Economic Commentary

Monetary policy and behavioural economics

Anna Breman and Björn Lagerwall

NO 6 2024, 10 April

SVERIGES RIKSBANK

Summary

The high inflation and changing consumption patterns of recent years have been particularly difficult to capture with the models and analyses normally used by central banks. We explore whether insights from behavioural economics can help to better analyse economic developments in a changing environment. Psychological factors can play an important role in understanding both macroeconomic relationships and monetary policy decision-making. Behavioural economics has empirically identified how individuals make economic decisions and can be a valuable complement to monetary policy analysis.

Authors: Anna Breman, First Deputy Governor, and Björn Lagerwall, Senior Advisor at the Monetary Policy Department.[1]

Behavioural economics – a useful complement to monetary policy analysis

The global economy has gone through several serious crises in recent years: a pandemic, war and very high inflation. The underlying causes as well as the sequence of events are very different from previous crises such as the dotcom crisis, the financial crisis and the euro crisis. Nevertheless, the effects on the economy have been very large and have led to extensive monetary and fiscal policy measures to address them.

It is well known that economic analysis is more difficult when the economy is hit by major shocks. The developments of recent years, characterised by major economic fluctuations and behavioural changes, have been particularly difficult to capture with the models and analyses normally used by central banks. This Economic Commentary examines whether research in behavioural economics can usefully complement standard macroeconomic models to improve analysis and decision-making in monetary policy.

How central banks conduct monetary policy and what their objectives should be are based on an interaction between practical experience and economic research. For example, some of the recipients of the Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel, often referred to as the Economics Prize, have been rewarded for key findings: the relationship between inflation and unemployment, what

[1] The authors would like to thank Mikael Apel, Hanna Armelius, Charlotta Edler, Daria Finocchiaro, Thomas Jansson, Caroline Jungner, Matilda Kilström, Åsa Olli Segendorf och Anders Vredin for their valuable comments, Charlie Nilsson for help with the figures and Gary Watson for his translation of the commentary into English.

the objective of monetary policy should be, and the position of the central bank in relation to the political system.[2]

The standard macroeconomic models commonly used by central banks, which build on the above-mentioned research, are based on the assumption that households and other economic decision-makers are rational and forward-looking and aim to maximise their own utility. This is usually described as the assumption about *the economic man* or *homo economicus*.

Behavioural economics integrates insights from psychology with economics. The subject has been honoured with two Economics Prizes, to Daniel Kahneman in 2002 and Richard Thaler in 2017.[3] In addition, several other laureates have focused on the subject later in their careers, such as George Akerlof and Robert Shiller.[4] The monetary policy discussion among central banks has sometimes highlighted the reasoning of behavioural economics that economic agents are driven by psychological factors and may have different preferences than those assumed by standard macroeconomic models, while these preferences may in turn differ among different agents.[5]

This Economic Commentary aims to provide some ideas on how empirical research from behavioural economics could help explain economic developments in recent years, particularly in relation to the large increase in inflation. We also discuss why it may be important to consider this research to improve future analysis when designing monetary policy. The first part of the Commentary describes some of the key findings from behavioural economics research. In this context, we will also discuss insights from social psychology that are important to consider in the context of group decision-making. The second part describes a simple monetary policy framework. The third part focuses on the inflation shock in 2021 and 2022 and its consequences going forward. We end the Commentary with some concluding thoughts.

Some key features of behavioural economics research

The role of psychological factors in economic decisions has been recognised since the beginning of economics. Adam Smith, sometimes regarded as the Father of Economics, analysed psychological factors as early as in the 18th century in his book "Theory of Moral Sentiments".[6] And since then, many well-known economists have discussed psychological factors. That said: For a long time, the research has been dominated by assumptions about *the economic man*. One reason for this was a need to make simpli-

[2] See for example Heikensten (2005) and Ingves (2015) for a description.

[3] The Prize awarded to Kahneman in 2002 was shared with Vernon Smith, who was honoured for his research on experimental economics; see Royal Swedish Academy of Sciences (2002). Kahneman passed away a few weeks ago at the age of 90.

[4] See Akerlof and Shiller (2009).

[5] See, for example, Yellen (2007), Haldane (2014) and Byrne et al (2022).

[6] See Ashraf et al. (2005).

fying assumptions to model the economy as a basis for various calculations. It was actually not until the 1970s and 1980s that behavioural economics research really took off, led by economics prizewinners Daniel Kahneman and Richard Thaler, among others. Simply put, the insights from behavioural economics seize on deviations from the assumptions about *the economic man*. There are many reviews of behavioural economics research worth reading.[7] In this Economic Commentary, we review some of the findings that we believe may be relevant to the monetary policy analysis and discussion:

- how we view risk and uncertainty – prospect theory
- rules-of-thumb, mental accounting and lack of self-control
- the perception of fairness
- social psychology factors in decision-making, such as conformity and groupthink
- life experiences that influence decisions over a long period of time

How we view risk and uncertainty – prospect theory

An important part of behavioural economics is how we view risk and uncertainty. In a 1979 article, Daniel Kahneman, together with Amos Tversky, launched the so-called **prospect theory, which deals with how we deal with risk and uncertainty**.[8] Two key elements of prospect theory are **reference dependence** and **loss aversion**.[9] Reference dependence means that we assess the value of an asset depending on how it relates to a reference, such as the purchase price. Loss aversion is about wanting to avoid losses in the face of economic uncertainty because they affect us more than the corresponding gains do. And the losses are then related to the reference value. A simple example can illustrate: If a person has bought a share and then sells it, it is considered a "good or bad deal" based on the purchase price, and a loss has a greater impact on utility than the corresponding gain has.

The area in which prospect theory has had the greatest influence is financial economics. Behavioural finance has been a very active and well-known field of research for quite some time.[10] Given how important the valuation of risk and uncertainty is in financial markets, this is perhaps unsurprising.

[7] See, for example, Gärdenfors et al. (2017), Royal Swedish Academy of Sciences (2017), Thaler (2018) and DellaVigna (2009) to name a few.

[8] See Kahneman and Tversky (1979). Tversky died in 1996 and was therefore unable to receive the 2002 Economics Prize.

[9] See Royal Swedish Academy of Sciences (2002) and Barberis (2013) for overviews of prospect theory.

[10] See for example Barberis and Thaler (2003) and Shiller (2003).

Rules-of-thumb, mental accounting and lack of self-control

Research has shown that households can use **rules-of-thumb** in their economic decisions. A well-known example of this is so-called **mental accounting**. This means that households divide their savings and expenditure items into different accounts such as "entertainment and travel", "food" and "retirement savings". As a result, savings are earmarked for different consumption purposes.[11] Mental accounting is a clear departure from standard macroeconomic theory, which usually assumes that it is the aggregate financial resources of households that matter for the ability to consume, or that money is fungible.

The research literature has often found unexpectedly large effects of temporary income changes on consumption. A common explanation for this is the existence of liquidity constraints, for example because the bank cannot grant additional loans. But behavioural economics highlights that such constraints can be self-imposed for psychological reasons.[12] For example, households would rather use their wages to consume than take out additional loans. Another rule-of-thumb could be that households do not want to sell the savings in shares they have set aside for retirement to cope with temporarily lower incomes. Another example could be that households use dividends for consumption but refrain from selling the shares.

One reason why households use rules-of-thumb and mental accounting might be to cope with **a lack of self-control.** This is because studies have shown that individuals often have difficulty sticking to their planned decisions, reflecting so-called *present bias* or *time-inconsistent preferences*.[13] One way of modelling this is so-called hyperbolic discounting, which means that individuals would much rather have the same amount of money today than in a week but do not experience the same difference when comparing getting the amount in a year or in a year and a week.[14] This may explain, among other things, the occurrence of *procrastination*, the tendency to postpone planned activities. For example, you decide to start exercising in a week, but when the week is over, it feels optimal to start exercising in another week and so on, so that the exercise never gets started. For example, a well-known study showed that many people buy expensive monthly gym passes and then only make a few visits. In retrospect, it turned out to be much cheaper to pay for each visit separately.[15] But buying a monthly pass can be a way of trying to deal with a lack of self-control by committing to going to the gym, even if it may not work so well.

[11] See for example Zhang and Sussman (2017) for an overview. For a recent study, see for example Gelman and Roussanov (2023).

[12] See for example Gelman (2022) and Vihriälä (2023).

[13] Note that this is a different type of time inconsistency than that commonly discussed in monetary policy, where rational agents change their decisions due to changing conditions.

[14] The formal name is *quasi-hyperbolic discounting* or the *beta delta model*. Although the same ideas were favoured by researchers several decades earlier, this concept is closely associated with the American economist David Laibson, who addressed the phenomenon in an article in 1997 (see Laibson, 1997).

[15] See DellaVigna and Malmendier (2006).

In the behavioural economics literature, individuals with a lack of self-control are sometimes divided into the categories “naïve” and “sophisticated”. Naïve individuals lack self-control but are unaware of it, while sophisticated individuals are aware of their lack of self-control and therefore demand so-called *commitment devices* (e.g. a monthly gym pass) to cope with it.

One of the most important findings in behavioural economics research concerns the effects of **default options**. Studies have shown that households often choose the pre-selected option instead of making an active choice. This means that businesses and public authorities can influence household finances just by framing the options they give them in a different way. A common such application relates to retirement savings, where households save more if they are automatically enrolled in a savings scheme than if they have to make an active choice to save.[16] These insights have been of huge practical significance in what is known as *nudging*. In simple terms, it involves changing the choice architecture to make it easier for people to make decisions in line with long-term goals.[17]

Perception of fairness

The perception of fairness can have a significant impact on wage and price formation, as we will discuss later. In the empirical literature, experiments have shown that individuals not only have preferences for maximising their own economic gain but also **consider the perception of fairness**. Some of the most famous experiments involve so-called dictator and ultimatum games. A dictator game involves a person choosing how much of a sum of money to share with another anonymous person. An ultimatum game works the same way, the difference being that the other party has the choice of accepting the offer or rejecting it. If the other party rejects the bid, neither participant earns anything. Research has shown that a significant percentage of players prefer to share a significant proportion of the money in the dictator game, and that bids perceived as too unfair are rejected in the ultimatum game.[18]

Social psychology factors in decision-making

In a famous experiment in the early 1950s, social psychologist Solomon Asch found something interesting.[19] A group of trial subjects were asked to compare two boxes: There were three lines in one and one line in the other. The question asked was which of the three lines in one box was the same length as the line in the other box. The answer was relatively obvious based on a visual inspection. In the control group, where people were allowed to answer themselves, less than 1 per cent of the answers were wrong. But in the actual experiment, the subjects were part of a group of 6-8 hired ac-

[16] See, for example, Choi et al. (2004) Cronqvist and Thaler (2004) and Thaler and Benartzi (2004).

[17] For a Swedish discussion, see Ramsberg (2016).

[18] For a simple description, see for example Gärdenfors et al. (2017).

[19] See Asch (1951).

tors. When the actors were asked to answer first and deliberately gave the wrong answer, more than a third of the subjects gave the same wrong answer.[20] Adapting your behaviour to the group in this way is called **conformity**. Interestingly, when only one of the actors deviated from the majority and gave the correct answer, the proportion of incorrect answers among the subjects was reduced to only 5 per cent.

Another well-known concept in social psychology is **groupthink**, which was introduced by social psychologist Irving Janis in the early 1970s.[21] The concept implies that the desire of a group of people to reach consensus leads to a tendency to suppress dissent within and outside the group. Studies have also shown that decisions made in groups can lead to more extreme outcomes than the preferences of the individual participants suggest, contrary to the idea that a group "smooths out" extreme preferences.[22]

Another well-known concept is the so-called **Abilene Paradox**, which was launched by the social psychologist and management professor Jerry Harvey in the mid-1970s.[23] According to the Paradox, a member of a group wrongly assumes that their preferences are different from those of the others and therefore does not object to the group's decision. As a result, a group can make decisions that are contrary to its members' own preferences.

How life experiences influence economic decisions

In recent years, an increasing amount of research has highlighted how **life experiences can influence economic decisions**, especially dramatic events.[24] For example, a generation that has experienced major stock market crashes may be more cautious about share ownership. This can lead to differences in economic behaviour between generations. "Depression babies" is a familiar term in this literature, referring to people who experienced the Great Depression of the 1930s as young people and who, as a result, have a more sceptical attitude towards risk-taking, such as when investing in shares.

[20] When the size of the groups was varied, it was found that all groups from three people upwards had the same effect on the trial subjects.

[21] See Janis (1972).

[22] The tendency for groups to make more extreme decisions than their members' individual preferences initially reflect is known as group polarisation.

[23] See Harvey (1974). The name comes from an anecdote that Harvey used to describe the Paradox: A family in Texas took a road trip to the city of Abilene, even though none of the individuals really wanted to.

[24] For an overview, see, for example, Malmendier (2021).

A simple monetary policy framework

To describe how insights from behavioural economics could help monetary policy, we use a simple framework based both on the relationship between the interest rate, the real economy and inflation, and on the monetary policy decision-making process.[25] Inflation expectations are a key component of how monetary policy affects the real economy and inflation. Monetary policy decisions are based on forward-looking assessments of economic developments. We will discuss different behavioural economic concepts in each section.

The interest rate, the real economy and inflation

In macroeconomic analysis, an important channel from monetary policy to the real economy is the so-called interest-rate channel. In turn, a key building block of this channel is the formation of expectations among economic agents, which we will discuss in this section.

The interest-rate channel essentially works by the central bank influencing the real, or inflation-adjusted, interest rate. In turn, the real interest rate affects demand in the economy, including households' decision to consume now or later.

But insights from behavioural economics show that household consumption and savings decisions can be driven by several psychological factors.

Money illusion may cause households to ignore inflation

A long-standing phenomenon in macroeconomic research is **money illusion**, whereby households tend to think in nominal terms and ignore the effects of inflation. One reason for such behaviour may be the use of rules-of-thumb in economic decision-making.[26] This means that it would in fact be the nominal interest rate, and not the real interest rate, that has the greatest impact on many households' consumption decisions. The analysis becomes even more complicated if we consider that the role of real and nominal interest rates in economic decision-making is likely to differ among economic agents. For example, while many professional investors focus on real interest rates, households are likely to differ in terms of which interest rate, nominal or real, matters most. Moreover, the focus can shift depending on whether inflation is low or high.

One point of having price stability as an objective for monetary policy could be that the consequences of money illusion need not be so great. The former chairs of the

[25] This is loosely based on a simple so-called New Keynesian model that usually contains three relationships: one between the interest rate and the real economy, one between the real economy and inflation, and a monetary policy decision rule. These relationships are often used among central banks to describe monetary policy in more general terms.

[26] See Shafir, Diamond and Tversky (1997) and Ziano et al (2021).

Federal Reserve, Paul Volcker and Alan Greenspan, have defined price stability precisely as a condition in which inflation does not influence economic decisions, and that the public does not need to distinguish between nominal and real amounts.[27]

As the Riksbank pursued an expansionary monetary policy, the **policy rate was negative** between 2015 and 2019. This received considerable media attention, despite the fact that the real policy rate has been negative on several previous occasions in history. According to standard monetary policy analysis, the real interest rate should have had the greatest impact on demand in the economy. One reason for the attention paid to the negative policy rate may have been precisely because households and the public attach more importance to the nominal interest rate and use it as a rule-of-thumb in their economic decisions, possibly reflecting money illusion.[28]

Default options with short interest-rate fixation periods

Another behavioural economic factor we mentioned earlier that can influence the effects of monetary policy is **default options**. In monetary policy, households' **choice of interest-rate fixation periods** is an important issue in terms of the impact of the policy rate on demand in the economy. The so-called cash flow channel suggests that monetary policy affects household consumption more the shorter the interest rate fixation periods are; cash flow is more affected by a given change in the policy rate.[29]

In Sweden, households' interest-rate fixation periods are short in both an international and historical perspective. But what drives households' choices? An issue that is rarely addressed is the default option that households receive when their interest-rate fixation periods expire.[30] Until about ten years ago, the practice among banks was that households received the same fixation period again when the previous fixation period expired, unless they made an active choice by contacting the bank and requesting a different option. But reacting to this, the Swedish Consumers' Banking and Finance Bureau, among others, said that this practice risked locking many households into long fixation periods. Following a dialogue with the banks, the practice was changed to the current one, whereby households automatically receive a three-month variable mortgage rate when their fixation period expires. If the household wants a different fixation period, it must make an active choice and contact the bank. Similar to the case where households save more when they are automatically enrolled in retirement saving plans, this may have contributed to more households having variable-rate mortgages. Our point with this example is not to say that one default option is better than the other, but to highlight that default options may affect household behaviour.

[27] Greenspan expressed it as "...households and businesses need not factor expectations of changes in the average level of prices into their decisions" and Paul Volcker as "...´stability´ would imply that decision-making should be able to proceed on the basis that ´real´ and ´nominal´ values are substantially the same over the planning horizon". See the description by Wynne (2008).

[28] Sveriges Riksbank (2020) and Tenreyro (2021) discuss money illusion as a possible reason for the public's scepticism about negative policy rates.

[29] See Sveriges Riksbank (2022a) for an illustration.

[30] For other explanatory factors, see for example Sveriges Riksbank (2023a).

Reference dependence and loss aversion in the housing market

As housing is often the largest investment a household makes, its value can have a significant impact on the ability to consume. When the Riksbank adjusts the policy rate in order to influence demand, one channel is via housing prices. For example, the value of the home affects the possibility of borrowing more money to consume, which is usually referred to as the collateral channel.[31] Several studies have used **prospect theory** to focus on the importance of **reference values and loss aversion** when households make housing transactions. One hypothesis is that households use the purchase price as a reference value and are reluctant to sell their property at a loss. This could explain why falling prices are often associated with low turnover.[32]

Perceived fairness affects acceptance of wage and price changes

A central component of the monetary policy analysis is the functioning of price and wage formation. In empirical macroeconomic research, an important finding is that **nominal wages are sticky downwards**, meaning that wage cuts are rare. But why is this the case? According to standard models in macroeconomic theory, as with the interest rate, households should care about real wages.

Behavioural economics research has **two feasible explanations**. First, reductions in nominal wages may naturally be seen as difficult to accept and linked to the **perception of fairness**. And second, **rules-of-thumb and money illusion** can cause households to think in nominal terms and use the nominal wage in their negotiations with their employer. Studies have shown that a nominal wage increase below the rate of inflation is much more acceptable than a wage cut in the absence of inflation, even though the real rate of increase is higher. This in turn leads employers to rarely decide to reduce nominal wages.[33]

Households' **perception of fairness** may also have implications for **companies' pricing behaviour**. Studies have shown that it is perceived as unfair, for example, to increase the price of soft drinks when the weather is unexpectedly sunny, or to increase the price of snow shovels after a snowstorm.[34] This may mean that households are much more likely to accept price increases motivated by rising costs than by high demand.

Households' perception of inflation is influenced by psychological factors

Research has also shown that households, as well as companies, use **rules-of-thumb when forming their inflation expectations**. It turns out that an important basis for households' expectations of inflation in the economy is price developments in goods and services they buy themselves.[35] Some patterns that emerge from the research are

[31] See Sveriges Riksbank (2022a) for an illustration.

[32] A classical study in this area is Genesove and Mayer (2001). For more recent studies, see for example Andersen et al. (2022), Bracke and Tenreyro (2021) and Badarinza et al. (2024)

[33] See, for example, Kahneman et al. (1986) and Yellen (2007).

[34] See, for example, Kahneman et al. (1986) and Eyster et al. (2021).

[35] See, for example, D'Acunto et al. (2021) and Weber et al. (2022).

that household expectations are more affected by prices that rise more than those that fall, by prices that change a lot and by prices of frequently purchased goods and services. As a result, household expectations tend to be higher than actual and expected inflation among, for example, financial market participants.

Studies have shown that **high inflation is perceived as a major problem by the public**.[36] This is partly due to psychological factors. One highlighted explanation is that households worry about declining purchasing power and living standards. This is consistent with a "supply-side view" of inflation, when inflation and the real economy move in different directions.[37] According to classical macroeconomic theory, higher expected inflation (all else equal) leads to lower real interest rates, which increases consumption. Although the research is not entirely conclusive, there are some indications that higher inflation expectations among households could instead lead to lower consumption, due to its association with declining living standards. Thus, a monetary policy aimed at stimulating consumption through higher inflation expectations may risk failing under certain conditions.[38]

The monetary policy decision-making process

The second component of our framework is that the central bank makes monetary policy decisions based on observations - and forecasts - of economic developments. In this context, we will focus on the decision-making process itself from a social psychology perspective: both the work of the decision-making committee, and the relationship between the staff and the committee.

Groupthink risks shaping monetary policy decisions

Monetary policy decisions in Sweden are taken by a group of people, the Executive Board, consisting of five members. It is a dominant practice among central banks to have a committee make monetary policy decisions. In the traditional economics literature, some reasons why groups make better monetary policy decisions than individuals are often mentioned.[39] Firstly, the amount of information available increases when more people participate. Second, as in portfolio selection and forecasting theory, there is a diversification argument: An average of several people's decisions tends to be better than a single person's decision. And third, and related to the second reason, decisions tend to be less extreme.

However, as described above, the social psychology literature has shown several pitfalls to be aware of when making decisions in groups. It is quite obvious that these pitfalls may also apply to monetary policy decisions within a committee.[40] Let us say a committee is faced with a choice between two monetary policy options: keeping the

[36] See Shiller (1997) and Stancheva (2024).

[37] See, for example, Weber et al. (2022) and Coibon et al. (2023).

[38] See, for example, Weber et al. (2022).

[39] See, for example, Blinder (2007) and Rieder (2022).

[40] See Sibert (2005).

policy rate unchanged or raising it by 0.25 percentage points. If one member leans towards the option of raising the policy rate by 0.25 percentage points, but all other members prefer an unchanged rate, **conformity** may cause the member to bow to the majority and also vote in favour of an unchanged rate - against their own convictions. **Groupthink** could arise from the committee becoming very close-knit and homogeneous and thus risking ignoring dissenting views inside and outside the central bank.

The **Abilene Paradox** can also apply if a staff member or decision-maker wrongly assumes that a proposal will not have the support of the committee and therefore never puts it forward. Instead, the member avoids making alternative proposals and the staff member risks only presenting proposals that they think the committee wants.

Behavioural economics perspectives on the rise in inflation in 2021-2022

In this section, we highlight some of the factors we discussed earlier that may shed light on the developments in recent years when inflation rose sharply in 2021 and 2022. We focus on four themes: (1) the importance of inflation for economic decisions, (2) household savings during and after the pandemic, (3) developments in the Swedish housing market and (4) monetary policy decision-making. Looking ahead, we also discuss the possibility of long-term effects of high inflation.

The importance of inflation for economic decisions

A phenomenon we described earlier is **money illusion**, i.e. the tendency of households and companies to ignore inflation in their economic decisions. However, it is also hypothesised that this tendency diminishes if inflation is sufficiently high. The theory of *rational inattention* implies that agents incur costs in obtaining information and therefore optimise their decisions accordingly. But there are also psychological explanations related to how visible price increases are. The literature on inflation expectations among households has found that expectations are affected by visible price changes. A hypothesis is therefore that there may be an “attention threshold” when inflation becomes important for economic decisions. In recent years, as inflation has risen sharply, several central banks have highlighted this possibility.[41]

In the spring of 2022, households’ expectations of their finances, as measured by the Economic Tendency Survey, fell very sharply, while inflation rose rapidly (see Figure 1). This is well in line with research showing that **households associate rising inflation with a decline in living standards**. As inflation rose, real wages fell very sharply. In its Monetary Policy Reports, the Riksbank has emphasised the importance of inflation

[41] See for example Nagel (2022), Bayarmagnai (2023), Bracha and Tang (2022), Braitsch and Mitchell (2022) and Norges Bank (2023).

falling towards the target, so that real wages can begin to rise again and living standards among households can improve.

Figure 1. Expectations of own finances and CPIF inflation
Net figures and annual percentage change

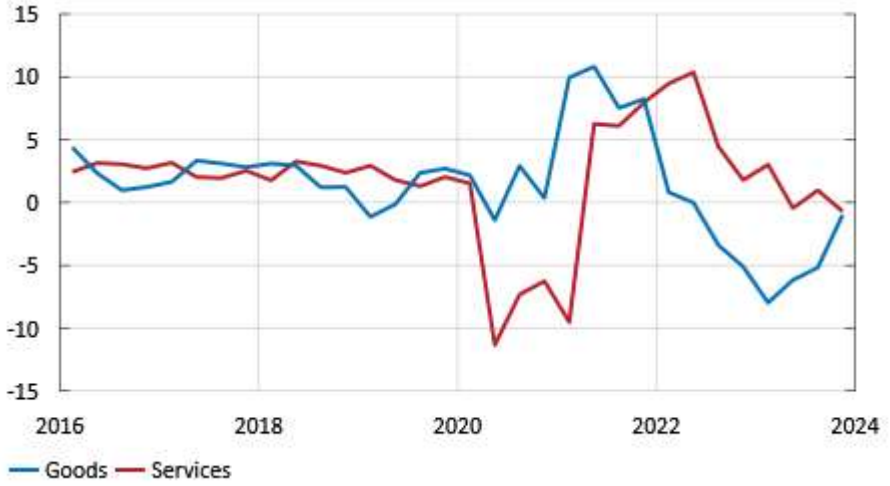
Sources: National Institute of Economic Research and Statistics Sweden.

Mental accounting may have influenced household savings

One explanation for the rise in inflation in Sweden and many other countries in 2021-2022 is strong consumer demand, especially for services. The theory of **mental accounting** provides a possible explanation for this development. During the pandemic, parts of the economy were shut down, and consumption of services such as travelling and eating out fell sharply. Total household savings increased significantly. Let us now assume that households have different mental accounts for, for example, 'home decoration and furniture' and 'travelling and eating out'. The amount of money in both accounts remained fairly normal during the pandemic for those households that kept their jobs. The mental account for 'home decoration and furniture' could be used and this consumption could be maintained, as the statistics show. However, due to self-imposed and public restrictions, the 'travelling and eating out' account filled up, pushing up total savings. Once restrictions were lifted, the account for travelling and eating out was full of money, which may explain the strong increase in the consumption of services after the pandemic (see Figure 2).

Figure 2. Household consumption

Annual percentage change



Note: Household consumption according to the National Accounts.

Source: Statistics Sweden.

Falling prices and low turnover in the housing market

For a long time prior to 2021-2022, interest rates had been very low and on a declining trend. During this period, the Swedish housing market had experienced strong price increases. During the pandemic, prices rose considerably, probably due to household saving patterns, as described above, and more time spent at home. The Riksbank policy rate remained unchanged at zero per cent, which meant that mortgage rates remained at about the same level as before.[42] When the Riksbank began raising the policy rate in the spring of 2022, there was considerable uncertainty about how the housing market would react. It came under pressure from several sources, including rising interest rates and changes in behaviour as the pandemic faded – less time was spent at home.

Prices then fell over the course of 2022 but then levelled off, while turnover fell. Many homeowners who were about to move were faced with a completely new situation. The theory of **reference values and loss aversion** fits qualitatively well with what happened, as it predicts that falling prices are associated with low turnover (see Figure 3). According to this hypothesis, many households who bought when prices were high in previous years would have had difficulty selling their homes at a loss. At the same time, households that bought earlier and benefited from the earlier price increases would have been able to sell their homes more easily.

[42] See Sveriges Riksbank (2021) for a description.

Figure 3. The housing market

Annual percentage change (left) and thousands (right)

Note: Housing prices refer to the HOX Sweden price index.

Sources: Valueguard and Svensk Mäklarstatistik.

Monetary policy, firms' pricing behaviour and households' reaction to the rise in inflation

An additional piece of the puzzle in the 2021-2022 inflation upturn was the late reaction of monetary policy-makers in many countries to indications of rising inflation. As mentioned earlier, central banks in many countries, including the Riksbank, had been facing the problem of excessively low inflation for a long time.

One explanation has to do with **the analysis of the economy itself**, where psychological aspects, such as changes in the behaviour of households and companies caused by the major economic shocks, may have been underestimated. One example of this was the initial rise in Swedish inflation, much of which was driven by sharply rising energy prices. According to traditional monetary policy analysis, the central bank should largely 'see through' this, as the effects on inflation tend to be temporary. But that turned out to be wrong. At the same time as societies opened up after the pandemic, Russia's illegal invasion of Ukraine added to already existing supply chocks and rising energy prices. In the face of these events, pricing behaviour of companies changed, and they passed on much or all of the cost increase to consumers.[43] This may have been possible because price increases were easy to accept under the prevailing conditions.[44] As discussed earlier, there is research showing that households find it easier to accept price increases explained by rising costs for companies than price increases resulting from high demand.

[43] See National Institute of Economic Research (2023) and Sveriges Riksbank (2023b).

[44] This was also stated by companies in the Riksbank's own survey at the beginning of 2022. See Sveriges Riksbank (2022b).

In an environment with severe global shocks, monetary policy assessment are always difficult, in part because forecasts are highly uncertain. Under such circumstances, it is important to guard against social-psychological pitfalls such as confirmation bias and group think. **Confirmation bias** means that individuals tend to seek information that confirms their previous hypothesis and largely dismiss information that suggests the opposite. **Groupthink** can be seen as confirmation bias at the collective level.[45] Thus, when inflation showed signs of rising, one pitfall that presented itself was the tendency to seek support for too long for the hypothesis that inflation had been low for a long time anyway and was at risk of remaining so. Sometimes, the term *fear of liftoff* is used to describe an inherent resistance to easing an expansionary monetary policy.[46] The possibility to enter a reservation against the majority decision is an important mechanism to foster constructive discussions in a committee. In recent years, the discussion of social-psychological aspects of monetary policy decision-making has gained a renewed momentum, partly because of the high and sharp rise in inflation.[47]

Looking ahead - lasting effects of the inflation shock

We previously described the literature on the **importance of experience** for economic agents.[48] Individuals who have experienced dramatic economic events are affected by them for a long time afterwards. This also applies to episodes of high inflation.[49] Research shows that monetary policy-makers are also influenced by their experiences. For example, there are indications that members of the Federal Reserve's Monetary Policy Committee who had experienced the Great Inflation in the 1970s and 1980s favoured tighter monetary policy than younger members who had not.[50]

In Sweden, we experienced a nearly 30-year period of low and stable inflation until the recent upturn. This meant that younger generations had no memory of high inflation, as it had last occurred in the early 1990s. This has changed with the recent rise in inflation. We now see inflation falling and approaching the target in many countries, including Sweden. An interesting question for the future is whether the economy will behave similarly when inflation is back on target or whether the period of high inflation may have had lasting effects. The research suggests that the experience of high inflation may have affected households, companies and economic policy-makers for a long time to come.

[45] See Haldane (2014).

[46] See Calabria (2016) and Orphanides (2015).

[47] See Blanchflower and Levin (2023).

[48] For an overview, see Malmendier (2021).

[49] See Salle et al (2024).

[50] See Malmendier et al. (2020).

Concluding thoughts

In this Economic Commentary, we have highlighted insights from behavioural economics research that we believe can be helpful for monetary policy. We see these insights as useful complements to the existing analysis and standard macroeconomic models. In many cases, they can offer alternative explanations for the relationships we observe. One example is the strong relationship of consumption with changes in income. It can be explained by the reaction of rational individuals to borrowing constraints or psychological factors such as present bias. Most likely, individuals are different, some are constrained by borrowing restrictions, and others are more present-biased in their financial decisions.

A further example is the strong relationship between inflation expectations and actual inflation when inflation is high. This can be the result of rational inattention or psychological rules of thumb. Again, there are likely to be differences between individuals, with some fitting better into one or the other of these explanations. In recent years, new research has attempted to integrate behavioural economic elements into macroeconomic models in order to draw conclusions that are more general about, for example, the effects of fiscal and monetary policy.[51]

We see a number of possible practical measures to integrate behavioural economic insights into the monetary policy analysis and decision-making process. One possible measure is to **supplement the ongoing model analysis with insights from behavioural economics**. A particularly interesting way forward could be to link behavioural economic results with models and analyses that include different types of households, or 'heterogeneous agents'.

What can be done to **avoid social psychological pitfalls** in the actual **drafting and decision-making process**? There are several well-known approaches to solving the problems of groupthink.[52] The methods are essentially about actively opening up to critical thinking. Applied to the monetary policy process, the **interaction between staff and committee** should be characterised by openness to alternative solutions and views. When it comes to t**he committee's own decision-making process**, it is important to make use of the different backgrounds and experiences of its members and to encourage open conversations. Reservations against decisions should not be seen as a sign of frictions but rather as a sign of good discussions.

[51] For an early overview, see Driscoll and Holden (2014). For more recent studies, see for example Laibson et al. (2024).

[52] See Janis (1982).

References

Akerlof, G.A. and R.J. Shiller (2009), “Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism", Princeton University Press.

Andersen, S., Badarinza, C., Liu, L. Marx, J. and T. Ramadorai (2022), “Reference Dependence in the Housing Market”, American Economic Review, pp. 3398-3440.

Asch, S. (1951), “Effects of group pressure upon the modification and distortion of judgment”, in Guetzkow (ed.). “Groups, leadership and men”, Pittsburgh, PA: Carnegie Press.

Ashraf, N., Camerer, C.F. and G. Loewenstein (2005), “Adam Smith, Behavioral Economist”, Journal of Economic Perspectives, pp. 131-145.

Badarinza, C., Ramadorai, T., Siljander, J. and J. Tripathy (2024), “Behavioral lock-in: aggregate implications of reference dependence in the housing market” Bank of England Working Paper No. 1054.

Barberis, N. (2013),”Thirty Years of Prospect Theory in Economics: A Review and Assessment”, Journal of Economic Perspectives, pp. 173-196.

Barberis, N. and R. Thaler (2003), “A survey of behavioral finance”, Handbook of the Economics of Finance 1.B, pp. 1053-1128.

Bayarmagnai, G. (2023), “Rational inattention to inflation among New Zealand households”, Analytical Notes, Reserve Bank of New Zealand.

Blanchflower, D.G. and A.T. Levin (2023), “Monetary policy committees need reform to avoid groupthink and ensure sound decision-making”, IMF Finance and Development, March.

Blinder, A. (2007), “Monetary policy by committee:”. Why and how?”, European Journal of Political Economy, pp. 106-123.

Bracha, A. and J. Tang (2022), “Inflation Levels and (In)Attention”, Research Department Working Papers, Federal Reserve Bank of Boston.

Bracke, P. and S. Tenreyro (2021), “History Dependence in the Housing Market”, American Economic Journal: Macroeconomics, pp. 420-443.

Braitsch, H. and J. Mitchell (2022), “A New Measure of Consumers' (In)Attention to Inflation”, Economic Commentary 22, Federal Reserve Bank of Cleveland.

Byrne, S., Devine, K. and Y. McCarthy (2022), “Behavioural Economics and Public Policy-Making”, Quarterly Bulletin 01, Central Bank of Ireland.

Calabria, F. (2016), “Behavioural Economics and Fed Policy Making” Cato Journal, No. 3.

Choi, J.J., Laibson, D., Madrian, B. and A. Metrick (2004), "For Better or for Worse: Default Effects and 401(k) Savings Behaviour", NBER Working Paper 10341.

Coibion, O., Georgarakos, D. Gorodnichenko, Y. and M. van Rooij (2023), "How Does Consumption Respond to News about Inflation? Field Evidence from a Randomised Control Trial", American Economic Journal: Macroeconomics.

Cronqvist, H. and R.H. Thaler (2004), "Design Choices in Privatised Social-Security Systems: Lessons from the Swedish Experience", American Economic Review, pp. 424-428.

D'Acunto, F., U. Malmendier, J. Ospina, and M. Weber (2021), "Exposure to Grocery Prices and Inflation Expectations", Journal of Political Economy.

DellaVigna, S. (2009), "Psychology and Economics: Evidence from the Field", Journal of Economic Literature, pp. 315-372.

DellaVigna, S. and U. Malmendier (2006), "Paying not to Go to the Gym", American Economic Review, pp. 694-719.

Driscoll, J.C. and S. Holden (2014), "Behavioural Economics and Macroeconomic Models", Journal of Macroeconomics, pp. 133-147.

Eyster, E., Madarász, K., and P. Michaillat (2021), "Pricing Under Fairness Concerns", Journal of the European Economic Association, pp. 1853-1898.

Gelman, M. (2022), "The Self-Constrained Hand-to-Mouth", The Review of Economics and Statistics, pp. 1096-1109.

Gelman, M. and N. Roussanov (2023), "Managing Mental Accounts: Payment Cards and Consumption Expenditures", NBER Working Paper 31613.

Genesove, D. and C. Mayer (2001), "Loss Aversion and Seller Behaviour: Evidence from the Housing Market", Quarterly Journal of Economics, 2001, pp. 1233-1260.

Gärdenfors, P., Johannesson, M., Molander, P., Sjöström, T. and P. Strömberg, (2017). "2017 economics prize to Richard Thaler", Ekonomisk Debatt nr 8, 6-16.

Haldane, A. (2014), "Central Bank Psychology", speech published on 17 November, BIS.

Harvey, J. (1974), "The Abilene paradox: The management of agreement", Organizational Dynamics, pp. 63-80.

Heikensten, L. (2005), "Monetary policy and the academics", speech published on 28 October, Sveriges Riksbank.

Ingves, S. (2015), "The central bank's objectives and means throughout history - a perspective on today's monetary policy", speech published on 6 May, Sveriges Riksbank.

Janis, I. (1972), “Victims of groupthink: A psychological study of foreign policy decisions and fiascos”, Boston: Houghton Mifflin Company.

Janis, I (1982), “Groupthink: A psychological study of policy decisions and fiascos”, Boston: Houghton Mifflin Company.

Kahneman, D., Knetsch, J.L and R. Thaler (1986), “Fairness as a Constraint on Profit Seeking: Entitlements in the Market”, American Economic Review, pp. 728-741.

Kahneman, D. and A. Tversky (1979), “Prospect Theory:An analysis of Decision under Risk” in Econometrica, pp 263-91.

Laibson, D. (1997), “Golden Eggs and Hyperbolic Discounting”, Quarterly Journal of Economics, s. 443-477.

Laibson, D., Maxted, P. and B. Moll (2024), “Present Bias Amplifies the Household Balance-Sheet Channels of Macroeconomic Policy”, Quarterly Journal of Economics, forthcoming.

Malmendier, U. (2021), “Experience Effects in Finance: Foundations, Applications, and Future Directions”, Review of Finance, pp. 1339-1363.

Malmendier, U., Nagel, S., and Z. Yan (2020), “The Making of Hawks and Doves: Inflation Experiences on the FOMC” Journal of Monetary Economics.

Nagel, J. (2022), “The long shadow of high inflation”, speech published on 18 November, BIS.

National Institute of Economic Research (2023), “Prissättning hos svenska företag 2023”, special study (only in Swedish).

Norges Bank (2023), “Inflation expectations in a period of high inflation”, article in Monetary Policy Report 4.

Orphanides, A. (2015), “Fear of Liftoff: Uncertainty, Rules, and Discretion in Monetary Policy Normalisation”, Federal Reserve Bank of St. Louis Review.

Ramsberg, F. (2016), “When the right thing becomes the easy thing - an ESO report on 'nudging'”, Report to the Expert Group for Studies in Public Economics 2016:7.

Rieder, K. (2022), “Monetary policy decision-making by committee: Why, when and how it can work”, European Journal of Political Economy.

Royal Swedish Academy of Sciences (2002), The Sveriges Riksbank Prize in Economic Sciences in Memory of Alfred Nobel 2002 - NobelPrize.org.

Royal Swedish Academy of Sciences (2017), The Prize in Economic Sciences 2017 - NobelPrize.org.

Salle, I., Gorodnichenko, Y. and O. Coibion (2024), "Lifetime Memories of Inflation: Evidence from Surveys and the Lab", Voxeu Column, 2 February.

Shafir, E., Diamond, P. and A. Tversky (1997), "Money Illusion", Quarterly Journal of Economics, pp. 341-374.

Sibert, A. (2005), "Central Banking by Committee", International Finance 9(2), 145–168.

Shiller, R.J. (1997), "Why do People Dislike Inflation?", NBER Working Paper 8881.

Shiller, R.J. (2003), "From Efficient Markets Theory to Behavioural Finance", Journal of Economic Perspectives, pp. 83-104.

Stancheva, S. (2024), "Why do We Dislike Inflation?", BPEA Conference Draft, Spring.

Sveriges Riksbank (2020), "The Riksbank's experiences of a negative repo rate", article in Account of Monetary Policy 2019.

Sveriges Riksbank (2021), "Rapidly rising housing prices despite coronavirus crisis", article in Monetary Policy Report, April.

Sveriges Riksbank (2022a), "Higher sensitivity to interest rates in the Swedish economy" in Monetary Policy Report, September.

Sveriges Riksbank (2022b), Business Survey, February.

Sveriges Riksbank (2023a), "A growing number of households choose variable interest rates", fact box in Financial Stability Report 2023:1.

Sveriges Riksbank (2023b), "The krona's impact on inflation appears to have been unusually large", article in Monetary Policy Report, November.

Tenreyro, S. (2021), "Let's talk about negative rates", speech published on 11 January, Bank of England.

Thaler, R. H. (2018). "From Cashews to Nudges: The Evolution of Behavioural Economics", American Economic Review, pp. 1265-87.

Thaler, R.H. and S. Benartzi (2004), "Save More Tomorrow: Using Behavioural Economics to Increase Employee Saving", Journal of Political Economy, pp.164-S187.

Weber, M., D'Acunto, F., Gorodnichenko, Y. and O. Coibion (2022), "The Subjective Inflation Expectations of Households and Firms: Measurement, Determinants, and Implications", Journal of Economic Perspectives, pp. 157-184.

Vihriälä, E. (2023), "Self-imposed liquidity constraints via voluntary debt repayment", Journal of Financial Economics.

Wynne, M.A. (2008), "How Should Central Banks Define Price Stability?", Working Paper No. 8, Federal Reserve Bank of Dallas.

Yellen, J. (2007), "Implications of Behavioral Economics for Monetary Policy", paper for the conference *Policymaking Insights from Behavioral Economics*, organised by the Federal Reserve Bank of Boston.

Zhang, C. Y. and A. B. Sussman (2017), "The Role of Mental Accounting in Household Spending and Investing Decisions", Chicago Booth Working Paper No. 19-07.

Ziano, I., Li, J., Tsun, S. M. , Lei, H.C., Kamath, A.A., Cheng, B.L. and G. Feldman (2021), "Revisiting "money illusion": Replication and extension of Shafir, Diamond, and Tversky (1997)", Journal of Economic Psychology.

SVERIGES RIKSBANK
Tel 08 - 787 00 00
registratorn@riksbank.se
.www.riksbank.se.

PRODUCTION SVERIGES RIKSBANK