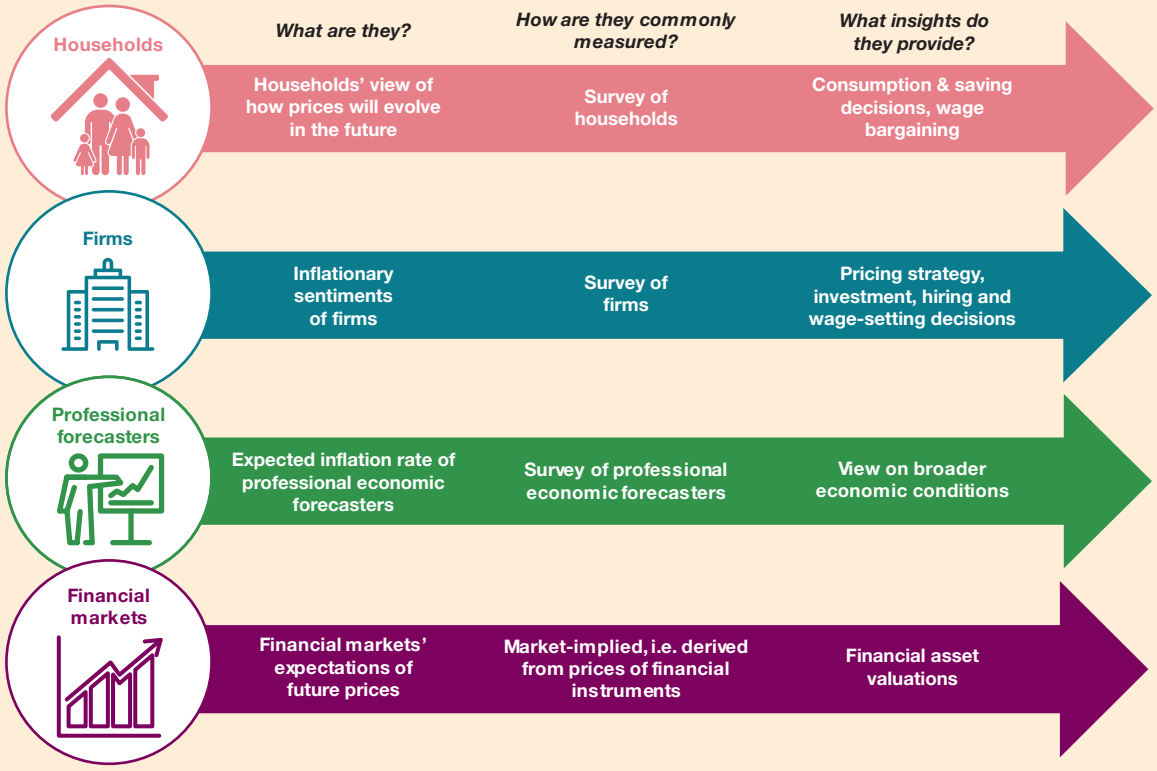
When the Future Starts Today: Inflation Expectations of Malaysian Households

By Zul-Fadzli Abu Bakar and Nur Aimi Abdul Ghani

Assessments on inflation expectations are of great importance in central banking, both in advanced and emerging market economies. Central banks care about inflation expectations given their prospective influence on key economic and financial variables such as actual inflation, households' consumption and saving decisions, firms' price- and wage-setting decisions, as well as financial asset valuations.

The concept of inflation expectations applies to households, firms, professional forecasters and financial markets. While the beliefs of future inflation hold across these different economic agents, their expectations are not interchangeable as they provide different insights (Table 1) (Coibion et al., 2018).

Table 1: Differences between Inflation Expectations of Households, Firms, Professional Forecasters and Financial Markets



Source: Coibion et al. (2018)

Given these different types of inflation expectations, this article focuses specifically on inflation expectations of households[1] in Malaysia, using data from the Bank Negara Malaysia Consumer Sentiment Survey (BNM CSS). It aims to explain the formation of these expectations, seeking insights into how households process information to inform their future price outlook. It then explores factors that contribute to biases in inflation expectations. As inflation expectations may influence households' spending decisions, the article also examines the relationship between inflation expectations and households' spending decisions.

[1] In the BNM CSS, a household is defined as related and/or unrelated persons who usually live together and make common provisions for food and other living essentials.

1. Why are inflation expectations important?

"Looks like prices are going to go up by quite a lot… I'd better buy this TV now before it gets even more expensive!"

"Yes you're right, but I think I'll start saving up in case there is an emergency in the future"

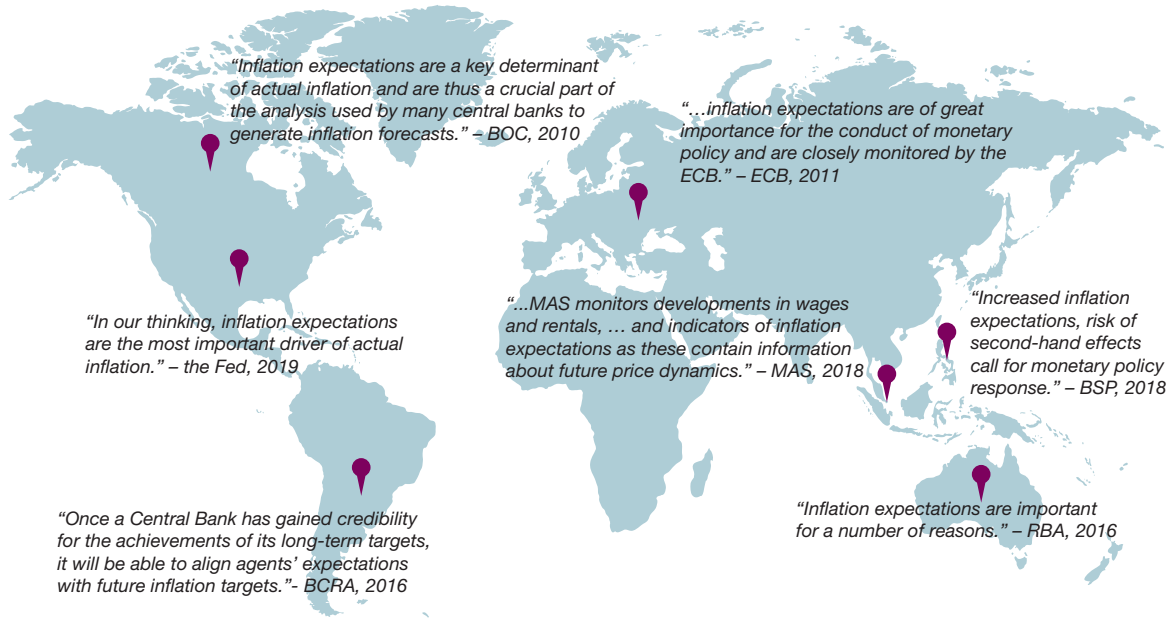
Often, we may hear statements like these from friends, families, or strangers in our daily lives. In essence, these statements are based on what is referred to as inflation expectations: the belief of how much prices will change in the future. In the modern economy, where every household is affected by price changes, it is reasonable to infer that each decision-maker holds some belief about future inflation (Mohanty, 2012).

Understanding inflation expectations is important because they affect the real economy in a number of ways (Moore, 2016). First, for firms, inflation expectations affect price-setting decisions. If firms expect higher inflation, they may be more inclined to set higher prices, which would lead to higher actual inflation. Second, in countries with strong labour bargaining power, inflation expectations affect wage negotiations. If inflation is expected to be persistently higher, workers bargain for higher wages, which places upward pressure on firms to increase prices. Third, for households in general, inflation expectations affect current spending decisions.

Inflation Expectations, Inflation Dynamics and the Conduct of Central Banking

Over the years, there has been a marked increase in the number of central banks that factor inflation expectations into their monetary policy considerations (Diagram 1). This trend is largely grounded upon economic theory which posits that inflation expectations are salient in influencing the behaviour of economic agents, making them a key driving force of actual inflation. The New Keynesian Phillips Curve (NKPC), which is a theoretical framework for inflation dynamics, explicitly incorporates this forward-looking expectations component. A property of the NKPC is that inflation is a forward-looking process, driven by expectations of future inflation and not merely past and current shocks.

Diagram 1: Statements on Inflation Expectations among Policymakers Across the Globe



Source: The Federal Reserve System (the Fed), Bank of Canada (BOC), European Central Bank (ECB), Banco Central de la República Argentina (BCRA), Bangko Sentral ng Pilipinas (BSP), Reserve Bank of Australia (RBA) and Monetary Authority of Singapore (MAS)

Inflation expectations affect actual inflation because they influence spending, price- and wage-setting decisions. They can cause a long-lasting impact to actual inflation, whereby one round of price increases triggers further rounds as inflationary psychology takes hold. Consequently, modern central banking practices involve anticipating future inflation and managing inflation expectations to ensure price stability. From a policy perspective, this forward-looking element opens the door to expectations management and communications as added tools of monetary policy.

Notwithstanding this, the sources of inflation expectations, as well as the actual drivers of inflation itself, need to be assessed holistically for monetary policy considerations. Notably, whether inflation expectations and actual inflation are demand- or supply-driven. The early 2007 – July 2008 period provides a good example, a time when global commodity prices, as measured by the IMF Commodity Price Index, increased by 83%, leading to rising global inflation. In the euro area, concerns of rising inflation expectations were at the forefront of policy discussions as there were risks of second-round effects to actual prices from price- and wage-setting behaviour. In other words, if rising inflation expectations were not managed, the commodity price shock may have had longer-lasting effects to actual inflation if firms were setting higher prices and households were bargaining for higher wages in anticipation of the higher future inflation. This, along with other considerations, led the European Central Bank (ECB) to increase its policy rate by 25 basis points in July 2008.

In Malaysia, the monetary policy stance was maintained during this period despite the increase in supply-driven inflation pressures. While the risks to inflation were on the upside, it was assessed that the risks to growth were on the downside given the weakening global growth, and thus reduced the likelihood of second-round effects to inflation. As the global financial crisis intensified, policy rates were consequently reduced by 150 basis points from October 2008 to February 2009.

Inflation expectations are only one of the many determinants of inflation. Ultimately, monetary policy must give due consideration to the overall inflation outlook, in addition to economic growth prospects and risks of financial imbalances.

2. How are household inflation expectations measured?

Household inflation expectations are measured through surveys

Unlike actual inflation itself, inflation expectations are unobserved. As such, their measurements rely on inference. A standard approach globally is to directly question households what they expect inflation to be in the following year through periodic surveys catered to extract household economic information (Table 2). There are variations to this question, which may be in qualitative or quantitative form, and either general or specific:[2]

Qualitative and general: "*During the next 12 months, do you think that **prices in general** will go up, go down, or remain the same?*"

Quantitative and specific: "*During the next 12 months, **how much** do you think prices of **fuel** will go up, go down, or do you think they will remain the same?*"

For Malaysia, similar questions are featured as part of the BNM CSS. Each month, around 1,000 respondents are interviewed from samples designed to be representative of the Malaysian population, with respondents ranging from 18 to 74 years old. The BNM CSS commenced in 2013 to bridge information gaps pertaining to consumer expectations on economic growth, inflation, wage growth and borrowing cost.[3] This survey also gathers households' demographics such as their household size, income and location.

[2] These questions are adapted from the University of Michigan Survey of Consumers for American households (Meyer and Venkatu, 2011).
[3] The Malaysian Institute of Economic Research (MIER) also conducts a similar survey on consumer sentiments in Malaysia. The main differences between MIER's survey and that of BNM's are the coverage of topics and frequency of survey.

Table 2: Surveys on Inflation Expectations of Households in Various Countries

Country	Survey	Year started	Frequency	Coverage	Expectation horizon
United States 	University of Michigan, Survey of Consumers	1946	Monthly	Minimum of 500 households	1-year & 5-year ahead
EU 	European Commission, Business and Consumer Survey	1961	Monthly	More than 41,000 households	1-year ahead
Australia 	Melbourne Institute, Consumer Attitudes, Sentiments and Expectations in Australia Survey	1974	Monthly	1,200 households	1-year ahead
Japan 	Bank of Japan, Opinion Survey on the General Public's Views and Behavior	1993	Quarterly	4,000 households	1-year & 5-year ahead
New Zealand 	Reserve Bank of New Zealand, Household Inflation Expectations Survey	1995	Quarterly	1,000 households	1-year & 5-year ahead
Canada 	Bank of Canada, the Canadian Survey of Consumer Expectations	2015	Quarterly	1,000 households	1-year, 2-year & 5-year ahead
Indonesia 	Bank Indonesia, Consumer Expectation Survey	1999	Monthly	4,600 households	6-month ahead
India 	Reserve Bank of India, Inflation Expectations Survey of Households	2005	Quarterly	6,000 households	3-month & 1-year ahead
Singapore 	SKBI-MasterCard Index of Inflation Expectations Survey	2011	Quarterly	400 households	1-year & 5-year ahead
Malaysia 	BNM Consumer Sentiment Survey	2013	Monthly	1,000 households	1-year & 2- to 3-year ahead

Source: University of Michigan, European Commission, Melbourne Institute, Bank of Japan, Reserve Bank of New Zealand, Bank of Canada, Bank Indonesia, Reserve Bank of India, Singapore Management University, and Bank Negara Malaysia

3. How do Malaysian households form their inflation expectations?

Households form their inflation expectations through a combination of past, current and forward-looking beliefs

To interpret the level and changes of inflation expectations, it is useful to understand how they are formed. Households place different weights on a host of factors when constructing their inflation expectations (Rowe, 2016). On the one hand, "backward-looking" households develop inflation expectations by extrapolating past and current inflation experiences into the future. These past and current inflation experiences are also referred to as inflation perceptions, which are the beliefs of how much prices have changed (Table 3). Sentiments surrounding income also shape inflation perceptions because changes in income relative to price affect the perceived impact of price changes, and thereby households' views toward affordability (Ranyard et al., 2008; Gärling and Gamble, 2006; Gamble, 2006).

Table 3: Differences Between Inflation Expectations, Inflation Perceptions and Actual Inflation

	Inflation expectations	Inflation perceptions	Actual inflation
Definition	The belief of how much prices will change in the future	The belief of how much prices have changed from the past	How much prices have changed from last year, based on a single basket of goods and services in the Consumer Price Index (CPI)
Influenced by	Individual's information sets of the past, present and future	Individual's information sets of the past and present	Average consumption patterns of Malaysian households and average prices in the economy

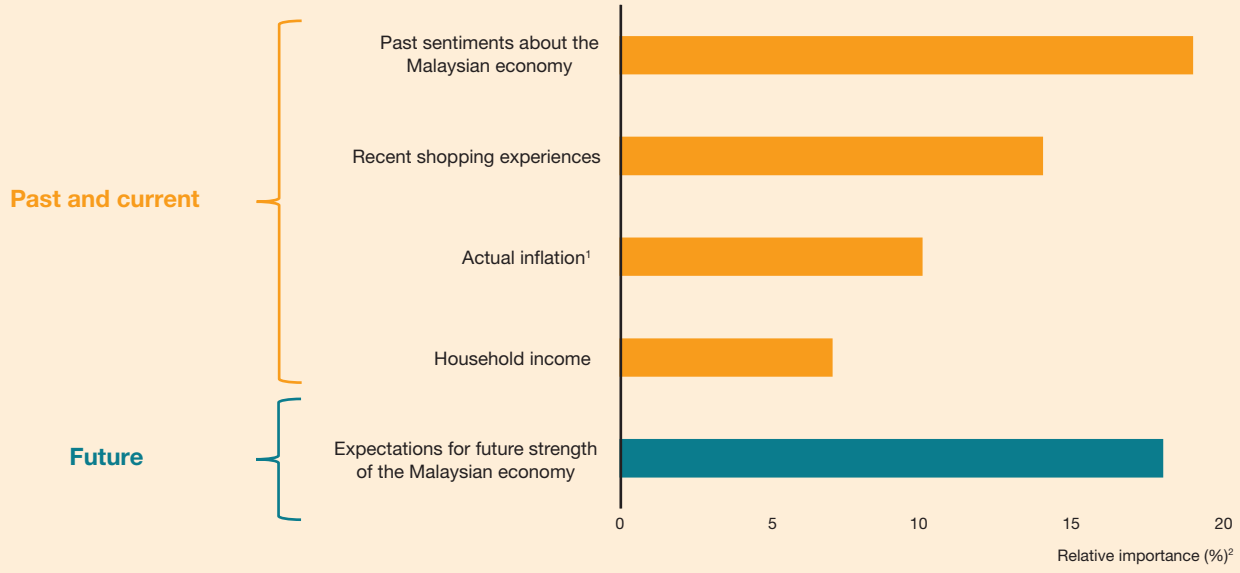
Source: Bank Negara Malaysia, Arioli et al. (2017)

On the other hand, "forward-looking" households consider expectations of future broader economic developments, such as their sentiments on the economy. In reality, households can integrate both backward- and forward-looking factors in shaping their inflation expectations.

On average, Malaysian households place weights on both backward- and forward-looking factors (Chart 1).[4] Past sentiments on the domestic economy, recent shopping experiences and current income levels are important backward-looking factors, reflecting their role as easy, accessible and personal ways to form predictions. The forward-looking aspect is also important, with households also considering their expectations of the future strength of the Malaysian economy when forming inflation expectations.

Chart 1: Selected Factors Estimated to Determine Inflation Expectations of Malaysian Households

Households consider both backward- and forward-looking factors when forming inflation expectations



[1] Actual inflation refers to Consumer Price Index (CPI) inflation of the current and past three months
[2] Relative importance refers to how much the factors contribute to the movements in inflation expectations relative to other factors considered

Note: Other factors that are considered include expectations for future interest rate on savings, expectations for future interest rates on loans and various sources of inflation information such as the mass media and internet. The factors chosen are based on Rowe (2016).

Source: Bank Negara Malaysia estimates using data from the Bank Negara Malaysia Consumer Sentiment Survey and Department of Statistics, Malaysia

[4] The estimates are derived using an Ordinary Least Squares (OLS) regression of inflation expectations against factors identified in the literature to affect inflation expectations. The regression also controls for time effects. The estimates shown are statistically significant at the 1% level.

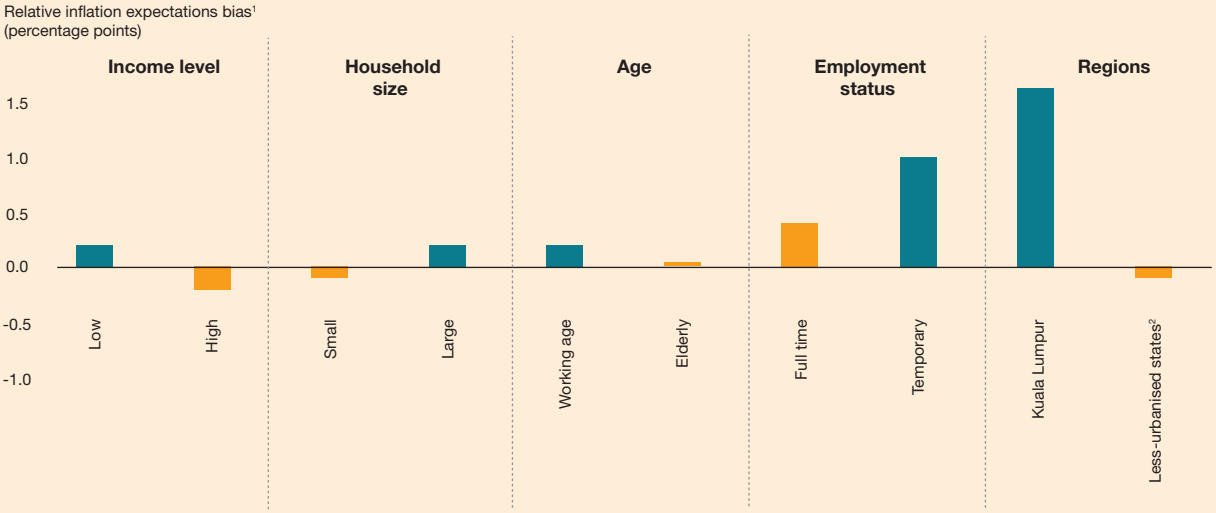
Households who are pessimistic on economic or financial conditions may be more likely to have higher inflation expectations. As these households struggle to make ends meet, either due to insufficient income or rising prices, they are likely to anticipate higher future inflation (Ehrmann et al., 2015). In other countries, it was found that financially constrained households also pay more attention to price changes compared to less constrained households, and that households in general are more receptive to bad news than good news. In totality, this could lead to higher inflation expectations (Ehrmann et al., 2015; Snir and Levy, 2011, Baumeister et al., 2001).

Most Malaysian households' inflation expectations are anchored at a relatively stable rate of 1 – 4%, though disparity is still observed

Some households tend to over-predict future inflation, which is also referred to as positive expectations bias, while others may be more inclined to under-predict, which is called negative inflation expectations bias. This disparity is evident in Malaysia when the inflation expectations bias is grouped by demographic groups (Chart 2). Lower-income households, large households, working age individuals, households with less job security, and households in Kuala Lumpur have greater tendency for higher inflation expectations.[5] Some of the groups, such as lower-income households, consume more necessities (e.g. food) which typically exhibit higher rates of inflation. The tendency for upward bias for these groups may also reflect their cost of living burden and concerns about insufficient income. Indeed, a common grievance voiced by these groups is that the actual inflation rate is not reflective of the actual price increases they experience on the ground.

Chart 2: Contribution of Main Demographic Characteristics to Inflation Expectations Bias

Certain households have greater tendency towards higher inflation expectations



Note: For income level, low refers to monthly household income below RM5,000 while high, above RM8,000. For household (HH) size, small refers to number of HH members below four while large, above seven. For age, working age refers to respondents aged between 20-59 while elderly, 60-74. For employment status, full time refers to permanent employees working eight hours a day or five days a week, while temporary refers to employees under a short-term, non-contractual or ad-hoc work arrangement. The methodology is based on Leung (2009)

[1] The bias refers to 1-year ahead inflation expectations minus actual inflation outcomes. The relative inflation expectations bias should be interpreted relative to a baseline respondent who represents a HH that earns RM5,000-RM8,000, has a HH size of between 4-7 members, is aged between 18-19, is self-employed (e.g. sole proprietor or independent professional) and is residing outside Kuala Lumpur and less-urbanised states

[2] Less-urbanised states are states with urbanisation levels of below 55%, according to the 2010 Population and Housing Census of Malaysia. These states include Sabah, Sarawak, Pahang and Kelantan

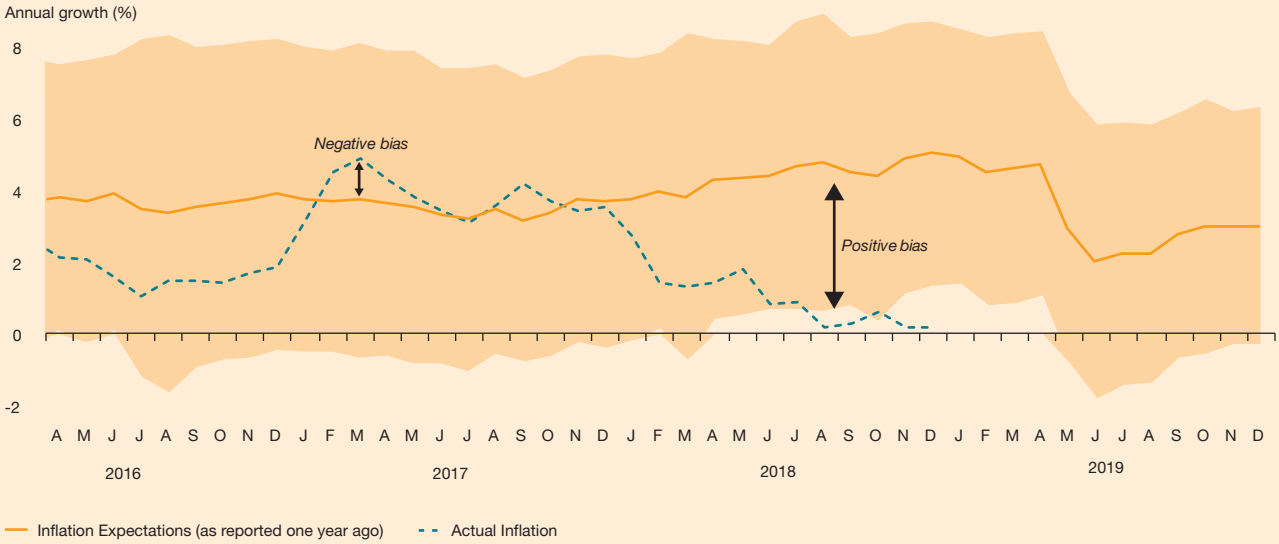
Source: Bank Negara Malaysia estimates using data from the Bank Negara Malaysia Consumer Sentiment Survey and Department of Statistics, Malaysia

[5] The estimates are derived using an Ordinary Least Squares (OLS) regression of inflation expectations bias against demographic characteristics to quantify their contributions to the over-prediction or under-prediction of future inflation. All the estimates shown are statistically significant at the 10% level, except for elderly respondents and respondents residing in less-urbanised states.

Notwithstanding the disparity across groups, for most periods, overall households' inflation expectations deviate on the upside from the actual inflation outcomes (Chart 3). This observation is not unique to Malaysia. Households, in both advanced and emerging economies, commonly display deviations in inflation expectations from the actual inflation outcomes (Coibion et al. 2018, Kliesen, 2015, Mohanty, 2012, Gnan et al. 2009, Deutsche Bundesbank, 2001). For countries with a longer history of household survey data, namely the United States, Australia, Japan and the Philippines, the positive bias can range between 1 and 4 percentage points. On average, most households' inflation expectations in Malaysia are broadly anchored at a relatively stable rate of 1 – 4%, close to the actual inflation long-run average of 3% (1980 – 2018).

Chart 3: Inflation Expectations of Malaysian Households

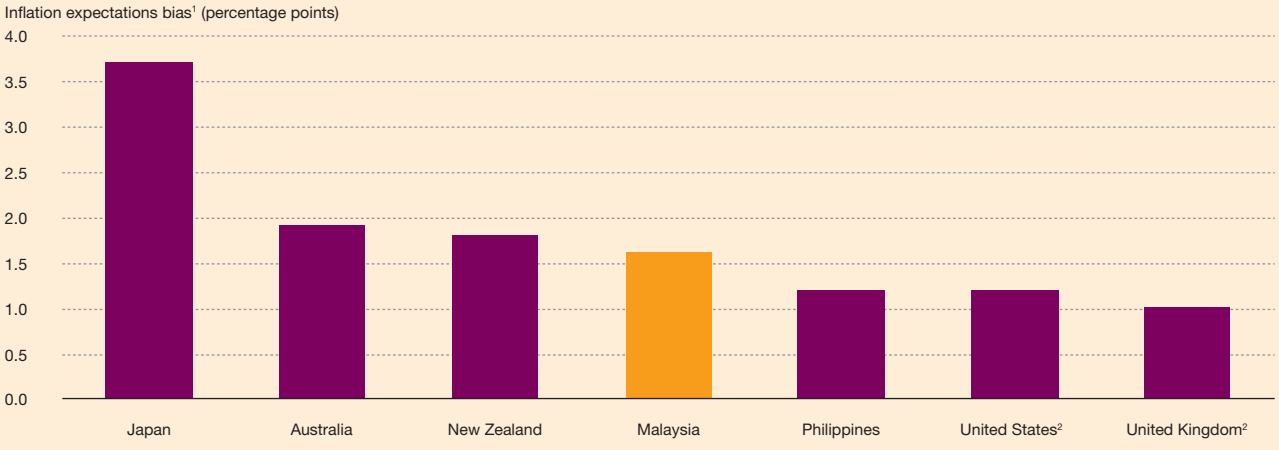
In line with experiences of other countries, inflation expectations of Malaysian households are typically different from the actual inflation outcomes



Note: The shaded area refers to the 1 standard deviation above and below the mean inflation expectations

Source: Bank Negara Malaysia estimates using data from the Bank Negara Malaysia Consumer Sentiment Survey and Department of Statistics, Malaysia

Average Household Inflation Expectations Bias Across Selected Countries Since 2015



[1] The bias is calculated by taking 1-year ahead mean inflation expectations minus actual inflation outcomes
[2] Inflation expectations for the United States and the United Kingdom are based on the median instead of the mean

Source: Bank Negara Malaysia estimates using data from the Bank Negara Malaysia Consumer Sentiment Survey, Department of Statistics, Malaysia and the respective household surveys

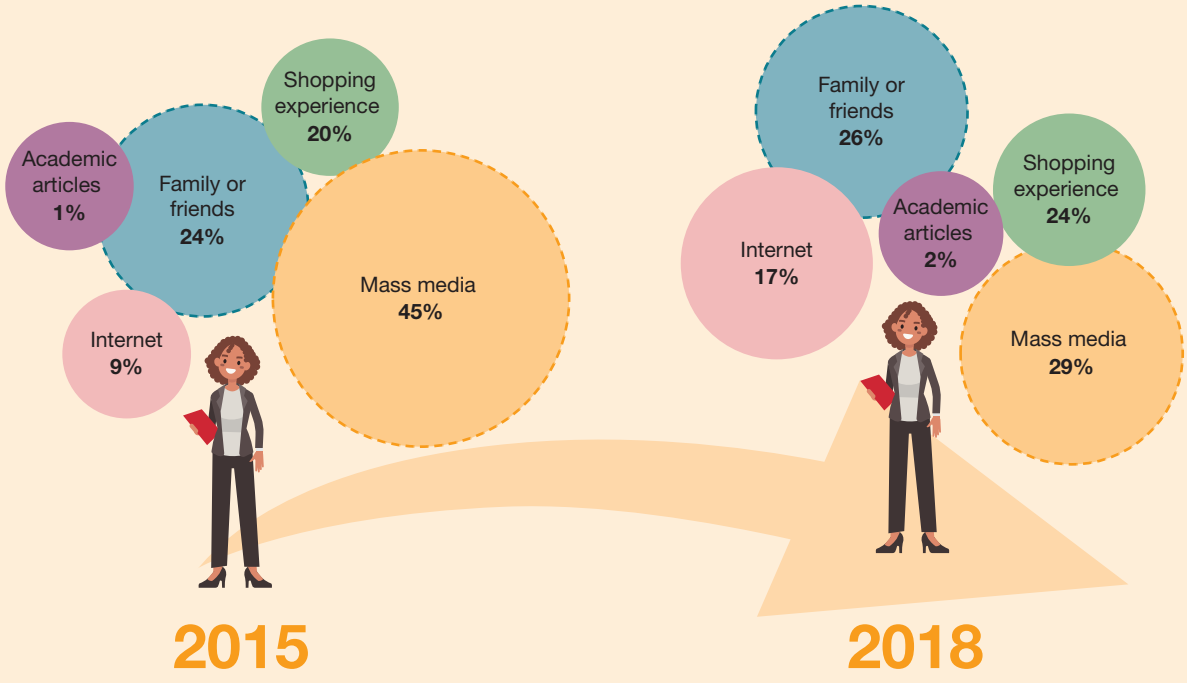
4. Why do inflation expectations differ from actual inflation?

Inflation expectations are unlikely to be the same as the actual inflation outcomes because forming accurate beliefs about future prices is challenging and costly, even for professional forecasters. It is found that in countries with extremely high inflation such as Argentina, households appear to be much more well-informed on inflation as its impact is acutely felt; whereas in countries with low inflation, households pay less attention to inflation given the relatively lower potential financial cost of ignoring inflation (Cavallo et al., 2017). In Malaysia, when respondents were asked whether they understood what the term "inflation" means, 77% of them answered no. The low awareness among households would likely contribute to biases in their inflation expectations. The wedge between inflation expectations and actual inflation outturns is driven by diverse information sets, different spending patterns and unanticipated shocks.

First, diverse information sets. Households rely on various information sources in informing their views on price developments. In Malaysia, households appear to be largely dependent on information sources that are relatively accessible when forming inflation expectations. These include mass media, family and friends, as well as recent shopping experiences (Diagram 2).

Diagram 2: Household Sources of Information about Inflation

The role of the internet as a source of infomation on inflation has markedly increased over time



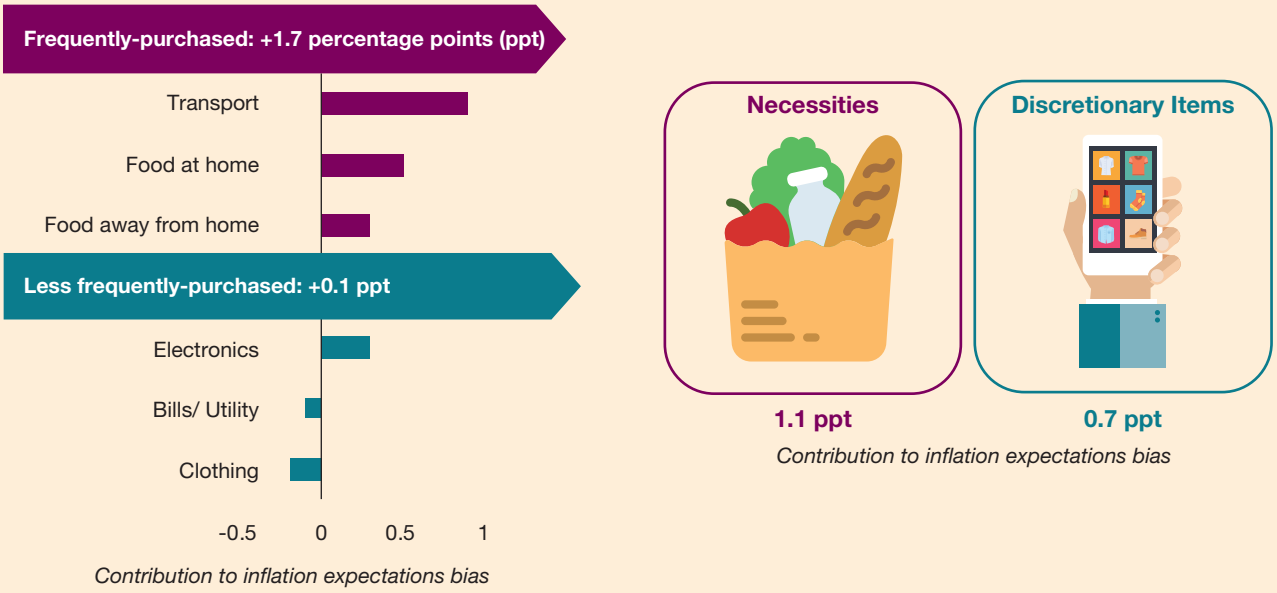
Source: Bank Negara Malaysia Consumer Sentiment Survey

These information sets and their importance are different from those used to construct the actual inflation rate, which is measured by the Consumer Price Index. This could lead to inflation expectations being different from the actual inflation outcome.

Second, the different types of items consumed. Households typically over-estimate future inflation of frequently-purchased items and necessities, such as transport and food (Diagram 3). Repeated shopping experiences of the same items (usually non-durable necessities), coupled with their corresponding price increases are more easily recalled and are therefore vivid in one's recollection when forming expectations. It was estimated that households in Malaysia who rely on recent shopping experiences as an information source tend to over-predict inflation by 1.2 percentage points (ppt) compared to households who do not rely on recent shopping experiences. This is compounded by memory bias, whereby increases in prices are more easily recalled rather than price declines (Loke and Khong, 2017).

Diagram 3: Contribution of Key Consumer Items to Inflation Expectations Bias

Households have a higher tendency to over-predict the future inflation of frequently-purchased and necessity items

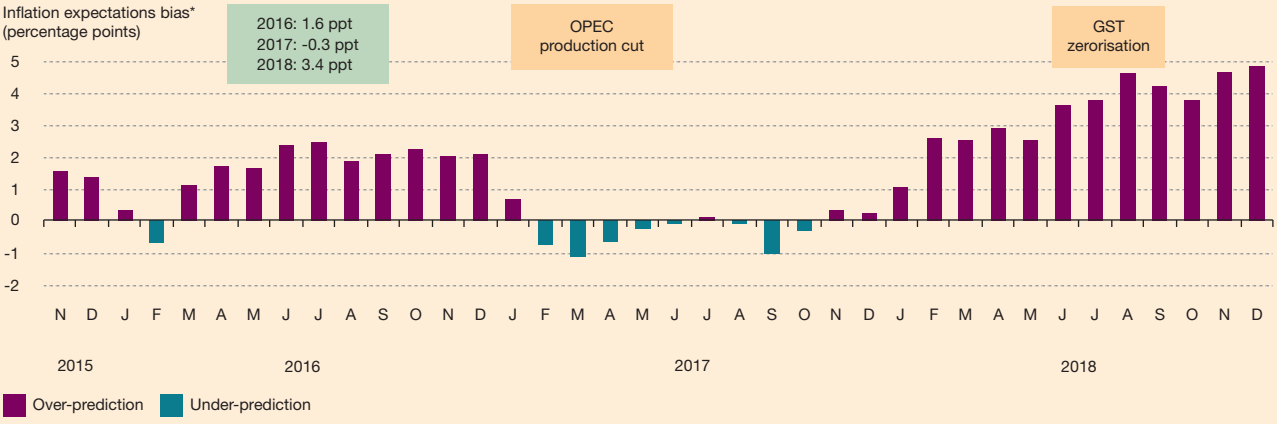


Source: Bank Negara Malaysia estimates using data from the Bank Negara Malaysia Consumer Sentiment Survey and Department of Statistics, Malaysia

Third, unanticipated shocks. Even if households are able to use all existing information to inform future inflation expectations, there remains a possibility of unforeseen events. In 2018, the actual inflation outcome was lower than expected mainly due to the zerorisation of the Goods and Services Tax (GST) rate,[6] which led to a broad-based decline in the prices of goods and services that were previously subjected to the GST. As a result, there was a positive bias as inflation expectations of households over-predicted actual inflation outcomes by an average of 3.4 ppt (Chart 4).

Chart 4: Inflation Expectations Bias: Over- and Under-Predictions Relative to Actual Inflation

Inflation expectations bias is subject to unanticipated shocks to the actual inflation outcomes



*The bias is calculated by taking 1-year ahead inflation expectations minus actual inflation outcomes

Source: Bank Negara Malaysia estimates using data from the Bank Negara Malaysia Consumer Sentiment Survey and Department of Statistics, Malaysia

[6] The zerorisation of the GST rate was between 1 June 2018 and 31 August 2018. Subsequently, the GST was replaced by the Sales and Services Tax (SST) effective 1 September 2018.

In 2017, the actual inflation outcome was higher than anticipated due to global oil prices that increased unexpectedly following the Organization of the Petroleum Exporting Countries (OPEC)'s agreement to cut production from 1 January 2017.[7] Subsequently, the inflation expectations of households under-predicted actual inflation, with a negative bias of -0.3 ppt.

5. Do inflation expectations of households affect spending decisions?

Higher inflation expectations could increase or decrease households' current spending (Table 4). Higher inflation expectations would lead to higher current real spending when households decide to frontload future purchases to protect themselves against a costlier future environment. In addition, assuming unchanged nominal interest rates, higher inflation expectations would lower real interest rates, thereby encouraging borrowers to spend.

Table 4: The Impact of Higher Inflation Expectations to Current Real Spending

Higher current real spending from higher inflation expectations:

Type of households	Reasons
General	**Frontloading of future purchases** *Higher inflation expectations signal that it is costlier to spend in the future, so it is favourable to frontload future spending today*
Borrowers	**Lower real interest rates for debt repayments** *The lower real interest rates lead to a perceived increase in wealth for borrowers. If borrowers have higher propensity to consume out of wealth than lenders, aggregate spending will increase*

Lower current real spending from higher inflation expectations:

Type of households	Reasons
General	**Uncertainty and increased precaution** *Higher inflation expectations may signal an environment of economic uncertainty, whereby households will tend to withhold spending and increase savings for precautionary purposes*
Financial investors	**Lower real income from financial assets** *Higher inflation expectations are a tax on real financial income due to the lower expected real returns. For households that rely on financial income, this discourages spending*

Source: Mian et al. (2013), Bachmann et al. (2015) and Coibion et al. (2018)

On the other hand, higher inflation expectations could lead to a decline in current real spending if households associate the higher inflation expectations with broader economic uncertainty, thereby preferring to save for precautionary reasons. For financial investors, the lower real interest rates also reduce expected real income from financial assets, discouraging spending. Overall, the effect of inflation expectations on real spending would depend on which of these factors dominate.

Households' sentiments on current prices, income, the overall economy, and their debt burden also influence their spending decisions (Diagram 4). For Malaysian households, while sentiments on income and current prices are the major factors that influence reported current real spending, there is still a role for inflation expectations, though small. Notably, there are other more prominent determinants of real spending decisions in Malaysia that are not captured by the BNM CSS, such as wealth (Bank Negara Malaysia, 2013).

[7] The stronger-than-expected global oil demand since the second quarter of 2017 amid production cuts led to falling inventories, which also supported the increase in oil prices. The rise in global oil prices was further compounded by unexpected supply disruptions in the US Gulf Coast due to Hurricane Harvey at the end of August and geopolitical tensions in the Middle East towards the end of the year.

Diagram 4: Relative Importance* of Various Types of Sentiments to Reported Current Real Spending

Households consider, among others, their sentiments on current prices and income when making spending decisions

* Relative importance refers to how much the sentiments contribute to reported current real spending, relative to the other sentiments considered

Note: The methodology is based on Ichiue and Nishiguchi (2013)

Source: Bank Negara Malaysia estimates using data from the Bank Negara Malaysia Consumer Sentiment Survey

6. Conclusion and policy discussions

Inflation expectations matter because they affect key economic and financial variables such as actual inflation, wage, spending and financial asset valuations. Looking specifically at inflation expectations of households in Malaysia, households form their inflation expectations by considering both backward- and forward-looking factors, such as recent shopping experiences and current income levels, as well as the future outlook of the domestic economy. Nevertheless, inflation expectations differ across households, given the different compositions, priorities and experiences. Certain demographic groups that typically experience higher cost of living burden, such as lower-income and large households, tend to display higher inflation expectations.

As commonly experienced by other countries, there is evidence of a wedge between households' inflation expectations and actual inflation outturns. This reflects households' broad inattention to inflation, varied information sets used to gain information about inflation, different consumption patterns, as well as unanticipated shocks to the economy.

However, the impact of households' inflation expectations on their current spending decisions is small, reflecting other more prominent determinants such as sentiments on income and current prices in driving consumption. The implication of this finding, therefore, needs to be considered with care and in the broader context of factors driving household consumption spending. Separately from consumption, higher inflation expectations could result in higher actual future inflation if they become entrenched, whereby one round of price increase triggers further rounds as inflationary psychology takes hold. As such, it is important for central banks to place focus on ensuring that these expectations are stable and anchored, rather than engineering higher expectations to meet short-term economic goals. This goes back to the need for having a solid understanding of how households form inflation expectations, in order for any expectation anchoring strategies to be effective.

To gain a complete understanding of the impact of inflation expectations on the Malaysian economy, inflation expectations of firms and financial markets should also be assessed in order to obtain a comprehensive picture that includes insights on price- and wage-setting decisions, as well as financial market valuations.

As ruminated by Tan Sri Dato' Abdul Aziz bin Haji Taha, the second Malaysian Governor of Bank Negara Malaysia, nearly four decades ago – "*Once businessmen and consumers discern an absence of will by the authorities to resist inflation, their expectations of rising inflation will be strengthened and they begin to act in a way that will make these expectations self-fulfilling*" (Bank Negara Malaysia, 1989).

Today, this statement remains highly relevant. For central banks, continuous research on the drivers of inflation expectations, clarity in communication and educational pursuit in addressing inattention to inflation – from the concept of inflation to the technicalities of its formulation – will go a long way in preventing the unhinging of inflation expectations.

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