Inflation expectations, persistence and monetary policy

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Monetary policy is often based on the idea that policymakers can achieve reductions in inflation by producing some economic slack. How much slack is needed in turn depends on the degree of inflation persistence; if persistence is low, the output costs to disinflation will be small. Inflation persistence has posed a major challenge for monetary authorities in emerging market economies (EMEs) over the years and is believed to have been a factor behind the failure of a number of stabilisation programmes seeking to end periods of very high inflation.[1] Even in areas where inflation has been relatively moderate, such as the euro area, inflation persistence has been a special concern because of the perceived costs of price and wage rigidity.

Contemporary macroeconomic analysis (including now standard open economy models relying on the New Keynesian Phillips curve or extensions) identifies inflation expectations as the key determinant of inflation persistence. In this scenario, a monetary policy framework that can successfully anchor inflation expectations can reduce or eliminate persistence.

To shed further light on the role of expectations this note briefly reviews: (1) factors that can lead to inflation persistence and how a monetary policy framework such as inflation targeting can offset these; (2) whether inflation persistence has declined in recent years; (3) whether inflation targeting has succeeded in anchoring inflation expectations and factors that could loosen this anchoring effect; and (4) the measurement of inflation expectations in EMEs.

Inflation expectations, persistence and inflation targeting

One of the key issues for monetary policy is how to lower inflation persistence, so as to lower the costs of disinflation. Recent research suggests two general explanations for such persistence.

First, *backward-looking expectations*. Some research for developed countries suggests that some proportion of agents is backward-looking (Roberts (1998)) although the proportion may be small (Galí and Gertler (1999)). One interpretation of backward-looking expectations is departures from rationality. While such departures are usually seen as a shortcoming when attempting to explain data, there is some empirical support for them. For example, a recent study (Mankiw et al (2003)) finds that survey data from both consumers and professional economists show significant departures from rationality, including substantial disagreement about expected future inflation, autocorrelated forecast errors, and insufficient sensitivity to recent macroeconomic news.[2]

Inflation may also behave as if there were backward-looking expectations in the presence of wage and price indexation (see, for example, Vargas et al (2009, this volume), Fraga et al (2003)). This may be particularly important in EMEs, where such indexation is much more

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[1] See the studies cited by Lefort and Schmidt-Hebbel (2002) and De Gregorio (1992, 1995).

[2] Their empirical tests suggest partial but incomplete updating in response to news, but a more sophisticated view than adaptive expectations.

prevalent than in developed economies (see Moreno (2009, this volume) and Lefort and Schmidt-Hebbel (2002)).

Second, inflation persistence can arise because *private agents have limited information about central bank objectives*. Models in which agents learn about policymakers' objectives over time include those found in Erceg and Levin (2003) and Orphanides and Williams (2007). They show that inflation tends to be less persistent if agents are more certain about the central bank's inflation objectives.[3]

While further research is needed to uncover how inflation expectations could be best anchored to reduce persistence, it is apparent that inflation targeting could play an important role. For example, in Erceg and Levin's model, agents need to disentangle whether a given inflation outcome reflects a shift in the inflation target or a transitory disturbance. This provides a rationale for a monetary framework that is transparent and credible, as well as for effective communications by the central bank. Agents would then find it easier to recognise the inflation target more quickly, thus reducing the persistence of inflation and output.[4] Many of these characteristics (eg transparency, communications procedures) are formally incorporated into inflation targeting regimes, which a number of EME central banks have adopted over the past two decades.

An important question is the extent to which a monetary framework such as inflation targeting could also reduce the prevalence of backward-looking expectations or departures from rationality. For example, it would be desirable to have a better understanding of whether inflation expectations in EMEs exhibit similar departures from rationality to those apparently observed in developed economies and to assess possible explanations (eg Mankiw et al (2003) argue that, in the United States, updating expectations is costly). This could suggest solutions that would improve forecast efficiency. Research on this topic could draw on the data on inflation expectations now collected in EMEs (see discussion below).

A better understanding of the effects of price and wage indexation on persistence under a more transparent monetary regime would also help shed light on this question. Fraga et al (2003) argue that better anchored expectations due to a credible inflation targeting regime could also lead to a fall in the fraction of backward-looking agents caused by indexation, thus reinforcing the reduction of inflation persistence. They cite some evidence for Brazil consistent with this view.[5]

Has inflation persistence fallen?

There is a fair amount of evidence that inflation persistence has fallen in some developed countries; but the experience of EMEs appears to vary. For example, one measure of inflation persistence is the sum of coefficients on lagged inflation. Williams (2006) estimates a Phillips curve model for the United States in which current quarter inflation depends on four lags of inflation, the unemployment rate in the previous quarter (which controls for the effect of labour market slack on inflation), and a constant. He finds that the sum of coefficients on lagged inflation appears to have fallen considerably, with point estimates for coefficient sums ranging from around unity for the 1980–Q2 2006 sample, to 0.6 for core personal

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[3] Desormeaux et al (2009) apply a similar kind of reasoning in the Central Bank of Chile's contribution to this volume. Also in line with this view, Vargas et al (2009, this volume) cite a Colombian central bank study by Gonzalez and Hamman that suggests that lack of credibility may have played a role in explaining high persistence of inflation in Colombia.

[4] Fraga et al (2003) stress the importance of greater transparency and communications to offset factors that may weaken the credibility of an inflation target (see below).

[5] See also Vargas et al (2009, this volume) and Lefort and Schmidt-Hebbel (2002).

consumption expenditures (PCE) inflation and 0.4 for core CPI inflation for the Q4 1999–Q2 2006 period. However, the decline in persistence is not statistically significant, reflecting the imprecision of the estimates and the difficulties in reaching conclusions about whether inflation persistence has indeed fallen. Nevertheless, the impression of reduced inflation persistence in the United States is reinforced by a recent study by Stock and Watson (2007). They decompose inflation into a trend component that follows a random walk (ie no reversion to mean) and a serially uncorrelated shock (implying transitory deviations around the trend), and show that the volatility of the (highly persistent) trend component has fallen while that of the temporary component has risen. One implication of this is that, because shocks are now largely mean-reverting, the persistence of inflation has tended to fall. A study of developed economies by Levin and Piger (2002) also finds that inflation persistence has declined.

Some of the evidence from recent studies, or reported in papers for this meeting, suggests that inflation persistence may still be high in a number of EMEs. For example, Capistrán and Ramos Francia (2006) find that inflation persistence has fallen in some EMEs while remaining high in others. In the Colombian central bank's contribution to this volume, Vargas et al (2009) report that consumer price inflation in Colombia during 2003 and 2006 exhibits some persistence related to the long-lasting response of tradable and regulated price inflation to overall inflation shocks and persistence in some shocks (eg tradable goods and food). For another example, in Peru shocks to core inflation die out only after about two years (see Armas et al (2009, this volume)).

As to whether inflation persistence has fallen more in countries that target inflation, a study of advanced economies and EMEs (Kuttner and Posen (2001)) suggests that inflation persistence has indeed declined more in those EMEs that have formally adopted inflation targeting.

Has inflation targeting resulted in better anchored expectations?

Research relating to developed economies generally suggests that inflation targeting has resulted in better anchored expectations (see Walsh (2008)).[6] Furthermore, using a measure of inflation expectations implied by bond yields, Gürkaynak et al (2006, 2007) find that in the United States, long-term inflation expectations react to news while they do not in inflation targeting Sweden, Canada or Chile. Evidence from the United Kingdom also supports the view that (credible) inflation targeting anchors expectations, as expectations responded to news prior to 1997, when the Bank of England became independent, but not after. In a study of developed economies, Levin et al (2004) find that lagged inflation is significantly correlated with expectations of future inflation in non-IT countries but not in inflation targeters. Ravenna (2008) estimates a DSGE model of Canada to generate counterfactual experiments; these predict lower inflation volatility under inflation targeting largely because of the effect of IT on expectations.

Questionnaire responses and papers contributed to an earlier Deputy Governors' meeting (see BIS (2008)) provide further insights into the behaviour of inflation expectations in EMEs. Summarising some of the results of papers and questionnaire responses, Mohanty and Turner (2008, p 20) report that a number of EME central banks find that inflation expectations have been better anchored in this decade, as indicated by growing convergence of private sector inflation expectations around the central bank's inflation target (eg in Colombia, the Czech Republic, Mexico and South Africa); a stronger reaction of financial markets to central

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[6] An exception is a study of six inflation targeting and six non-targeting developed economies (Johnson (2002)). This study finds that while the adoption of inflation targeting was followed by a significant decline in expected inflation, the variability of expected inflation in targeters and non-targeters remained the same, suggesting that inflation targeting does not anchor expectations.

bank policy announcements has been recorded; and there has been an improvement in central banks' ability to reduce the size of policy adjustments. Some of the findings are illustrated by a paper in that volume by Bevilaqua et al (2008). They cite: (1) a decline in inflation uncertainty, as indicated in lower forecast errors measured as the difference between 12-month actual and expected inflation; (2) reduced dispersion of inflation expectations, as measured by reduced disagreement among survey respondents providing a point inflation forecast; (3) a lower risk premium implicit in longer-term interest rates; and (4) the fact that inflation targets are significant attractors for inflation expectations. In particular, a regression of inflation expectations on a constant and the inflation target during a recent "normal" period shows an intercept of zero and a slope coefficient close to unity.

While expectations appear to have become better anchored in EMEs in this decade, an important concern is that large shocks that have periodically affected EMEs could loosen inflation expectations from their anchor. For example, in Brazil, according to the indicators cited by Bevilaqua et al (2008), inflation expectations do not appear to have been well anchored in the period around 2002 and early 2003, when there was great uncertainty about fiscal policy. However, they were relatively well anchored before and after that period (see Figures 5–11 of their paper, and also Graph 1 below). Significant changes in the behaviour of inflation expectations in Turkey are also discussed by Basci et al (2008).

Graph 1

Inflation and policy rates

In per cent
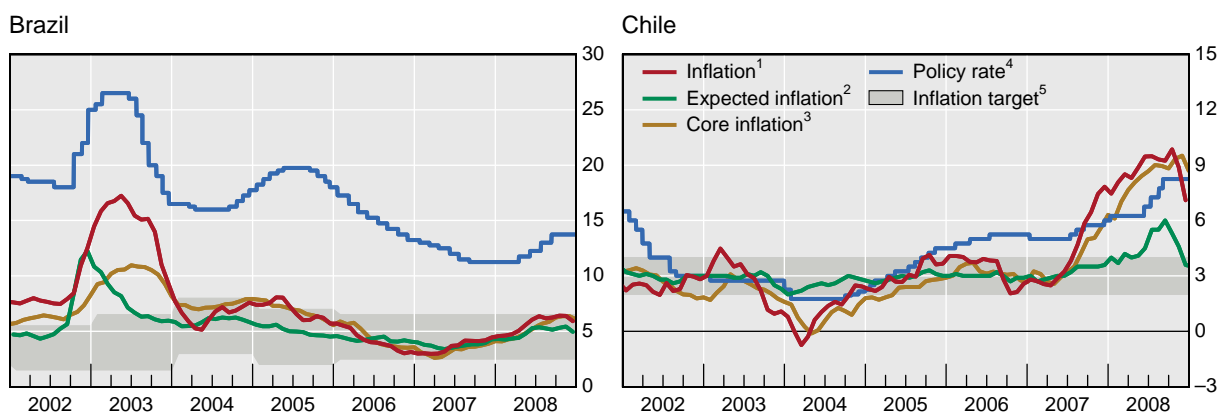
[1] Twelve-month changes in consumer prices, in per cent. [2] Twelve months ahead. Based on surveys conducted by the respective central bank; observations are positioned in the month when the forecast was made; annual changes, in per cent. [3] Twelve-month changes in core consumer prices, national definition, in per cent. [4] Brazil, overnight SELIC rate target; Chile, official monetary policy rate. [5] Announced targets, in terms of CPI inflation.

Sources: IMF; Bloomberg; Consensus Economics; national data.

In this context, one could ask whether inflation expectations have become more loosely anchored in the most recent period of financial turbulence, large fluctuations in commodity prices in EMEs, and concerns about the outlook for growth. More systematic analysis is needed but some perspective can be gained from Graph 1, which shows inflation expectations and inflation indicators for Brazil and Chile. In Brazil, both actual and expected inflation began rising in 2007 and by mid-2008 exceeded the midpoint of the target range (but remained within the target ceiling). In Chile, inflation expectations had remained stable for a long period, but large terms-of-trade movements were eventually associated with a sharp rise in inflation, and an eventual rise of expectations above target as well. In Israel, inflation expectations have recently become more volatile and in some cases more dispersed

(see discussion of Figure 4 in Eckstein and Segal (2009), the Bank of Israel's contribution to this volume). In contrast, Hampl (2009), in the contribution of the Czech National Bank to this volume, finds that inflation expectations have remained well anchored by the inflation targeting framework.[7]

One explanation for why expectations lose their anchor is that the public may perceive that institutional or economic factors may make it very difficult for the central bank to meet its inflation target. Fraga et al (2003) cite three factors that remain relevant today.

1. *Fiscal dominance.* Here unsustainable fiscal policies delink inflation expectations from the target because agents believe the target would be too costly to maintain. One concern is that with a large public debt overhang, tighter monetary policy could lead to higher sovereign risk premia (by increasing the probability of default on debt), depreciation pressures and higher inflation (see Blanchard (2004)). EMEs have made significant gains in fiscal consolidation but public debt to GDP ratios remain high in a number of countries, and the perceived need for fiscal stimulus in response to weakening global demand could pose concerns.

2. *Financial dominance*, in which weak financial sectors could make it too costly for monetary authorities to stick to their inflation targets. Here, improvements in banking supervision and regulations appear to have led to more robust EME banking sectors. However, continued pressures in global financial markets pose risks, particularly in the aftermath of the disruptions observed since September 2008.

3. *Large external shocks*. While EME resilience has increased, exposure to external shocks has also increased due to growing trade and financial integration. For example, starting around the first half of 2008, capital inflow reversals and sharp depreciation pressures accentuated inflation concerns, prompting central banks to intervene in foreign exchange markets, to tighten monetary policy or to defer easing. However, such actions had to be weighed against the risks of sharp slowdowns in growth. Real shocks also pose important concerns. As noted in a number of central bank contributions to this volume, terms-of-trade shocks have contributed to inflationary pressures in recent quarters that have in some cases pushed actual and expected inflation well above the ceilings of the inflation target (see eg Graph 1). At this time, disinflationary or deflationary pressure due to weak demand and sharp declines in commodity prices could generate a new set of challenges through their impact on expectations.

Measuring inflation expectations

The previous sections have highlighted some channels by which inflation and inflation expectations could interact. However, inflation expectations are not directly observable, and this has resulted in significant efforts to measure them (Table A1). A natural place to start is those markets in the economy where inflation expectations play a central role.

Household and business surveys

Inflation expectations are crucial for the functioning of labour markets, as they are a primary consideration in wage negotiations. Wage pressures in turn can influence pricing behaviour. In economies where labour market developments are thought to have a greater impact on inflation dynamics, inflation expectations of labour market participants are important for policymakers. The inflation expectations of workers and firms are usually measured through

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[7] See also Holub and Hurník (2008).

household and (non-financial) business surveys. However, such surveys raise a number of issues.

First, household surveys are expensive because the population surveyed tends to be relatively large and heterogeneous.

Second, heterogeneity can pose problems of interpretation. Brischetto and de Brouwer (1999) find that average inflation expectations can vary widely for different types of survey respondents. People with better access to information or more developed information processing skills tend to have more accurate inflation expectations.

Third, surveys could be subject to large measurement errors. The incidence of measurement errors is a key determinant of the quality of the inflation expectations estimate, and these errors can be large when measuring inflation expectations through household surveys. In economies where expectations are volatile, answers could be affected by unfolding events if the time span between interviews of survey respondents is long. Smyth (1992) tests errors in the measurement of inflation expectations in households and concludes that such estimates are (positively) biased, because households tend to overestimate the inflation rate they experience. Policy decisions based on biased inflation expectations could raise concerns.

Fourth, surveys (particularly household surveys) are not conducted often, so they generate relatively low-frequency data. In economies where inflation is muted this is not a problem but when inflation is a major policy concern their usefulness might be reduced.

Professional forecasters and financial market participants

Surveys of financial market participants' or corporate sector expectations on inflation (conducted by central banks or the private sector) are now relatively common in EMEs. While a smaller and homogeneous population helps attenuate some of the concerns associated with household surveys, there are other concerns.

One concern is that market participants might not face adequate incentives to provide their best prediction, leading to biased estimates.[8] Producing an "unbiased" estimate would require information on the direction of the bias, which might not be possible in a relatively small sample. One solution has been to increase the payoff to market participants who give accurate estimates. In Brazil, the central bank survey has asked market participants to forecast price indices at one month and up to two years. The forecasts are collected weekly and the central bank computes several statistical measures that are published according to a schedule. More significantly, the central bank publishes monthly the forecasters' ranking according to the accuracy of their forecast. It is known that this ranking implies commercial and financial gains for those in the top places. This approach appears to be particularly appropriate if updating expectations is costly, as in the analysis of Mankiw et al (2003). It is worth noting that in their contribution to this volume, Central Bank of Brazil researchers provide evidence that inflation expectations in Brazil are unbiased (Araujo and Gaglianone (2009)).

One survey of market analysts widely used in producing estimates of inflation expectations is the Consensus Forecast. This commercial survey is produced monthly for a large number of EMEs. It provides inflation forecasts one and two years ahead. Disclosure of the individual respondents' forecasts helps alleviate some of the concerns cited earlier. Another advantage is that the forecasts are produced independently from the government. While many central

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[8]   In the United States bias exists but appears to be relatively small. For further discussions of bias in the US context see Mankiw et al (2003).

banks have been granted operational independence, faced with a possible conflict with the government a central bank might opt for self-censorship.

Central banks may also produce and publish their own inflation forecasts, which can provide an estimate of inflation expectations over the forecasting horizon. A shortcoming is that these forecasts assume policy invariance: the central bank performs its computations under the assumption that its monetary policy instruments remain unchanged. This might be supplemented with some forecast discussion that might provide some additional information about likely policy direction and how it might affect the forecast. Central banks in some small open advanced economies have tried to improve this inflation expectation estimate by incorporating the most likely policy interest rate paths over the forecasting horizon.

Financial market measures

Financial markets have become a major field for gauging inflation expectations. The growth of financial markets has raised the availability and profile of asset price based measures and of financial market participant surveys. The high-frequency data in financial markets can provide timely observations of inflation expectations. Furthermore, because financial markets tend to process large and frequent amounts of information about the economy, market participants are very well informed and capable of fairly sophisticated analysis. One advantage of these measures is that estimation bias is likely to be small: financial market participants back their views on inflation by taking positions that expose them to risk.

In many developed financial markets the existence of inflation-linked financial securities provides a market-based measure of inflation expectation as well as attitudes toward inflation risk. Long-term inflation-linked government bonds in principle create opportunities for deriving inflation expectations from asset prices. The difference in the rate of return of inflation-linked bonds and a nominal rate (the "break-even rate") would offer a market-based measure of inflation expectations. Some EMEs (eg Chile or Israel) have been able to develop an inflation-linked government bond market, but in most cases such markets do not exist. An important issue is how to disentangle inflation expectations from other factors that may be embedded in the break-even rate. Break-even rates can be decomposed into at least three components: (i) expected inflation during the remaining maturity of the bonds; (ii) inflation risk premia; and (iii) liquidity premia. Technical factors specific to each market may also play a role. Sometimes, the expected inflation component is extracted by using expectations from professional forecasts (see above). In the case of the United States such (longer-run) expectations have been stable, and it appears that most of the recent volatility in the break-even rate is attributable largely to liquidity premia (a higher liquidity premium would increase the yield on real bonds relative to nominal bonds and recently a flight to safety lowered the nominal rate for Treasury securities). Thus, the break-even rate appears to give a relatively noisy signal of inflation expectations at this time.

To sum up, the measures of expectations discussed above can offer very useful sources of information for purposes of macroeconomic analysis, for central banks and researchers. Among the questions one could ask are: (1) what are the properties of the data (eg forecast accuracy, autocorrelation) and what do they reveal about how agents form expectations (eg are they rational, do they use information efficiently and so on); (2) what do measures of expectations tell us about how expectations behave over the business cycle and the main drivers of such expectations; (3) how well anchored are inflation expectations, during normal times and during episodes of economic or financial stress; and (4) what are the implications for monetary policy frameworks and implementation?[9]

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[9] Some relevant questions are addressed in Araujo and Galianone (2009, this volume) and also by Waiquamdee et al (2009, this volume).

Table A1

Central bank surveys on inflation expectations

Economy	Survey	Frequency/ conducted as from	Data collection technique	Population (type and size)	Selection criteria/ number of respondents	Inflation expectations measure	Notes
Argentina	REM (Market Expectations Survey)	Monthly/ since December 2003	Census	Participation is voluntary and opened to institutions that provide well grounded forecasts on a regular basis	49 participants (10 banks, seven investment banks and brokerage firms, 14 financial and economic consultants, eight foundations and think tanks, and 10 universities)	Expected CPI change in one, two and 12 months and expected CPI change in current year and next (average and year-end)	Results are published every month. The survey is carried out weekly
Brazil	Focus Report	Weekly	Census	Firms, financial institutions and economic consultancies		CPI and PPI inflation two and three years ahead. Expectations of the same variables on a monthly basis	http://www.bcb.gov.br/pec/notastecnicas/ingl/2003nt36SistemaBacenExpectMercadoi.pdf
Chile	Economic Expectations Survey	Monthly/ since February 2000	Fixed sample	Financial institutions' consultants, executives and advisers	Excellence/ around 40 participants	Inflation	The survey is closed once CPI t-1 or IMACEC t-2 is known. The results are published on the central bank's website (http://www.bcentral.cl/index.htm).
Colombia	Encuesta de expectativas económicas	Quarterly/ since 2000	Random sample	Business managers	Probabilistic, 170 participants	Expected annual inflation at one, two, three and four quarters ahead	

Table A1 (cont)

Central bank surveys on inflation expectations

Economy	Survey	Frequency/ conducted as from	Data collection technique	Population (type and size)	Selection criteria/ number of respondents	Inflation expectations measure	Notes
Colombia	Encuesta de inflación y tasa de cambio a expertos financieros	Monthly/ since 2003	Census	Professional forecasters in the financial sector	Probabilistic, 41 participants	Expected inflation: month-end, year-end and 12 months ahead	Beginning of each month
Czech Republic	Inflation expectations of financial markets	Monthly/ since May 1999	Survey of fixed sample	Financial market analysts very active in capital and money markets from large banks and brokerages	15 financial market analysts	Expected CPI change in one year and three years ahead	The Czech National Bank also conducts an inflation expectations survey covering non-financial corporations and firms
Czech Republic	Inflation expectations of managers of non-financial corporations	Quarterly/ since June 1999	Fixed sample: survey using standardised questionnaire	Stratified sample of non-financial corporations and companies of the region, by activity and role in Czech economy	Fixed sample, 62 respondents	Year-on-year consumer price changes in the next 12 and 36 months	Quantitative survey. Respondents provide their quantitative estimates of expected inflation figures, ie the specific annual prices for the one-year and three-year horizons. The simple arithmetical average is computed

Table A1 (cont)

Central bank surveys on inflation expectations

Economy	Survey	Frequency/ conducted as from	Data collection technique	Population (type and size)	Selection criteria/ number of respondents	Inflation expectations measure	Notes
Czech Republic	Inflation expectations of households	Quarterly/ since June 1999	Telephone sample survey based on the CATI method (Computer Assisted Telephone Interviewing)	Household members between 15 and 79 years old, randomly selected in 14 regions	600 respondents selected according to gender, age, occupation, region, size of town, education, average net income, number of household members, type of employment	Year-on-year consumer price changes in the next 12 and 36 months	Quantitative survey. Respondents provide their quantitative estimates of expected inflation figures, ie the specific annual prices for the one-year and three-year horizons. Extreme values are excluded (5% highest, 5% lowest), and the simple arithmetical average is computed
Hong Kong SAR		The Hong Kong Monetary Authority does not conduct any surveys on inflation expectations					
Hungary	Households' inflation expectations survey	Quarterly	Random sample	Households	Personal interview	Perceived inflation in the last 12 months; expected inflation in next 12 months	Results are published
Hungary	Firms' inflation expectations survey	Quarterly	Random sample	Firms	Telephone interview	Perceived and expected change in general domestic sale prices and in perceived and expected inflation	Results are not published
India	Inflation expectations survey for households	Quarterly/ since September 2005	Sample survey: a two-stage sampling design is used	All households in the country		Expected inflation for next quarter and year	

Table A1 (cont)

Central bank surveys on inflation expectations

Economy	Survey	Frequency/ conducted as from	Data collection technique	Population (type and size)	Selection criteria/ number of respondents	Inflation expectations measure	Notes
Indonesia	Consumer survey	Monthly/ since October 1999	Sample survey	Respondents are selected by sampling from the number of households over 18 cities	About 4,650 households	Price change expectation	This survey seeks information about the growth of demand in the short term as reflected in the changes in consumer expectations on spending. Data canvassing is carried out through telephone interviews and direct visits in particular cities. The balance score method (net balance + 100) has been adopted to construct the index; values above 100 points indicate optimism and vice versa
Indonesia	Markets perception survey	Quarterly/ from September 2001 to December 2006	Sample survey	Respondents are selected by sampling from 11 big cities	The survey covers 100 respond-ents including economists, economic researchers, capital market analysts, academic societies and bankers	Inflation rate expectations	This survey is used to collect experts' predictions on changes in selected macroeconomic indicators. Data are collected by mail, fax and e-mail. The survey focuses on predictions made by a majority of respondents. See http://www.bi.go.id/web/en/Publikasi/Survei/Survei+Persepsi+Pasar/
Israel	Companies Survey Professional forecasters	Quarterly/ since September 1983 at least twice a month	Sample of private companies: random sample, by industry	Private companies (excluding banks), main industrial categories	About 600 companies	Expected change in CPI, three months and one year forward	Participants are asked to report on the degree of change expected (great, slight)

Table A1 (cont)

Central bank surveys on inflation expectations

Economy	Survey	Frequency/ conducted as from	Data collection technique	Population (type and size)	Selection criteria/ number of respondents	Inflation expectations measure	Notes
Korea	Consumer sentiment survey	Monthly	Specially designed form and telephone interviews	Households	Stratified sample of 2,000 households	Expected CPI change in one year	
Korea	Survey of inflation expectations of experts	Quarterly	Specially designed form	Fixed sample	45–50 pro-fessional forecasters	Expected CPI change in two quarters	Not published
Mexico	Survey on the private sector's economic expectations	Monthly/ since September 1994	Fixed sample	Analysts from 37 private sector economic groups	Analysts willing to participate	Expected CPI and core CPI inflation: monthly for the next 12 months; end of year; four-year average after five years from the current date	The Bank of Mexico publishes a results document showing the average private sector economic expectations and a Confidence Index
Philippines	Business expectations survey (BES)	Quarterly/ since June 2001	Sample survey; stratified random sample by industry group	Top 5,000 corporations registered with the Securities and Exchange Commission (SEC)	Criteria: top 5,000 corpo-rations in terms of gross revenue. Sample size: 1,087 corpo-rations	Outlook for inflation	

Table A1 (cont)

Central bank surveys on inflation expectations

Economy	Survey	Frequency/ conducted as from	Data collection technique	Population (type and size)	Selection criteria/ number of respondents	Inflation expectations measure	Notes
Poland	Consumer inflation expectations	Monthly/ 1992 (Ipsos) 2001 (GfK Polonia)	Monthly	Quota random sampling method	Men and women aged 15+	Ipsos: inflation expectations GfK Polonia: inflation perception, inflation expectations	
Poland	NBP quarterly survey of producers' inflation expectations	Quarterly	Quarterly	na	na	Price of produced goods in three months and CPI and PPI in three and 12 months	Published
Saudi Arabia		The Saudi Arabian Monetary Agency does not produce any inflation expectations surveys					
South Africa	Survey of inflation expectations	Quarterly/ since fourth quarter of 2000	Direct (mail and e-mail) and personal interviews. Partly fixed/partly random sample	47 million people	2,500 rep-resentative households are sampled. Also fixed sample of non-financial firms, financial analysts and trade unions	Expectations for the current and next two years: average CPI inflation, average CPIX inflation rate	The South African Reserve Bank contracted the Bureau for Economic Research (BER) to conduct a quarterly inflation expectations survey, in view of the Bank's inflation targeting monetary policy framework. See http://www.ber.ac.za/RunTime/POPContentRun.aspx?pageidref=1778
Turkey	Survey of expectations	Twice a month starting from August 2001 (first and third week)	Non-proba-bilistic samp-ling method based on the participation of selected volunteers	Experts and decision-makers from the financial and corporate sectors and professionals	120 persons/ 60 to 85%	Expectation of CPI, for the current month, next month, two months ahead, end of year, next 12 months and 24 months	The survey is carried out via e-mail

Table A1 (cont)

Central bank surveys on inflation expectations

Economy	Survey	Frequency/ conducted as from	Data collection technique	Population (type and size)	Selection criteria/ number of respondents	Inflation expectations measure	Notes
Turkey	Consumer tendency survey	Monthly/ since December 2003	Sample survey	All individuals aged 15 and above, having a job that provides income in urban and rural areas of Turkey	Approx 8,000 respondents are selected from the Turkish Statistical Institute's Household Labour Force Survey based on age, income and status in employment categories	Price expectations	1. The survey is annexed to the Turkish Statistical Institute's Household Labour Force Survey in the form of a module 2. Some questions in the survey are used to compile the Consumer Confidence Index

Sources: Central banks; BIS.

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