

# Monetary policy and the measurement of inflation: prices, wages and expectations

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Inflation measurement is fundamental to the conduct of monetary policy. Price indices form the foundation of central bank policy frameworks around the world. They serve as guides to decision-making, as well as providing the primary mechanism for holding independent policymakers accountable. The purpose of the annual meeting of Deputy Governors of emerging market economies, held in Basel on 5–6 February 2009, was to explore three issues: price indices used by central banks; the role of wages and productivity in inflation policy; and the measurement and assessment of inflation expectations. In this brief introductory essay, I will introduce each of these topics.

## Price indices used by central banks

Over the last quarter of the 20th century, a consensus developed that price stability should be the primary focus of monetary policy. It is now agreed that the economic well-being of the general population is best served by keeping inflation low and stable and that, in order to deliver on this objective, central banks should be independent of political authorities, but receive a clear mandate for which they are then held accountable.<sup>2</sup>

Day-to-day implementation of a price stability mandate, as well as accountability, has to be based on data. This means choosing a price index. And, as everyone knows, there are a variety of indices available. National statistical offices in most countries produce survey-based consumer price indices as well as indices used in the construction of national income and product account measures. These indices differ based on their coverage and their weighting. For example, consumer price indices generally cover out-of-pocket expenditures with fixed weights based on survey responses, while personal consumption expenditure price indices may be implicit deflators, with weights that change every period and cover both actual expenditure and services provided by governments, or imputations for other goods that are not explicitly priced.

Before going into the details of the problems facing central banks, it is worth reflecting on the broad reasons one might wish to measure prices. There are three. The first is to transform nominal quantities into real quantities. This is the role of implicit deflators and chained indices constructed in the process of computing real gross domestic product and its components. The second rationale for computing a price index is to compensate individuals for price changes in order to keep their utility invariant in the face of aggregate inflation. Consumer price indices are computed for this purpose. Third, and last, we compute price indices for the

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<sup>2</sup> How central banks implement this price stability goal and their precise relationship with the executive branch varies around the world. Many inflation-targeting central banks clearly take account of short-run behaviour of output in their decisions, while some do not. And some are much more independent of the executive than others. Depending on the circumstances this could have an impact on the nature and effectiveness of policy.

conduct of monetary policy. At the abstract level of macroeconomic modelling, it is simple to say that this is *the* aggregate price level. More concretely we could think of it as the common element of all prices in the economy. That is, every price can be decomposed into a common and an (orthogonal) idiosyncratic element. The common part is the aggregate price level, and this is the part with which monetary policy should be concerned – in theory, that is. Practice is harder, and that is where we go next.

The questionnaire responses in Table A1 of Moreno (2009, this volume)<sup>3</sup> make it clear that the primary price indicator or target for the majority of emerging market economies (EMEs) represented at the 2009 meeting is headline CPI,<sup>4</sup> often supplemented by a set of other indicators. Large structural changes in developing economies can make the accurate measurement of inflation a far from trivial exercise. Rapid productivity growth, terms-of-trade shocks and divergent price movements across sectors all create challenges for monetary policy.

Beyond the choice of an index to target – a headline measure – central bankers face two challenges in measuring inflation for the purpose of short-term policymaking. The first concerns transitory phenomena, or noise, that should not affect policymakers' actions. Sources of such noise include changing seasonal patterns, broad-based resource shocks, exchange rate changes, changes in indirect taxes, and asynchronous price adjustment. Knowledge of the extent to which noise is present in measured aggregate price indices is important since it determines the extent to which policymakers should react to monthly or quarterly changes in observed aggregate price indices.

The second potentially severe difficulty associated with measurement involves biases that are a consequence of weighting schemes, sampling techniques and quality adjustments employed in the calculation of price indices. These biases can be divided into two broad categories: those related to the way in which individual prices are weighted together to form an aggregate index (weighting bias; an example is substitution bias); and those that result from actual errors in measuring the individual prices themselves (measurement bias), such as quality or new goods bias.

### **Underlying or core measures of inflation**

There have been a number of suggested solutions to the problem of high-frequency noise in monthly or quarterly inflation measures. The most common is to measure the underlying or *core* component of inflation by excluding certain prices from the computation of the index; that is, assign a zero weight to parts of the index believed, a priori, to contain substantial amounts of noise (and then proportionally increase the weight on what remains). This is the “ex food and energy” strategy that is common in many countries. There are a variety of alternative methods of measuring core inflation. These include median and trimmed mean measures<sup>5</sup> or more involved econometric procedures.<sup>6</sup> While these alternatives are widely employed inside of central banks – most policymakers monitor a suite of indices – complexity limits their usefulness in external communication.

In addition to transparency and simplicity, core measures should exhibit a variety of other properties. First, they should be unbiased so that over relatively long periods they exhibit the same average inflation as the headline index. Second, their volatility should in fact be lower

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<sup>3</sup> This paper also provides more detail on some of the measurement issues discussed in this section.

<sup>4</sup> An exception is Thailand, which targets core CPI.

<sup>5</sup> See Bryan et al (1997).

<sup>6</sup> One such example is described in Bryan and Cecchetti (1993).

than that of the all-items measure. Third, since the core is supposed to be devoid of transitory fluctuations, the headline measure should revert to it, not the other way around. Related to all of these is that the core and headline measures should be cointegrated – that is, their difference should be mean zero with no trend (either deterministic or stochastic).

It is worth noting that some central banks (notably the Bank of Thailand and the National Bank of Poland) have put substantial energy into successful education programmes, with the result that the public in those countries are comfortable with the relatively complex concept of core inflation. However, other central banks have questioned the ability to do this. As one central bank meeting participant noted, in his country there is one price index for each person. In the end, since everyone eats and uses electricity and fuel, excluding food and energy can be quite difficult to explain. And in poor countries, where food is a large fraction of expenditure, this can present significant difficulties.<sup>7</sup> Over-reliance on core measures can damage the central bank's credibility.

Meeting participants highlighted a variety of disadvantages of core measures of inflation. First, there is the fact that the exclusion measures (ex food and energy) are built under the assumption that the items left out contain no information about the long-run inflation trend. That need not be true. For example, commodity price inflation may exhibit substantial persistence, and if it does, then core measures will diverge from headline inflation for significant periods. In recent years, both Colombia and Thailand have experienced such a problem.

Some participants observed that, in their environment, core measures of inflation were of limited usefulness in policy formulation. First, there is the problem of communication: in the Philippines, for example, the general public is more familiar with headline inflation (both headline and core inflation are available five days after the reference month). Second, on an analytical level, the amount of information contained in core measures, over and above what is in headline inflation, varies. In Brazil, for example, measures of core inflation have not been useful in forecasting the trend in headline inflation. And in the Philippines, the correlation between headline and core CPI inflation is 0.91, and tests of mean and variance show no advantage in the measure of core inflation. However, in periods of volatile commodity and energy prices, the use of core inflation would be an important indicator for decision-making, especially if central banks are concerned about the second-round effects of these volatile commodity prices on inflation.

Beyond the potential usefulness of core measures for decision-making and communication, there is the question of whether a central bank should target core or headline inflation. As headline inflation is the measure of the cost of living, and this is what affects welfare, most central banks target headline inflation, using core as a supplementary indicator primarily for internal use. But one central bank, the Bank of Thailand, has taken a different route, targeting core inflation.

There is ample theoretical justification for the Thai decision. In state-of-the-art macroeconomic models, price rigidity is why monetary policy has real effects.<sup>8</sup> It is these sticky prices that cause output and unemployment to fluctuate away from their optimal levels. Policymakers should therefore only concern themselves with the fluctuations in activity associated with these particular price (and wage) movements. Flexible prices – those of items like food and oil that are determined in markets and change every day (or minute) –

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<sup>7</sup> For example, in Bangladesh 60% of the basket consists of food, while in the United States food only accounts for 15%. This also raises distributional issues related to the fact that the price index of the rich is not the price index of the poor.

<sup>8</sup> The canonical reference for this is Woodford (2003). As discussed below, policy credibility and the anchoring of inflation expectations may have a bearing on price rigidity.

are of no consequence. In fact, in the benchmark New Keynesian model, when inflation is stable, output is equal to potential, so there is no output gap. But in the end, this is an empirical question that needs to be answered on a case by case basis: does stabilising core inflation lead to a more stable economy or not?<sup>9</sup>

### Measurement bias, administered prices and coverage

Understanding short-run fluctuations in price measures is only one of the problems policymakers face. Their lives are made even more difficult by the fact that traditional price indices are biased upward. The sense in which they are biased is somewhat difficult to describe, but quite precise: if you use standard price measures like the CPI to increase the nominal wage of the typical household in an attempt to keep their welfare invariant in the face of price changes, you will be giving them too much additional money. So long as this bias is approximately time-invariant, it affects the central bank's inflation target itself, not day-to-day stabilisation policy. Since measured zero is not zero, price stability is achieved when reported inflation is positive by the amount of the bias.

Measures of consumer price inflation that are rooted in the theory of the cost of living index may be biased measures for a variety of reasons.<sup>10</sup> Loosely speaking, bias arises because of the way the raw data that go into the index are collected, how they are weighted together and combined into a single index, or how the statistical agency gathering the data tries to deal with improvements and deteriorations in the quality of the goods being priced.

A typical consumer price index is intended to measure the inflation experience of a hypothetical average or representative consumer. To construct the index, a statistical agency must determine what it is this hypothetical consumer spends their money on – that is, what the consumer buys.<sup>11</sup>

The first bias, **substitution bias**, arises because the assumptions about what individuals buy do not reflect actual expenditure patterns as consumers tend to shift away from goods that become relatively more expensive. The ability of consumers to substitute between food and clothing, or food and entertainment, in response to relative price changes is somewhat limited. However, the scope for substitution between bread and chicken, or between movies and video rentals, is usually a lot greater.

The biases due to the various forms of substitution induced by changes in relative prices are well understood and in principle easy to deal with by using alternative weighting schemes, such as chain-weighted indices, and by increasing the frequency with which the weights are changed. However, the problems posed by changes in the quality of the goods and services included in the consumer price index and the arrival of new goods in the consumer marketplace pose the greatest challenges for statisticians in accurately measuring the cost of living. **Quality bias** arises when statisticians fail to take into account improvements in the quality of a good or service included in the consumer price index. Finally, **new goods bias** arises when statisticians fail to recognise the introduction of new goods or services on which consumers spend a significant fraction of their income.

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<sup>9</sup> It is worth noting that if the targeting horizon is long enough – greater than one or two years – it should not matter whether the central bank targets headline or core inflation.

<sup>10</sup> The following discussion on bias is based on Cecchetti and Wynne (2003).

<sup>11</sup> National statistical agencies also try to determine *where* consumers make their purchases. When, in order to escape inflation, buyers shift from higher-priced small stores to larger hypermarkets, for example, this can give rise to what is known as *outlet substitution bias*.

How big are these biases? In advanced countries, they are probably on the order of 1 to 2 percentage points, at most. But in EMEs, where data collection is more difficult, they can be large.

While computing the size of measurement bias in a particular index may pose a significant practical challenge, it is clear what to do once you have the number. The same cannot be said for administered prices. How should a central bank treat inflation arising from changes in administered prices? In Brazil, for example, there are two sorts of prices that are not set by markets: regulated prices, such as those for telephone use and electricity, which are set based on rules; and administered prices, including those for mass transportation and health insurance, which are determined by national, regional or local governments. Most of these prices relate to services, with a public or private monopoly or oligopoly. Some of these prices move in predictable ways as they are based on things like past inflation, the exchange rate, or the international oil price, so they are known in advance. But in general, changes in regulated and administered prices are difficult to integrate into a macroeconomic model designed to produce an aggregate inflation forecast. Nevertheless, policymakers are obligated to try to control inflation in the economy as a whole, so they need to react to movements – both expected and unexpected – in these prices.

## Wages, productivity and structural inflation

Original models of macroeconomic fluctuations – the first Keynesian models – were built on the premise that wages were not flexible, so labour markets did not clear. The idea was simple: employment was demand-determined. Since demand fell during a cyclical downturn, the result would be unemployment. But in the 1970s this logic fell out of favour in academic circles. Observed wages had little relationship to the marginal product of labour on a day-by-day or even month-by-month basis. Instead, wages were conceived of as instalment payments in longer-term contracts, with the vast majority of workers working harder when there was more work to do and sitting around the rest of the time. There was a spot market for marginal workers, and their wage moved to clear that market.

Starting in the late 1970s, macroeconomists began to build models based on price rigidity. There was a labour market in the background (with an implicitly flexible wage determined by the equilibrium of supply and demand) but the baseline models were composed of a set of monopolistically competitive firms that faced costs of adjusting their prices. It took a while, but over the last decade researchers have been looking at price data to see how sticky prices really are. The answer is: not very! And the prices that are fixed for extended periods tend to be the ones in service-based industries. In fact, the higher labour's share in costs, the less flexible prices tend to be.<sup>12</sup>

Maybe academics should not have given up on wages. Central bankers clearly did not. And the reason for this is their importance in the inflation process. Wage growth equals productivity growth plus inflation.<sup>13</sup> In fact, growth in real wages that is in line with labour

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<sup>12</sup> See Álvarez et al (2005).

<sup>13</sup> This relationship does have to be used very carefully. While it is an implication of equating the marginal product of labour with the wage, it is not an identity, so the measurement of the various quantities must be taken into account. Two points are worth noting here. First, there is often only one source of price data. These data are then combined and used in different ways to produce consumer price indices, which are in turn used to deflate nominal wages and national income and product account data in order to compute real quantities that go into the computation of productivity. Second, in a variety of cases output is imputed from a combination of hours and electricity usage. Not all output measures included in GDP, and used for productivity computations, are measured directly.

productivity growth (usually measured as average output per hour paid) is widely seen as a necessary precondition for macroeconomic stability. In EMEs, with their concern for exports, a close relationship between real wage growth and labour productivity growth helps preserve external competitiveness while limiting inflationary pressures and the risk of a wage-price spiral developing.

A wage-price spiral typically occurs when employees and others seek wage increases to keep pace with rising prices. The increased wages force employers' costs up. These increased costs may then be passed on to consumers in the form of higher prices. Higher consumer prices feed into future wages, and the spiral is on its way.<sup>14</sup>

During the first half of 2008 there were widespread concerns in both EMEs and many advanced economies that the run-up in food and oil prices would set up just such an adverse inflation dynamic. In China in the spring of 2008, for example, authorities in several provinces felt obligated to raise minimum wages by double digit amounts to relieve the pressure higher consumer prices were putting on real household income. This raised concerns that overall inflation could accelerate as a result and hurt China's external competitiveness.

All of this strongly suggests that measures of labour costs at the aggregate level could serve as a useful indicator of economy-wide inflation pressures. Unfortunately, until recently a lack of data has undermined attempts at such an analysis in most EMEs. As a result, few EME central banks have mentioned the labour-cost inflation linkage in the past. But the adoption of inflation targeting frameworks by many emerging market central banks has provided an incentive to compile better labour market data and has enabled central banks to use productivity and unit labour costs more widely in their inflation forecasts.<sup>15</sup> Even so, some countries employ proxy measures for wages: interestingly, the Magyar Nemzeti Bank (the Hungarian central bank) uses service price inflation to forecast wage dynamics. And in countries where productivity data do exist, interpretation can be tricky. For example, in Korea the difference between real wage growth and productivity growth has declined over time.

Attempts to use wage data in inflation analysis are always going to be challenging for several reasons. First, there are problems with timing and quality that do not appear in the case of price information. Wage data often come with a long delay – two to three months in Israel and Poland, for example. And because many series are based on national accounts information, they are also subject to revisions (as they are in the Czech Republic). In other cases, data are simply unreliable as national statisticians are unable to ensure sample consistency, so the numbers are not adjusted for changes in composition.

Nevertheless, in those countries with high levels of collective bargaining, wage agreements provide substantial information. The Reserve Bank of India pays attention to wage bargaining and contracts, particularly in the public sector. The extent to which these are forward-looking can provide policymakers with information about inflation expectations. And, in inflation targeting countries, the central bank's inflation target can become an anchor if it is built into wage agreements.

Finally, any attempt to employ official wage data in the policy process can be hampered by the existence of an informal sector. A number of Latin American EMEs report informal sectors that account for 50% or more of their economies. In such cases, movements in measured wages can be very misleading. For example, if a country raises its statutory minimum wage, this will be reported as wage inflation. But if the result is to drive more workers into the lower-wage informal sector, the result could be a net reduction in the

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<sup>14</sup> In the background of a wage-price spiral we would expect some degree of monetary accommodation.

<sup>15</sup> Due to the difficulties associated with monitoring and interpreting wage statistics, the People's Bank of China focuses on price statistics to gauge future inflation.

properly measured average wage. There are, of course, forces pushing in the opposite direction as governments push to shift the informal sector into the formal one. Unfortunately, there is very little information on the implications of employment dynamics between formal and informal sectors for overall wage setting in EMEs.<sup>16</sup>

Before moving on, I would like to note that it is often useful to supplement the analysis based on economy-wide measures of wage and productivity growth with more disaggregated measures derived from two-sector models.<sup>17</sup> One of the most widely used two-sector models is that of differential productivity growth in tradable and non-tradable industries. This kind of model has some quite interesting implications for the economies with rapid productivity growth in tradable industries, including that: (1) the rate of wage increase tends to adjust to the “room” for wage increase in the tradable sector, as defined by the sum of the (exogenous) increase in world market prices for tradables and the (exogenous) rate of productivity increase in that sector; and (2) as faster productivity growth in tradable industries is a normal part of economic development, not all inflation in such economies is necessarily undesirable or avoidable. If labour and capital markets are unencumbered, there is not much that monetary policy can do to control this source of inflation.

What this means is that as EMEs catch up to the productivity *level* of their advanced neighbours and trading partners, they can expect to have higher inflation. Such real convergence creates structural inflation differences that pose significant medium-term challenges. Does this mean that EME monetary authorities would be well served by focusing on inflation in tradable/non-tradable goods (as they do, for instance, in Colombia)?<sup>18</sup>

## **Inflation expectations and monetary policy**

The third topic discussed at the February 2009 meeting of Deputy Governors of emerging market economies was inflation expectations and their relationship to monetary policy. In considering this very general topic, a series of questions arise:

1. How do central banks measure and use inflation expectations?
2. What is the relationship between inflation expectations and the costs of disinflation?
3. Are monetary policy frameworks effective in anchoring inflation expectations?

## **Inflation expectations measurements and their use**

There are two basic sources of inflation expectations: surveys and financial markets.<sup>19</sup> Moreover, the first group encompasses surveys of households and businesses, professional forecasters and financial market participants. All of these have drawbacks. For example, household and business surveys are costly, which can influence coverage, frequency and quality. The survey population can be unrepresentative, with more informed than uninformed people in the sample. There is a clear tendency for household surveys to be biased, with inflation expectations systematically overestimating actual inflation experience. (In fact,

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<sup>16</sup> These are clearly big issues in EMEs; for example, Turkey's GDP was revised by 32% in 2008 due to better coverage of the informal sector.

<sup>17</sup> Mihaljek and Saxena (2009, this volume) provide additional perspective on this topic.

<sup>18</sup> See Table A3 in Mihaljek and Saxena (2009, this volume).

<sup>19</sup> See Moreno and Villar (2009, this volume) for further discussion on the use of these two types of data sources in EMEs.

households systematically *perceive* inflation to be higher than it is.) Obviously, policy decisions should not be based on biased expectations.<sup>20</sup>

Turning to professional forecasters and financial market participants, the data here also have shortcomings. Prime among them is concern about incentives. Two issues arise. First, there is the cost of revising expectations. However, given that these are professionals, that problem is likely to be small. Unfortunately, the second problem is significant. Professional forecasters are paid for their forecasts, and their pay depends not just on accuracy but on recognition. The only way to be recognised is to be right when everyone else is wrong; however, that is impossible if everyone's forecast is the same. This creates an incentive to try to distinguish forecasts from each other that has nothing to do with accuracy.

Finally, there are financial market expectations. 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. The difference in the rate of return of an inflation-linked bond and a nominal rate (the "break-even rate") would offer a market-based measure of inflation expectations. 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. In the case of the United States such (longer-run) expectations have been relatively 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 US Treasury securities). Thus, the break-even rate appears to give a relatively noisy signal of inflation expectations at this time.

Some EMEs (eg Chile or Israel) have been able to develop inflation-linked government (or central bank) bond markets, but in most cases such markets do not exist.

Turning to actual experience, central banks vary in their use of surveys. Hungary and the Philippines survey both households and businesses. Korea surveys only households; and Thailand only businesses. Turkey surveys both businesses and the financial sector, while Brazil and Israel survey the financial sector alone. Finally, Chile surveys forecasters. There is wide variation in the frequency of the surveys; the nature of the questions, both the index and the horizon; the statistics reported (means, medians, etc); and the nature of publication – the Central Bank of Brazil publishes individual forecasters' responses on its public website.

A number of central banks report using a variety of financial market indicators (break-even inflation and swap market rates). The preferred financial market indicator reflects availability and market conditions. Brazil, Chile and Israel use inflation-linked bonds to compute break-even inflation rates. While Israel reports that this is useful, other authorities appear less sanguine about the guidance they receive from break-even measures, as the market for indexed bonds is not always very liquid. There are alternatives. For example, in Thailand, where there are no inflation-linked bonds, the central bank uses the implied forward yield curve; the risk premium is small and the long-term rate is stable so inflation expectations can be extracted, at least during periods when markets are functioning normally.

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<sup>20</sup> So long as the bias does not change much over time the solution, as suggested by the Hungarians, is to focus on changes in expectations rather than on their level.



## Expectations and the costs of disinflation

Inflation persistence is a key factor in the costs of disinflation. There are two possible explanations for the presence of inflation persistence: (1) backward-looking, or not fully rational expectations (possibly a result of explicit indexation); and (2) private agents having limited information about central bank objectives.

International experience is extremely diverse on this issue. In some countries, for example Brazil, Chile, the Philippines and Thailand, inflation expectations are quite persistent. And the extent to which forecasters are forward-looking clearly varies. In the Philippines and Thailand, expectations also appear to be backward-looking, based on past data. By contrast, in the Czech Republic, household expectations are backward-looking because people believe that the past is certain while the future is uncertain, while on the other hand, financial analysts are forward-looking.

While backward-looking expectations are a problem when the central bank is attempting to disinflate, they are not where there is low and stable inflation around the target. In Turkey, financial sector agents' expectations move much more closely with actual inflation, while real sector expectations are stickier. Nevertheless, in some countries expectations and costs of disinflation appear to be closely related. For example, in Colombia minimum wages and regulated prices are subject to indexation in spite of the adoption of inflation targeting 10 years ago. The result is that Colombia's disinflation process is slow.

## Anchoring expectations and the role of the monetary framework

One of the primary rationales for inflation targeting is to anchor inflation expectations. In fact, many people would say that this is the point: keeping expectations of inflation low keeps inflation low. But is this actually the case?

A few points are worth making in this regard:

- In the case of developed economies using a measure of inflation expectations implied by bond yields, studies find that in the United States long-term inflation expectations react to news, while in inflation targeting Sweden and Canada they do not!<sup>21</sup>
- 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.<sup>22</sup>
- A study of developed economies by Federal Reserve Board economists finds that lagged inflation is significantly correlated with expectations of future inflation in non-IT countries but not in inflation targeters.<sup>23</sup>

As for the EMEs, questionnaire responses and papers contributed to an earlier Deputy Governors meeting<sup>24</sup> provide the following insights into the behaviour of inflation expectations: a number of EME central banks find that inflation expectations have been better anchored in this decade and continue to highlight this success; a stronger reaction of financial markets to central bank policy announcements has been recorded; and there has been an improvement in central banks' ability to reduce the size of policy adjustments.

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<sup>21</sup> See Gürkaynak et al (2006, 2007).

<sup>22</sup> See Gürkaynak et al (2006).

<sup>23</sup> See Levin et al (2004).

<sup>24</sup> See BIS (2008).

## Fiscal dominance

Unsustainable fiscal policy can break the link between inflation expectations and the inflation target. If households, businesses and financial market participants can come to believe that, because of fiscal policy, it will become too costly to maintain an inflation target, then fiscal policy will dominate monetary policy. The story is a familiar one: with a large public debt, tighter monetary policy can lead to higher sovereign risk premia (by increasing the probability of default on debt), depreciation pressures and higher inflation. In the past, both Brazil and Turkey have been described in this way. And, notwithstanding significant gains in fiscal consolidation, public debt to GDP ratios remain high in a number of countries, suggesting the possibility that policies may be unsustainable. Are current fiscal policies designed to address only current challenges, sowing the seeds of even bigger future problems? After all, central banks cannot achieve their low inflation objectives on their own. They need fiscal cooperation.

## Conclusion

Price measurement is at the heart of macroeconomic stabilisation policy. Without adequate measures of inflation, monetary policymakers would have no final long-term objective at which to aim. And without a clear understanding of inflation dynamics, central bankers have nothing to guide their short-term policy actions. Building appropriate price indices for monetary policy, as well as models of their evolution that allow for control, is a significant challenge faced around the world. Today, emerging market economies are making substantial progress in meeting that challenge.

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