May 2023

BEYOND TERMINAL

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Inflation has surged over the past couple of years and that has triggered a significant correction in the stance of monetary policy. Central banks raised their policy rates by multiple percentage points and in some cases started the process of unwinding the massive expansion in their balance sheets that had taken place over the previous decade.

Inflation may still be high today but current market pricing suggests that this global hiking cycle is almost complete, with only a handful of 25 basis points hikes still to be delivered in most jurisdictions over the next few meetings before rates reach their terminal level for this cycle.

Whether those market expectations will be validated or not will depend on how the economy behaves and in particular whether inflationary pressures soon start to abate. This note does not discuss whether that is likely or not, but instead asks what might happen after that: where is the economy and the stance of monetary policy likely to go after rates have unambiguously reached terminal?

The answer to this question lies in understanding the strategy that central banks are currently pursuing to tame inflation. Yes, interest rates are high because inflation is high. But the link between them is not mechanical. As the narrative on inflation has changed – why inflation is high and whether inflation is likely to stay high – then so has monetary strategy, so we start there.

THE INFLATION NARRATIVE: FROM TRANSITORY TO PERSISTENT

To begin with the surge in inflation was dismissed as a largely transitory phenomenon by most macroeconomists, both inside and outside central banks. The problem was diagnosed as a one-off increase in the price level – rather than a persistent increase in the rate of change of prices – that could be attributed to the pressure that the rapid recovery in demand post-lockdown was placing on still-constrained supply, particularly for a subset of items like cars.

According to the transitory hypothesis, the rate of inflation would increase for a period, as the correction in the price level played out, and then fall back to more normal levels. Indeed, high inflation might be followed by low inflation under the extreme version of the transitory hypothesis. The price level might temporarily rise, given a transitory shock to the supply side, but when that shock dissipates costs and ultimately prices should fall back. But in the meantime, the negative cost shocks continued to arrive. In particular, the invasion of the Ukraine aggravated existing imbalances within commodity markets (that reflected other factors such as supply shortages caused by climate change) causing further steep rises in the price of food and energy. Again, at least to begin with, these new shocks were viewed as just another correction in the level of consumer prices and another transitory burst of inflation.
Over time, the transitory thesis started to come under challenge.

First, the scale and the duration of these corrections in the price level was proving uncomfortably large and long as costs and margins gradually adjusted along supply chains. It turns out that when wholesale energy prices go up, it can take a long time for their full effect to be felt in the price of, say, consumer services even if they show up in petrol prices within a couple of months.

Second, there was increasing concern that large increases in the price of specific items – whether that be utility bills or the price of used cars – could have a more pervasive and long-lasting impacts on inflation through so-called "second round effects". These second round effects can materialise through a variety of channels: rapidly rising prices can trigger higher wage demands as workers try to protect disposable income; companies may find it easier to raise prices and margins in an environment where other prices are rising rapidly; or expectations of the future pace of inflation may be based in part on perceptions of the current pace of inflation, which in turn may be particularly sensitive to changes in the price of key essentials (including food and petrol).

Third, and perhaps most important of all, there was an increasing sense that there was a genuine imbalance in the economy and that was fuelling inflationary pressure in the economy. If the level of spending in the economy is too high and the level of unemployment too low then that will fuel inflationary pressure, and will continue to do so until that imbalance is corrected.

THE POLICY RESPONSE: FROM NORMALISATION TO TIGHTENING

The drift in the inflation narrative was reflected in the evolution of monetary strategy. Monetary policy has been extremely loose during the pandemic. To begin with, central banks concluded that ultra-accommodative stance was no longer warranted as the economy recovered and inflation surged. But so long as the spike in inflation was judged to be transitory then there was no obvious need for policy rates to go beyond neutral.

The more concerned that central banks became that inflation would persistently over-shoot the target the greater urgency there was around getting back to neutral as fast as possible. It soon became clear that just moving rates back to neutral would be insufficient. Rates would have to move into restrictive territory and rates now sit comfortably in restrictive territory: one, two or even three percentage points above pre-pandemic estimates of where the neutral policy rate lies.

The shift in mind-set from just no longer wanting to be accommodative to wanting to take policy into restrictive territory is fundamental. If the root cause of the inflationary problem is an imbalance between the levels of aggregate demand and supply then the solution has to involve slowing the economy down to close that gap. Likewise in the labour market, the problem is too many job-openings chasing too few job-seekers and the solution involves cooling labour demand, both in terms of the level of employment and the stock of unfilled vacancies.

The term recession means different things to different economists. However, a reasonable working definition is a significant and sustained slowdown in aggregate demand that leads to a deterioration in the labour market. On that basis, one can argue that the intermediate (and unfortunate) objective of the current monetary strategy is to cause a recession, because cooling the labour market down is a necessary condition for restoring price stability. This may sound counter-intuitive given that the recessions in recent memory have been caused by exogenous shocks (pandemics) or credit bubbles bursting, but if we take a longer perspective, we find that it is not so uncommon for recessions to be caused by monetary policy belatedly reining in a boom in activity.

The basic strategy may be clear – take policy into restrictive territory to cool demand and restore price stability – but the calibration of that strategy is up for debate. In particular, it was unclear how far into restrictive territory central banks needed to go. Answering that question would require a judgement on bad the inflation (or real imbalance) problem is, and how to trade-off the speed with which inflation returns to target and the depth and duration of the recession that policy will trigger.

INFLATION EXPECTATIONS AND RISK MANAGEMENT

In August last year, ECB Board member Isabel Schnabel gave an influential speech at the Federal Reserve's Jackson Hole conference that addressed this question head-on. In that speech, she argued in favour of a forceful strategy – or what she referred to as the path of determination – that prioritises getting inflation back under control "even at the risk of lower growth and higher unemployment."

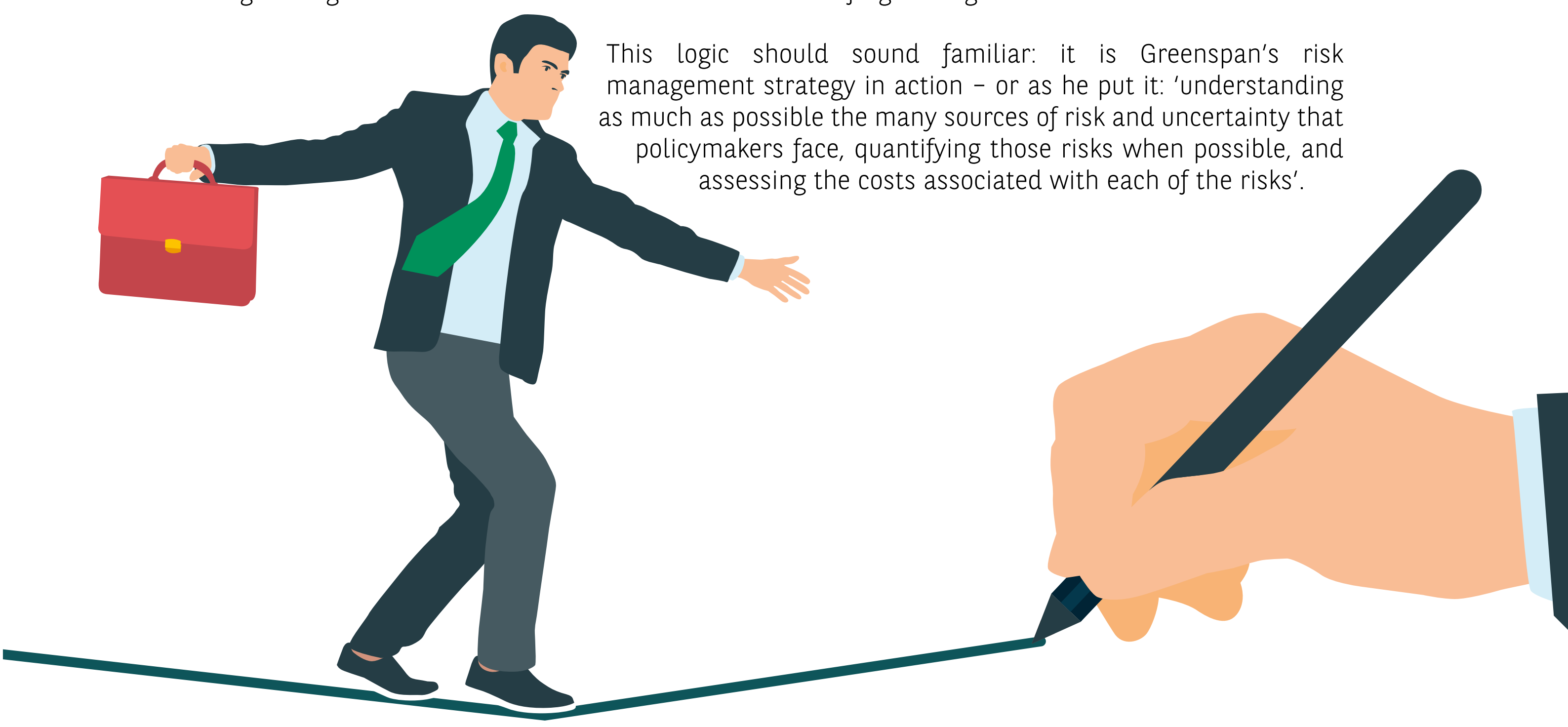
One way to think about the calibration of this forceful strategy is to think about the perceived costs associated with potential policy errors today – that is, between raising rates too far, too fast or the opposite – given the uncertainty confronting policymakers, and in particular around the outlook for inflation.

The outlook for inflation is always uncertain. But when you make a sequence of large forecast errors in the same direction it is natural to become more agnostic about the outlook and perceive that the distribution of possible outcomes is more widely spread around your modal forecast (the perceived single most likely path) than is usually the case. There are sound theoretical reasons for supposing that the distribution of inflation outcomes has not only become more uncertain but also increasingly skewed to the upside, particularly in the medium-term. That is, the probability of persistently high inflation outcomes has risen, and that is thanks to the behaviour of inflation expectations.

There is ample evidence that expectations of inflation are sensitive to perceptions of inflation. Expectations of inflation can therefore de-anchor if inflation stays too high for too long which can then both directly and indirectly raise the probability of persistently high inflation outcomes in the future. Directly in the sense that an increase in inflation expectations will tend to trigger larger increases in wages and prices when they are reset, leading to persistence. Indirectly in the sense that unless (nominal) policy rates are adjusted in response, higher inflation expectations will also lower real interest rates, stimulating spending which will tend to lead to higher inflation with a lag.

Once expectations slip then the costs involved in dis-inflating the economy will likely increase significantly. The central bank may have to engineer a material economic slowdown to drag inflation and inflation expectations back to the target. Policymakers are likely to conclude that it is therefore best to avoid this situation if at all possible. In other words, once there is a distinct possibility that expectations could slip then the strategy debate becomes asymmetric as well: the costs of tightening too little will increase relative to the costs of tightening too much.

This logic should sound familiar: it is Greenspan's risk management strategy in action – or as he put it: 'understanding as much as possible the many sources of risk and uncertainty that policymakers face, quantifying those risks when possible, and assessing the costs associated with each of the risks'.



IMPLEMENTING RISK MANAGEMENT IN THEORY

Risk management basically involves building in some insurance into the monetary stance against outcomes that particularly concern policymakers. The monetary stance is set sufficiently tight so that the forecast for inflation under-shoots the target on the modal (single most likely) outlook, in order to reduce the probability of very high inflation outcomes and the associated risk of de-anchoring. It is worth mentioning that in the background this strategy also implies that the modal forecast for unemployment will be correspondingly higher than might otherwise be the case (in order to drive inflation lower). The question is: how much insurance against de-anchoring is enough, or how big an under-shoot should the central bank aim for on the modal view?

If the distribution of inflation outcomes is skewed then having the mean (expected value) at a target of, say, 2% implies the median is below 2% (as well as the mode), which implies that it is more likely than not that inflation will be below 2%. So there is some insurance there. But if the costs associated with persistently high inflation are perceived to be particularly high then aiming to drive the mean back to the target might not provide enough insurance. There could still be a non-trivial probability of persistently high inflation outcomes even with the mean of the distribution at 2%. In other words, given the cost-benefit analysis above, the central bank may want to tighten policy so that the mean forecast is below the target to reduce the probability of very high inflation outcomes still further to a sufficiently low level.

Implementing this risk management strategy is not straightforward because of the complexity of the analysis it requires. The textbook says that central banks should always calibrate the stance of monetary policy based on the mean forecast for inflation. However, in normal times, the risks around the outlook are assumed to be broadly balanced, which means the distribution of possible inflation outcomes is symmetric. Under these fortuitous circumstances, the mode is equal to the mean of the distribution of possible outcomes, which implies that you don't have to model and forecast the entire distribution to calculate the mean if you want to follow the textbook recommendation. You just need to set policy so that your forecast of the mode is at the 2% target at the appropriate time horizon (and the mean will also be there).

Once you reach the conclusion that the distribution of inflation outcomes is significantly skewed then this analytical short-cut no longer applies. If you want to follow the textbook recommendation then you have to model and forecast the distribution of future inflation outcomes, whether you are trying to locate the mean at the target or below the target. This is not straightforward at the best of times since our understanding of what drives macro outcomes is by definition less advanced the more we focus on extreme, rare events. Unfortunately, modelling and forecasting the distribution of outcomes is particularly problematic when central bankers claim to have lost confidence in the models that are typically used to forecast the modal path of inflation.

The most extreme variant of this risk management strategy is robust control, which was referenced by Schnabel in that Jackson Hole speech. Robust control entails setting policy to achieve not so bad outcomes in the extreme tail of that distribution, if the worst case scenario materialises. Or as one economist put it, you set policy to minimise the maximum harm to the economy.

You don't need to model the entire distribution of inflation outcomes if you want to implement robust control. But you do need to be able to identify the worst case scenario, and the harm to the economy that arises in that scenario, and that requires a good understanding of outcomes in the extreme tails of the distribution of possible macro outcomes. Again, that is not something that the standard macroeconomic toolkit is set up to do.

DRIVING USING THE REAR-VIEW MIRROR

One can never be sure from the outside about the true nature of the policy debate inside central banks. But there is not much evidence from the information that central banks release into the public domain that policy is being is calibrated based on a forecast of the distribution of possible inflation outcomes or a view on the required level of insurance against de-anchoring, expressed in terms of the tolerance for the distribution of inflation outcomes above some threshold. Nor do we see much quantification of the worst case inflation scenario and the appropriate robust control policy response. One can therefore reasonably question just how much risk management is going on, or whether robust control is being implemented in practice.

In practice, it seems that central banks are implementing a form of risk management by placing more weight on data outturns when setting policy and corresponding less weight on their conventional toolkit. Policymakers appear to be treating forecasts that inflation will return to the target with greater scepticism than usual, on the basis that those forecasts are based on models that often either implicitly (based on the sample period over which they were estimated) or explicitly (hard-wired into the calibration of the model) assume that expectations are firmly anchored on the target. Putting too much faith in those forecasts could lead policymakers to pause too soon in the hiking cycle, allowing inflation to stay higher for longer which could then precipitate the de-anchoring of expectations that would invalidate the key assumption on which those forecasts were based.

Rather than making assumptions based on those models, policymakers appear to be waiting for confirmation in the data that inflation is back under control before taking major decisions on monetary strategy. For example, the Governor of the Banque de France, Francois Villeroy de Galhau, described ECB strategy as follows in late 2022: "as long as underlying inflation has not clearly peaked, we shouldn't stop on rates." There is a clear logic to putting a lot of weight on the inflation data if you don't trust models (or at least the assumptions in conventional models) and you are conscious of the tendency for perceptions of current inflation to drive expectations of future inflation. That having been said, this strategy will also be unduly influenced by any noise in the inflation data – particularly around the peak in the series – with an erratic movements in prices that do not reflect the broad state of the economy determining where and when policy rates reach terminal.

The more fundamental concern with setting policy based on outturns for data series like wage inflation or core inflation is that they typically behave as lagging indicators – that is, they will typically reflect the state of the economy in the recent past. That is a little problematic when the orthodox approach is to set policy based on what is likely to happen in the future, given the lags in the transmission mechanism. To be fair, this backward-looking posture is a feature, not a bug of the current strategy. The reason for putting so much emphasis on data outturns was to avoid putting too much weight on forecasts of the future (and in particular the potentially flawed implicit or explicit assumptions that inflation expectations would remain well anchored).

Central bankers often use an analogy of driving a car to explain aspects of monetary strategy. With that in mind, setting policy based on inflation outturns could then be described as analogous to driving a car by looking in the rear-view mirror (at a lagging indicator) rather than out the windscreen (at forecasts). Indeed, a current member of the ECB Executive Board used an even more colourful driving analogy: 'What we do not want is "to drive like crazy at night with our headlights turned off"'.

Whilst this backward-looking approach may be the best that can be done to manage the risks of expectations de-anchoring it is not obvious it can be relied upon to give a near-optimal response to future developments in the economy. In other words, at some point – when policymakers are sufficiently reassured about the path of inflation and inflation expectations – then they will have to switch back to looking out the windscreen.

FALSE DAWNS

Current pricing suggests that global investors believe that the hiking cycle is almost complete. Central banks are expected to deliver at most a few more 25 basis point hikes before rates reach their peak over this cycle. Those expectations reflect a judgement that the battle against inflation has finally almost been won. However, declarations of victory may turn out to be premature.

Indeed, it is almost impossible to know in real-time whether core inflation has peaked or not given the volatility in the data. It will only become clear with the benefit of hindsight that core inflation has peaked. This is indeed part of the problem with relying on inflation outturns to drive the policy debate. It is perfectly possible that inflationary pressure could appear to cool and then resume rising again. A false dawn on inflation could occur for a number of reasons.

1. First, inflation expectations may have already started to de-anchor, or more precisely by more than is factored into current forecasts of inflation. As discussed above, if the inflation expectations of households and companies have started to drift higher then we should expect to see higher rates of wage and price inflation, but also more robust consumption and investment (which will add to inflationary pressure in the future) as those households and companies perceive lower real interest rates.

2. Second, the real imbalance in the economy - the gap between the levels of demand and supply that is driving underlying inflationary pressure – could be larger than imagined, or more precisely is larger than is factored into current forecast of inflation. That so-called output gap is notoriously hard to measure in real-time, and it is not entirely unreasonable to claim that persistently strong wage and price inflation is a symptom of a significant output gap. In any case, a larger output gap implies persistently higher wage and price inflation.

3. Third, spending could prove more robust than is implicitly assumed in current inflation forecasts. More rapid growth in spending will put upward pressure on the levels imbalance between demand and supply, and hence underlying inflationary pressure in the economy. That news on spending could come from one of two fundamental sources. It could be that the rise in interest rates (and associated tightening in financial conditions) has had a more muted impact on the interest rate sensitive parts of domestic spending than the historical record would have implied. Or it could be that the more exogenous sources of spending (i.e., those that are not particularly sensitive to domestic financial conditions) such as domestic fiscal policy or overseas demand for exports could prove surprisingly strong. Implicitly, the resilience of spending would suggest that the real equilibrium interest rate is higher than imagined so actual real interest rates need to rise further to restrain demand.

4. Fourth, the economy could be hit by fresh negative cost shocks, which would then lead to a further jump in the price level that could potentially disturb inflation expectations. Recent experience suggests a whole host of candidate cost shocks that could temporarily raise inflation but the chief cause for concern is probably around food prices. Climate change already appears to be a major factor influencing food prices via disruptions to supply and unfortunately it seems that this will become increasingly commonplace.

CONCLUSIONS: OVER-HIKING?

Pulling the threads together, the strategy currently being pursued by central banks has two or potentially three key features. First, the strategy involves taking the policy rate into restrictive territory, significantly above the neutral rate. Second, the strategy is designed to cause a material slowdown in the labour market – aka a recession – because that is viewed as a necessary evil to restore price stability. Third, to the extent that central banks are in true risk management mode, the strategy is designed so that it is more likely than not that inflation undershoots the target in the future in order to reduce the risk of inflation expectations de-anchoring, which would then lead to a costly disinflation strategy. Together these features paint an interesting picture about the path of policy and the economy once inflation and hence the policy rate has peaked.

Rates are in restrictive territory, above neutral, because inflationary pressure is elevated. But they cannot stay in restrictive territory indefinitely. Policy rates must eventually return to neutral. The timing of those rate cuts will depend on when the inflationary pressure abates and the real imbalance in the economy unwinds, but there should be no doubt that these cuts must happen at some point.

Policymakers are seeking to engineer a recession to correct the imbalance in the real economy and restore price stability. With rates significantly above neutral, growth in spending should slow and that should weigh on labour demand and ultimately unemployment. The longer that rates stay a long way above neutral, the more likely it is that there is a significant downturn in demand and increase in unemployment. It may well therefore be that as inflationary pressure abates and the economy slows the central bank is obliged to take rates back into accommodative territory to remedy this situation. Indeed, there is a tendency for unemployment to rise significantly once it starts to rise, which would make this switch to an accommodative stance more likely. In short, policy rates could end up approaching neutral from below.

The fact that policymakers are in risk management mode, prioritising taming inflation and reducing the risks that expectations de-anchor, makes it much more likely that policy rates have to go below neutral. Remember that the signature of the risk management strategy is the mode and median of the distribution of future inflation outcomes located below as opposed to at the target, and that implies a correspondingly higher modal and median unemployment forecast. In short, it is more likely than not that the central bank in risk management mode today will be confronted by too little inflation and too much unemployment in the future and that will likely require cuts potentially quite far into accommodative territory. The more insurance the central bank takes out against the risk of de-anchored expectations, the more likely it is that it will face a significant inflation undershoot and unemployment overshoot in the future.

Furthermore, if central banks are currently setting policy by looking in the rear-view mirror then it is inevitable at some point – when there is greater confidence that inflation is returning to the target and inflation expectations are secure – that they will turn and start setting policy based on the view out of the windscreen. That is, they will stop looking so much at data and start looking more at forecasts and that could lead to a discontinuous shift in the implied policy stance. In other words, there could be a significant adjustment in interest rates during a period where there was relatively little data news. The implied jump would be even more abrupt if a central bank was following a robust control strategy and then switched back to a conventional approach.

If this description of events proves roughly right, then it may well appear to the casual observer that central banks have made a significant mistake. They raised rates aggressively in response to inflation but then the economy enters a recession and inflation may well fall back below the target. At some point during this process, central banks slash rates, at the very least by several hundred basis points to neutral, and perhaps by a lot more. Central banks would appear to have been guilty of "over-hiking". But that charge would be mis-placed. These are the favoured outcomes of a cost-benefit analysis when central banks were confronted by the realisation that a large imbalance had opened up in the economy (a large, positive output gap) and there was a material risk of losing control of inflation expectations.

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