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Raphael, thank you, and good morning everyone. I'm sorry I can't be with you in person, especially given the temperature difference between London and Amelia Island.

The past few years have not been happy ones for central banks. And the problems have arisen in the **two** areas that constitute their main responsibilities: controlling inflation and preventing bank runs and failures.

In the advanced economies we have failed to prevent a surge in inflation that has brought back memories of the 1970s. Central banks now face a dilemma – do they continue to tighten monetary policy to bring inflation back to their 2% target, or do they end further tightening because bank failures may reduce money and credit growth and hence inflationary pressure? Resolving that dilemma will be the main challenge in the management of the global economy in 2023. And the recent failures of regional banks in the US have prompted suggestions and debate about the reform of deposit insurance.

Those challenges add to an already crowded agenda for the upcoming G7 Summit in Japan. They will require serious rethinking of existing policies. And although many of those policies are national rather than international in nature, the intellectual mistakes and their corrections are common to all advanced economies.

I want to focus on why these two objectives of price stability and financial stability have proved difficult to achieve in the period since 2020.

Common to both policy areas is the same problem: namely that central banks have fallen victim to academic research which has given the impression that models can predict the future and hence tell us how to set policy. In my view, the main challenge for policymakers is to recognise that the forces driving the economy are always changing, or, to use the technical phrase, the world is nonstationary. This proposition was put most forcefully in John Maynard Keynes' 1939 review of Jan Tinbergen's pioneering study of econometric relationships. The attractions of estimating such relationships, and the number of articles and PhD theses that could thereby be completed, overwhelmed the question of whether it made sense to assume stationarity. We live in a world of constant change, a world of radical uncertainty. None of this might matter if models were used in an appropriate way. But they are not. Models can produce useful insights into the way the economy works. But they are not literal descriptions of the world. They cannot be – the world is too complex. Central bank policy – whether monetary policy or banking regulation – must be set in the world and not in the model. Most of the recent failures of policy have reflected the mistaken view that policy can be set in the model. Instead, key insights from models need to be combined with an attempt to understand what is going on in the world. Asking the question "what is going on here?" may seem trivial, but it isn't. It is the essence of coping with the need to make decisions in a world of radical uncertainty.

Let me make this proposition more concrete by talking about the mistakes in monetary policy in the past few years. After thirty years of low and stable inflation, the major western economies lost control of inflation during the pandemic. CPI inflation in the US is now 4.9%, having peaked at close to 10%. Although inflation is likely to fall quite sharply across the G-7 economies during 2023, policy mistakes allowed inflation to rise to its highest level for several decades. What went so badly wrong?

Part of the answer is the sharp rise in food and energy prices following the Russian invasion of Ukraine. But that is not the whole story. Food and energy prices have fallen back. And excluding food and energy prices, core CPI inflation in the US, euro area and the UK is running between 5 and 6%. Central banks were slow to realise that the rise in inflation was more than a "transitory" deviation from target.

We are all familiar with Milton Friedman's dictum that inflation is always and everywhere a monetary phenomenon. Monetarism became discredited for two main reasons. First, the relationship between monetary aggregates and nominal incomes proved nonstationary. This told us less about the role of money and more about structural shifts in banking and the financial system. Second, Friedman and other American monetarists focused on the monetary base rather than broader monetary aggregates which could not be controlled directly by the central bank. But as we have seen with QE, base money is relevant to the determination of aggregate nominal incomes only insofar as it affects broader measures of money. As a result, academic research turned its back on decades of monetary theory and decided to develop a theory of inflation without any reference to money at all. Once again, the attraction of writing down such models overwhelmed the question of whether they made any sense.

Unfortunately, inflation is a nominal variable. So any theory of inflation has to be related to nominal variables. The challenge of how to close a model by pinning down the price level or inflation in the medium term was solved by the assumption that inflation was determined by expectations and that expectations were determined by the official inflation target. In other words, the model assumed that inflation in the medium term would always return to the official inflation target of 2%. Milton Friedman's dictum had been replaced by the new dictum that inflation was always and everywhere a **transitory** phenomenon.

But a satisfactory theory of inflation cannot take the form "inflation will remain low because we say it will"; it has to explain how changes in policy – whether via QE or changes in interest rates – affect the economy.

For a long while, central banks were successful in keeping inflation close to the target and so nothing disabused them of the strong assumption they were making – until the pandemic came along. Following a sharp reduction in potential supply – the consequence of the measures taken to prevent the spread of Covid – central banks around the industrialised world decided to expand demand by a substantial programme of money printing through quantitative easing. Quantitative easing is an expansion of the money supply, although most central banks are reluctant to describe it as such. Unlike its use after the banking crisis a decade or so ago, aimed at preventing a fall in broad money resulting from a contraction of commercial bank balance sheets, this time QE created a substantial monetary overhang. Growth rates of broad money accelerated rapidly, in the case of the United States to the highest levels since the end of the Second World War, at an annual rate of 24% in the first half of 2021. Aggregate money demand exceeded aggregate supply valued at the current price level (augmented by the inflation target). I am not suggesting that policymakers respond in any automatic fashion to changes in the growth rates of monetary aggregates. But I do think it would have been sensible to ask in 2021: what is going on here with broad money growing at 24% a year?

The case for substantial monetary expansion in March 2020 was framed as a response to "dysfunctional markets." But the monetary injection was not withdrawn once financial markets were operating normally. Indeed, further QE was conducted in 2020 and 2021. This was unnecessary.

The lock-down response to Covid-19 led to a large fall in potential supply, most of which was expected to be temporary. A big hit to supply, albeit temporary, is not the circumstance in which it is sensible to expand aggregate demand. The actions taken to deal with the pandemic reduced the supply of goods and services. Central banks increased the supply of money. This produced the time-honoured recipe for inflation – too much money chasing too few goods.

The rise in inflation reflected an absence of common sense, a much-undervalued attribute in policy-making. There were at least three different ways to look at the problem: an excessive growth of broad money in relation to real GDP, an excessive fiscal and monetary stimulus to aggregate demand, and interest rates well below the level implied by any version of a Taylor rule. All three approaches implied that policy was overly expansionary.

After the policy mistakes of 2020 and 2021, 2022 was a year when central banks corrected their errors. They raised interest rates and stopped printing money through QE. The result is that monetary growth and nominal demand are no longer expanding rapidly. In the US, for example, broad money is now declining. In due course, not only will headline inflation fall back as the effects of higher energy and food prices drop out of the twelve-month measure, but the domestic component of inflation will also come down. How quickly this will occur is unclear. And relying on a model which ignores money, and other variables relating to the banking and financial sector, can lead to errors both on the upside and downside. Setting policy in 2023 will involve a difficult balancing act.

Let me turn to the stability of the banking system. Two days ago, the G7 finance ministers and central bank governors met in Niigata in Japan. I don't know how many of you have read their communiqué. So let me quote for you:

"Financial institutions' recognition and full and prompt disclosure of their losses … play an important role in reducing uncertainty, improving confidence, and restoring the normal functioning of the markets. In addition, authorities should … ensure measured and flexible responses to market stress, including arrangements for dealing with weak and failing financial institutions, both domestically and cross-border".

Very sensible. But unfortunately, that quotation does **not** in fact come from the communiqué of two days ago, which said remarkably little about inflation or banking, but from the communiqué of the G-7 ministerial in which I took part when it met in Tokyo in February 2008. Fifteen years, and thousands of pages of complex regulation, later, the communiqué issued on Saturday ignored the lessons of the past.

We have failed to prevent another set of bank failures. And once again regulators have been making it up as they go along. In the case of Silicon Valley Bank, uninsured depositors were fully compensated, and in Switzerland Credit Suisse shareholders benefited at the expense of the contingent convertible bondholders, an inversion of the normal hierarchy of creditors. **Two** features of those bank rescues stand out. First, the absence of a clear *ex ante* framework for the provision of central bank liquidity to any institution suffering from a bank run. Second, the willingness of governments and politicians to intervene in the resolution of a failing bank and change the rules in an *ad hoc* manner.

On the first, a bank run can occur not only from uninsured depositors but from the failure to roll over short-run wholesale financing. That was demonstrated in the financial crisis in 2008. Banks are institutions that borrow short and lend long. They are vulnerable to any loss of confidence, whether justified by the underlying reality or not. Over several centuries, we have come to rely on the benefits of maturity transformation to finance investments by the issue of short-term liabilities that are used as money. If we wish to retain those benefits, then central banks must stand ready to lend against any very short-term runnable liability. Ambiguity over whether a central bank will stand ready to provide liquidity makes a run more likely. But a commitment to provide liquidity cannot be open-ended. That would be to underwrite excessive risks taken by banks. The solution is an *ex ante* framework in which banks are prohibited from issuing more runnable liabilities than the central bank is willing to lend against the collateral which the bank can offer. The willingness to fight a fire by the provision of liquidity must be tempered by measures to limit the size of the fire. The terms on which a central bank should provide liquidity need to be designed carefully and spelled-out in advance. In my book *The End of Alchemy* I called such an approach the Pawnbroker For All Seasons.

The basic principle behind the scheme is to ensure that banks will always have access to sufficient cash from the central bank to meet the demands of depositors and others with claims on very short-term debt. For each type of asset which a bank was willing to offer as collateral, the central bank would calculate the "haircut" it would apply when deciding how much cash it would lend against that asset. Adding up over all assets, it would then be clear how much the central bank would be prepared to lend with no questions asked. The regulatory rule would be that no bank could issue more runnable liabilities than the central bank was committed to lend.

The central bank would make a promise for a lengthy fixed period of several years to provide a contingent credit line against that fixed haircut. Interestingly, the new Bank Term Funding Program announced by the Federal Reserve in March provides for lending against the par rather than the market value of bonds used as collateral – a negative haircut on market value but close to the way the Pawnbroker For All Seasons would set haircuts. The problem with the Bank Term Funding Program is that it sets haircuts retrospectively. It would be better to incorporate such an approach into an explicitly *ex ante* framework which would leave no room for ambiguity about the availability of central bank liquidity to support short-term runnable liabilities. Such a framework would likely have limited the speed at which Silicon Valley Bank expanded its deposits. And Credit Suisse's travel on a self-inflicted path of multiple scandals might have been caught earlier by a central bank more willing to impose a haircut on some of the dubious assets than was its regulator in dealing with bad behaviour.

The need for a clear *ex ante* framework for the provision of central bank liquidity is that it is impossible to anticipate the scale of contagion from one failing bank to other banks, as the problems of First Republic demonstrate. People have forgotten that when BCCI was closed by the Bank of England in 1991 – an idiosyncratic case of fraud if ever there was one – the concern about the fate of other small banks led the Bank to provide support secretly to other small banks. The fact that a bank run can occur today in a few hours rather than a few days is **less** important than the fact that the maturity of its short-run liabilities is much shorter than that of its assets. The approach I have outlined would ensure that no run could bring down a bank because there would always be cash available to cover all the runnable liabilities. It makes little sense to guarantee all deposits in a bank that fails and yet maintain that the upper limit on deposit insurance remains for all other banks. And the right time to introduce the scheme is today when the expansion of QE means that the deposits of commercial banks with the Fed are at an unusually high level. The regulatory reforms that followed the financial crisis were little more than sticking plaster to a system that requires a simpler, less costly but comprehensive approach to the provision of central bank liquidity.

In conclusion, recent failures in respect of both price and financial stability are the result of self-inflicted intellectual wounds. Bringing inflation back to the 2% target will be a challenge. But that challenge will be all the greater if we continue to rely on models that assume that any deviation of inflation from target is always transitory. Central banks need to monitor developments in money and credit growth and in the financial system more generally.

Bank runs will continue to occur until we put in place a clear *ex ante* framework for the provision of central bank liquidity against collateral. And we cannot rely on resolution frameworks if governments continue to intervene in the resolution process.

Radical uncertainty means that models provide us with important insights, but they are not literal descriptions of the world. In particular, the complex world of money and the financial system do not fit easily into a tractable model. But they do matter. We must always ask the question: “what is going on here?”

Thank you for listening and now let me invite Julia to moderate the question-and-answer session.

Julia.

Mervyn King was Governor of the Bank of England from 2003 to 2013.