Questionnaire for Catherine Mann

8 July 2021

Personal

1. Do you have any business or financial connections or other commitments, that might give rise to a conflict of interest in carrying out your duties as an external member of the Monetary Policy Committee (MPC)?

   I have no connections or commitments that might give rise to a conflict of interest in carrying out my duties as an external member of the MPC.

   I expect to retain my memberships and/or activities with various professional organizations, including Council on Foreign Relations, Economic Club of New York, American Economics Association, National Association for Business Economics, National Business Economic Issues Council, Global Interdependence Center, Center for Economic Policy Research.

   I may from time to time consult with the economics teams at the European Investment Bank, in the context of the research backdrop to the EIB's annual investment report; see for example the 2020/2021 Report, Building a smart and green Europe in the COVID-19 era.

   Prior to engaging in any specific projects with the EIB, or with other organizations, I will consult with the Secretary of the Bank.

2. Do you intend to serve out the full term for which you have been appointed?

   Yes, I intend to serve the full term, and be resident in London, once quarantines permit travel.

3. Please give an overview of how your career and experience to date will inform your work as an external member of the MPC, and of your current knowledge of the UK's economy and macro-economic policy.

   I have a unique background as an international economist with nearly 40 years of research , policy, and private sector experience. I started my career at the Federal Reserve Board of Governors (rising to Assistant Director, International Finance Division) with a secondment as Senior International Economist at the Council of Economic Advisors and a two-year stint as Advisor to World Bank Chief Economist Stanley Fischer. Switching to think-tanks and academia, I joined Peterson Institute for International Economics (PIIE) as Senior Fellow and then moved to the tenured university position as Rosenberg Professor of Global Finance and Director of Rosenberg Institute at Brandeis University. I returned to policy as the OECD Chief Economist, Head of Economics Department, and G20 Finance Deputy. Following, I transitioned to the private sector to round out my institutional perspective and expertise as Global Chief Economist at Citibank, resigning in June 2021. Each of these jobs and institutions have a somewhat different focus -- macroeconomic, structural, and financial -- and by putting them together I bring an integrated view of the policy, real-side, and financial market whole to the Bank of England.

   In terms of subject matter expertise, my core research focus is international economics and finance. From there, I have several more specific research themes, still with an international

perspective: climate economics and finance, productivity and inequality, and digitalization and information technology. This suite of topics is central to the performance of the UK economy, and therefore to monetary policy.

On the core focus of international economics and finance, my publications relevant to current issues facing the UK (and other) economy include how global financial markets might aid or impede the transmission of monetary policy to a domestic economy (see Negative Interest Rates: Where is the Real Limit to Cheap Money? (CIti GPS); "Monetary Policy in the Next Recession," (US Monetary Policy Forum); Strengthening Economic Resilience (OECD). Foreign participation in the US Treasury markets has been important and the insights from this research may be relevant for the UK.

On international topics such as exchange rate pass-through, external debt sustainability, and challenges of trade integration, topics that have immediate interest for the UK, I have 20 articles and book chapters on my CV. Most of these focus on US dynamics, but the frameworks for analysis are relevant for the UK as well. Some notable examples: Managing Exchange Rates: Achievement of Global Re-balancing or Evidence of Global Co-Dependency? (winner of NABE Abramson award for best article); Perspectives on the US Current Account Deficit and Sustainability (*Journal of Economic Perspectives,* 2002) and The United States as Net Debtor: How much longer the 'Exorbitant Privilege'? (2006).

In the research area of productivity and inequality**,** my recent monograph, For Better or Worse, Has Globalization Peaked? (Citi GPS) addresses the relationship between globalization, productivity, and inequality. OECD research undertaken when I was Chief Economist addressed many dimensions of inequality, culminating in a paper presented to the G7 on A Fiscal Approach for Inclusive Growth in G7 Countries. My OECD research team pioneered the 'leaders and laggards' research using firm-level data that is now central to understanding productivity dynamics. Many policy implications on housing, bankruptcy, worker training, and regional development stem from this research, which was a key input to the OECD's Economic Survey of the UK (2017), undertaken while I was Chief Economist. Investigating the UK's productivity puzzle relates to equitable and rising living standards. In addition, productivity growth can mitigate inflationary pressures, as well as providing monetary policy space through its relationship to r*.

The role for digitalization and information technology in the global context is another facet of my research portfolio where I have written three books: Accelerating the Globalization of America: The Role for Information Technology (2006), The New Economy and APEC (2001) and Global Electronic Commerce: A Policy Primer (2000). Some 15 articles and chapters in books detailed on my CV include addressing the challenges of managing different societal approaches to privacy and security of cross-border data flows; whether market forces can discipline data breaches; and how digitalization facilitates cross-border services, raises productivity, but also encourages 'white-collar outsourcing'. Relevant for the UK and monetary policy, digitalizalization can affect productivity dispersion (and therefore average productivity growth).

A budding area of research interest is the inter-relationships between climate, real-economy, and finance, which is relevant given the statutory objectives of the Bank of England. I contributed to the book Financing a Greener Planet: Catalyzing Private Capital for a Net Zero Emissions World (Citi GPS). While Chief Economist at the OECD I led the G20 report Investing in Climate, Investing in Growth. Since the climate objective is global, robust

participation in the Network for Greening the Financial System, investigating one's own exposure via the Total Climate-related Financial Disclosure, and working towards consistent metrics of evaluation are all relevant for leadership by the central bank and regulatory community as it works alongside fiscal authorities in global collaboration to incentivize the private sector to reallocate capital towards greener product and processes.

Finally, my most recent work (client proprietary at Citibank) focuses on the financial sector as intermediary between monetary policy and real-economy outcomes (inflation, GDP, employment). Research suggests that although the substantial liquidity provided by central banks post-global financial crisis has been reflected in more favorable financial conditions, it has not motivated private business investment to the expected degree; that is, the transmission from monetary policy to real-side economic metrics apparently has loosened, with asset prices (e.g. financial conditions) responding relatively more. This appears most obviously in the US data, and in housing markets generally (including the UK). For the UK, against the backdrop of both Brexit and COVID, making clear assessment of the links between monetary policy, financial conditions, and business investment is particularly challenging but especially salient.

The Monetary Policy Committee

4. The current MPC remit sets an inflation target of 2 per cent at all times, but it also allows the MPC to tolerate temporary deviations of unspecified length in order to avoid "undesirable volatility in output". How do you interpret this mandate and the degree of flexibility it offers?

The remit from HM Treasury from 3 March 2021, reconfirms a symmetric inflation target of 2 per cent that applies 'at all times', reflecting the primacy of price stability. It also updates the MPC's remit to achieve "strong, sustainable, and balanced growth that is also environmentally sustainable…" These objectives for both price stability and sustainable growth recognize that volatility and uncertainty undermine the environment for business and consumer decision-making. Volatility and uncertainty also negatively influence financial conditions.

The challenge for monetary policy is to apply this remit in the face of shocks that buffet the economy. Some economic models posit a trade-off between price and output stability. In the face of shocks, a strict adherence to a price target yields more output volatility or targeting output generates more price volatility. Against this simple framework, achieving the policy objective of inflation at 2 percent "at all times" could imply substantial output volatility. A more granular assessment of a wide variety of data, richer dynamics of economic interactions, and considering both real and financial players provides the foundation for more realistic decision-making.

Rather than focus on a theoretical trade-off, it makes sense to evaluate granular and high-frequency data on both the inflation and growth processes to gauge the appropriate monetary policy. With regard to inflation, a more complex assessment looks at expectations (consumer, business, financial market), commodity prices (considering both spot and futures), and tightness in labor and product markets (eg. wage dynamics and firms' pricing power). A similar granular approach is needed to evaluate volatility in output. Volatility in GDP is an aggregate assessment that builds-up from metrics of volatility across sectors, regions, demographics of labor and size of business. Volatility in domestic demand vs. in external markets is also an important consideration. The granular analysis illuminates the

complexity of economic interactions, which contributes to a better understanding of the transmission mechanism of monetary policy and when and what type of monetary policy decision is appropriate.

For both the inflation process and output volatility, it is also important to evaluate the stability of the frameworks underlying the economic relationships relative to historical experience. Both Brexit and COVID (and new objectives of climate) represent changes that may well affect the historical relationships between economic variables, with implications for conduct of monetary policy to achieve the remit.

5. What would be the costs and benefits of the MPC collectively, and members individually, providing clarity on their expectations for the path of interest rates, including through conditional forecasts?

Clear monetary policy signals (as well as other policy signals) support better decision-making by consumers, businesses, and sovereigns. Sending clear signals in a complex environment can be challenging. An important step for communications is to educate and explain this complexity and how it impacts monetary policy decision-making. On the other hand, a collective committee view helps reduce uncertainty about the likely policy path. It is important to balance education on the complexity of the decision with communicating a clear consensus for the policy path going forward.

Monetary policy requires an assessment of a lot of data, a view of the economic and financial processes that underpin inflation going forward, and a framework for how monetary policy interacts with initial conditions and future processes (both real-side and financial markets) to achieve the inflation objective. The clearer are MPC members on these three aspects (data, processes, frameworks) of their decisions, the greater is the transparency regarding the complexity of the inflation process, which can help educate markets, businesses, and individuals. But, such transparency also can generate greater uncertainty about the likely policy path if there is no way to determine which of the several potentially different views is more credible and likely to guide the policy path going forward.

An additional challenge is, who is the audience for monetary policy communications: Financial markets, real-side consumers and business -- presumably both. But, presenting just a wide dispersion of views requires real-side actors and markets to figure out for themselves what to believe about the conduct of policy. Specifically, expectations for the policy path within the context of conditional forecasts may be interpreted differently by financial markets vs. by real-side economic actors.

Therefore a consensus committee view on the underpinnings to the monetary policy decisions can guide economic actors towards the central view of the committee as a whole, which should reduce uncertainty about the likely policy path. It is important to balance education on the complexity of the decision with a clear consensus for the policy path going forward.

The economy and monetary policy issues

6. What is your assessment of the overall prospects for UK and global economic growth, inflation and unemployment over the short and medium term, and what do you see as the main upside and downside risks?

For the specifics of the state of the UK economy, I will learn much more as I receive briefings in the context of the MPC process.

In terms of a general assessment of the global economy, the recovery from COVID is more fragile than might appear based on projections of global growth at nearly 6 percent, which is dramatically above historical trend. This fragility comes from the disparity in timing and magnitude of growth rebound across economies, a question about the magnitude and rotation of spending across sectors as fiscal policies retrench and lockdowns relax, and the differential pace of return to pre-COVID metrics for GDP growth vs. employment. These disparities relate to both COVID and to the magnitude and choices within fiscal policy initiatives, as well as household and business behaviors (for example, household savings and supply chain disruptions), issues that will drive the medium-term growth outlook as well. Against this backdrop remain the unknown issues of COVID variants and vaccination deployment and effectiveness.

Below the top-line global projections, many projections reveal differences in pace and timing of return to pre-COVID GDP among Advanced Economies (AEs). In particular, the rapid acceleration of US growth into mid-year exceeds that of other AEs due to the larger magnitude and policy choices of stimulus checks and larger/longer unemployment benefits. In addition, a more rapid vaccination outcome along with differential state-by-state opening up has added to US growth momentum.

Into 2022, three factors are in play, particularly for AEs. First, hopefully the pandemic will have been contained. Second, how consumers deploy their lock-down related savings is key -- both how complete will be the rotation from purchase of consumer durables to services but also whether consumers will keep a higher household savings buffer. Income demographics will be an important lens for assessing the consumer; in this regard, the pace of re-employment and labor-force participation (including by various demographics) are important variables. Notably, many forecasters show a more sluggish return to pre-COVID employment as compared to the timing for a return to pre-COVID GDP. Third, the amount and focus on fiscal stimulus could vary by country in 2022 vs 2021. Finally, private business investment is central to watch. Fiscal policy may catalyze business investment, or prospects for strong growth may induce business investment; the channels are different, but private investment is key to sustained GDP growth rates and employment. A significant downside risk is that private business investment stays on the sidelines. Exacerbating this is the possibility that policy impetus will divert into asset prices without appreciable transmission to consumption or business investment.

For Emerging Markets (EMs), there is substantial variation in prospects depending on exposure to tech, tourism, commodities, the China market and supply chain, and other 'neighborhood' effects. Economies with tech exposure have done well with the work-from-home boom; those dependent on tourism have fared much worse. Commodity exporters enjoy tailwinds; importers face headwinds. Exposure to the China supply chain and US tariff wars benefits economies to which trade and investment are relocating; but economies exposed to the China domestic market may find less uplift than in previous cycles, as China is expected to grow much more slowly than in the past. For other regions (USMCA economies, EA and CEE economies) US and EA 'neighborhood' growth effects are relevant. This variation in external factors for EM GDP growth is, in some economies, dominated by the internal effects of COVID and vaccination availability and deployment. All together, this dispersion among EMs adds to the fragility of the global forecast for historically robust growth.

For inflation, there are similar disparities, as well as hints of longer-term issues. Only in the US is CPI inflation expected to exceed the 2% objective for some years. Inflation in other AEs does not breach 2% at least as measured on an annual basis. For EM as well, after the 2021 boost in inflation, their average inflation also is expected to moderate substantially. While the conclusion might be that monetary authorities have inflation well in hand, the other conclusion is that policy moderates too soon and/or business investment never takes over as the driver of economic activity; that is, higher inflation rates currently observed are not maintained because demand falls off. A third (unlikely, see below) possibility is that business innovation and investment is so robust that supply-side potential is boosted sufficiently to moderate inflation to below 2%.

Indeed, considering the longer term collection of growth, employment, and inflation forecasts currently on offer from most organizations should cause some concern. By and large, no economy is expected to sustain its current higher growth rate induced by current policies, and no economy is expected to achieve a higher rate of growth of potential output once the COVID period and policies end (thus implying that the third possibility above is viewed as unlikely). There is a history lesson: An assessment of the post-GFC data shows that that period was associated with rising inequalities (including much diminished prospects for younger generations) and poor productivity growth (and slowed convergence) in most economies. The projections for the post-COVID growth rates raise similar concerns. At the same time, debt levels (private and public) are much greater, posing tensions between addressing inequalities and debt sustainability. Therefore, key risks to the projections include prospects for innovation and productivity growth; labor force participation, augmentation and quality; and new or renewed private capital investment. For most economies, returning to the pre-COVID growth rate should not be considered a sufficient outcome.

7. The MPC's current policy guidance is that it "does not intend to tighten monetary policy at least until there is clear evidence that significant progress is being made in eliminating spare capacity and achieving the 2% inflation target sustainably." What is your assessment of the current level of spare capacity/output gap, and how do you expect it to develop?

I will have access to much more data and analysis once I am at the Bank of England in order to assess these issues for the UK economy. However, the framework that I will bring to my assessment for monetary policy deemphasizes the macroeconomic concept of the output gap and emphasizes understanding the inflation process and the growth process, where these depend importantly on structural characteristics that are evolving with COVID and Brexit (and potentially climate).

The output gap concept is the difference between GDP and potential GDP. The rationale for this concept and how it relates to monetary policy is that when GDP exceeds potential GDP, inflationary pressures build, which then must be addressed through monetary (and perhaps fiscal) policies. However, it is difficult to measure potential GDP in the best of times, and in the current environment of both COVID and Brexit the situation is particularly challenging. Further, various research shows that using the output gap as a guide tends to make policy tighten too soon, yielding losses in GDP that are not made up (see the previous discussion of the post-GFC assessment). Ultimately, if the objective of monetary policy is to target inflation, then the framework discussed above (expectations, commodities, tightness in labor and product markets) offers a better read on the inflation process.

This is not to say that assessing potential output is not important, including the role that monetary policy might play in potential output. As discussed above, understanding the developments that underpin potential output (productivity, and labor and capital characteristics) are key ingredients for increasing the capacity of an economy to deliver higher living standards. Standard economic theory says that monetary policy has no effect on potential output, that structural policies (e.g. productivity outcomes) dominate. However, to the extent that monetary policy affects real business investment vs. asset prices, then there is a connection between monetary policy and potential output, with investment raising the capital stock. There are also indications that equity booms are associated with innovation, also key for potential output growth. To the extent that monetary policy can increase labor force participation by running the economy hot, it can affect potential output through the labor component. It is important to evaluate whether policy is leading to higher potential output (supply side response) versus a traditional demand push. The supply effect moderates inflation, the demand effect augments inflation.

Understanding the evolution of spare capacity in the COVID and Brexit environment is very important, but requires microeconomic analysis and data at least at the sectoral level, and preferably at the firm and labor market level. How much reallocation of both capital and labor, how quickly that reallocation can take place, and what kinds of structural policies can facilitate that reallocation are all important areas for research and as inputs to understanding the environment in which monetary policy is being made.

8. What assessment have you made of the impact of Brexit on the UK economy to date and going forward?

In April 2016, when I was Chief Economist at the OECD, we produced a report assessing the channels through which Brexit might affect the UK economy: *"The shock would be transmitted through several channels.. tighter financial conditions and weaker confidence; … higher trade barriers and ... restrictions on labour mobility. ... [S]tructural impacts would take hold through the channels of capital, immigration and lower technical progress... reduced foreign direct investment and a smaller pool of skills. The extent of foregone GDP would increase over time... By 2030, in a central scenario GDP would be over 5% lower than otherwise."*

Since that report was written, there was an initial fiscal and monetary response after the vote that helped to calm markets (although the depreciation of Sterling has persisted), the timetable and terms for trade relationships were extended and negotiated, and, of course, COVID happened. It bears considering that Brexit is more of a shock to externally focussed sectors whereas COVID has been more of a shock to domestic customer-facing services sectors (albeit of course there are overlaps, e.g aviation and tourism).

Nevertheless, the channels for assessing the impact of Brexit on the UK economy on potential output (productivity, labor, capital) and through financial markets (including currency, equities, credit, corporate and sovereign bonds) are still valid. Measuring the sectoral reallocation of activities and investment, the needed skill matching, and prospects for innovation are all important for assessing the impact of Brexit, and need to be evaluated at the micro level, not just from a macro perspective. How financial markets support or impede these reallocations remains to be seen.

9. Why in your view have the UK and other advanced economies suffered from stagnant productivity growth in recent years, and what do you see as the prospects for productivity growth in the coming years?

   My research teams at the OECD pioneered firm-level assessments of productivity growth via within and cross-sectoral reallocation of resources using firm-level data. Research using matched employer-employee datasets give deeper insights into the labor market and wage dynamics associated with productivity growth. The research is on-going, particularly to understand the sectoral and labor aspects of COVID.

   Research findings on the productivity slowdown note two facets of the slowdown. First, a widened dispersion within sectors between productivity leaders and laggards. That is, in each sector, productivity growth increased for leading firms--larger, more globally engaged, with a higher share of intangible and technology capital, which also paid higher wages. Productivity growth stagnated for most other firms in each sector. Aggregate productivity is the average of both 'types' of firms across all sectors. At the 'bottom' of the distribution of firms, research pointed to these lagging firms not adopting available technologies, remaining too small, capturing resources, and/or not exiting, thus dragging down aggregate productivity from the 'bottom'. Many structural policies affect the robustness of resource reallocation and/or the exit of the lagging firms. Labor market policies, housing policies, bankruptcy policies as well as managerial acumen are all highlighted in this research; the relative importance is country-specific.

   Second, more recent data analysis points to weakened productivity growth at the frontier, which would slow aggregate productivity growth from the 'top' rather than from the 'bottom' of the distribution of firms. Areas for research include what might be reducing frontier firms' incentives to innovate and invest, for example, slackened competitive pressure from less robust global competition, or various financial aspects (M&A, buy-backs, private equity). Sluggish overall demand conditions and uncertainty about future demand also likely are relevant.

   For emerging markets, the slowdown in productivity growth has been particularly notable, with the consequence being a slowed rate of convergence to advanced economies' higher income per capita. There are many possible domestic reasons, but the slow-down in trade liberalization and build-up of international reserves may be factors.

   Prospects for future productivity growth are quite difficult to gauge. One story is that changes induced by COVID will increase investment in technology across a broader set of sectors and this will usher in a new boost in productivity growth, similar to the late 1990s/early 2000s. The lessons of the leaders/laggards research is that investment in technology is necessary but not sufficient. Productivity analysis in the 1990s/2000s comparing countries and sectors emphasized that changes in products, processes, and workplace practices were necessary for productivity growth. The leaders-laggards research helps to identify what policies could be deployed differently this time

10. Since the financial crisis, interest rates have been at or near zero. Do you expect this to remain the case after the recovery from the pandemic, and what is the impact on the scope for monetary policy to stabilise output and inflation?

    A full discussion of prospects for interest rates and the scope for monetary policy to stability output and inflation requires consideration of nominal vs real rates, at various maturities,

and with different credit risk profiles, all of which would be affected by policy choices (fiscal, monetary, structural) as well as outcomes of growth, inflation, and productivity.

One framework for thinking about the forces underpinning these various interest rates is the following: nominal interest rates depend on real rates, a duration premium, a credit risk premium, and possibly an uncertainty premium. The anchor for this constellation of interest rates is r* -- the real short-term interest rate associated with stable inflation and full employment. r* is not observable (as NAIRU wasn't either). One notable feature of estimated r* (using the Holston-Laubach-Williams 2017 model) is the gap between trend growth and r* that opened up around the time of the Global Financial Crisis, with r* falling significantly more than did trend growth (the gap is not as wide for the UK as for the Advanced Economy aggregate). This gap between r* and trend growth warrants continued examination, particularly given the issues discussed above on the transmission of monetary policy through financial conditions to real economic outcomes.

But r* is not the only perspective on interest rates. Another perspective notes that real interest rates are anchored to productivity and therefore to the marginal product of capital investment. If productivity increases, associated with a higher marginal product of capital, then the real interest rate should increase. Contrary to some financial market interpretations, a higher real rate under this scenario is a positive indication, say for equity valuations. Second, rising inflation should be incorporated into higher nominal rates particularly at longer duration maturities. So long as inflation does not spiral, a positive inflation premium on longer duration securities is consistent with a positive economic climate and not a negative signal for markets. Differentiation along the lines of business-characteristics (sector, size, leverage, etc) should be reflected in more dispersion in credit risk premia, unlike the tight spreads of current times. Uncertainty, for example regarding the stability of the policy environment, could top-up nominal rates, although whether most prevalent at the short end or longer duration is unclear.

In terms of the scope for monetary policy to stabilize output and inflation, positive real rates, from productivity growth, a moderate inflation premium at longer duration consistent with hitting the inflation target, and wider credit spreads that reflect risks all give greater scope to the monetary authorities as compared to low r*, negative real rates, no duration premium, and narrow credit risk spreads.

11. What is your assessment of monetary policy tools other than conventional interest rate setting, including quantitative easing and negative interest rates?

The effectiveness of unconventional monetary policies such as quantitative easing and negative interest rates depends importantly on the domestic and global economic growth and policy environments, the institutional structure of the domestic financial markets, and the timing of the deployment of the tools.

Research conducted as a member of the US Monetary Policy Forum (referenced above) evaluated how various monetary policy tools -- forward guidance, QE, negative interest rates -- affected financial condition indexes (FCIs) in eight advanced economies (including the UK). The research found: The global component of financial conditions is quite important, which implies limitations on effectiveness of domestic monetary policy if it faces global financial headwinds, say from tighter policies abroad. Under the period of research consideration that focused on post-GFC, pre-COVID while these new tools did loosen financial conditions, they generally were not sufficient to overcome the headwinds already present. State-contingent forward guidance was the tool most associated with improved financial

conditions. With regard to negative interest rates, this tool was generally deployed after other tools, so the marginal effect on financial conditions was limited. This research addressed only the first step in the effectiveness of monetary policy -- that is the relationship between monetary tools and financial conditions. The second step -- how financial conditions affect real economic behavior; and then the third step -- how that behavior affects inflation -- warrants continued study.

With regard to negative interest rates specifically, some research (for example from the ECB) found that negative interest rates (in conjunction with other tools) did promote loan availability, to the benefit of real-side behavior (investment). But as outlined in the Citi GPS monograph (referenced above), with respect to the overall objective of increasing inflation and considering a wider range of economies and central banks, the tool seems to distort household savings, to raise risk taking, and to reduce the profitability and stability of banks, pension funds, and insurers. Taken overall, this tool has not had the magnitude of effect on inflation commensurate with the monetary policy effort.

12. What role do money supply growth and asset prices play in generating inflation, and what role should they play in setting monetary policy?

Money supply growth no longer has a stable relationship to inflation, and thus is not a good guide for monetary policy. Asset prices provide important information about the transmission of monetary policy to the real-economy and inflation. If asset markets absorb more than transmit monetary policy, Central Banks can face a dilemma: Deploy the monetary policy tool more forcefully in an effort to achieve the inflation objective but doing so could add to financial stability risks should asset prices overshoot.

With respect to money growth and inflation, the well-known relationship championed by Milton Friedman in the 1980s fell victim to the assumption of constant velocity of money. In recent decades, there has been virtually no relationship between money growth and inflation; thus spawning other models of the inflation process (such as the one described above). Given technological change in the forms of money (e.g. digital), in the institutions and instruments of leverage (e.g. financial markets), and in how credit relates to spending (e.g. peer-to-peer), there is little likelihood that the strong relationship between money growth and inflation will re-emerge. Therefore, money growth is only one observation on the behavior of markets, not a sole guide to monetary policy.

On the other hand, the panoply of asset prices and metrics (equities, credit spreads, bonds of various maturities, housing, and derivatives and securities based there-on) are an important window into the transmission and effectiveness of monetary policy. The relationship between various financial conditions indexes and the objectives of monetary policy (inflation and others) is an ongoing area of research.

In a simple framework for monetary policy, there is a three-step process: The policy decision is transmitted to the financial markets, which signal to businesses to undertake investment and consumers to spend, to result in inflation (and other objectives appropriate to the central bank mandate). Examining each of these steps is important to understand the effectiveness of monetary policy. For example, the monetary policy decision might show up in asset prices (financial conditions), but those financial conditions may not translate into real-side behavior: for example, high equity prices may not elicit real-investment but rather be associated with robust buy-backs. Or monetary policy might transmit through asset prices and to business and consumer spending but because of the characteristics of labor

and product markets (wage compression and/or limited firm pricing power) only incompletely transmit to affect inflation.

Asset prices and their relationship to financial stability also are important for monetary policy considerations. Suppose a monetary policy decision affects primarily asset prices, but is not transmitted to the real economy and inflation. In this case, there is potential for overshooting. Uncertainty, confidence, and volatility in asset prices can affect real-side behavior directly (investment decisions, consumer wealth), which feeds back to influence the effectiveness of monetary policy to achieve the inflation mandate. If the transmission of monetary policy to asset markets is imperfect (including different from historical experience), central banks may face a dilemma: Deploy the monetary tool more forcefully to achieve the ultimate objective, but at the risk of asset markets becoming further misaligned, which when resolved could feed back to push the economy away from the inflation objective.

The Treasury Committee will publish your answers to this questionnaire. Please provide a full CV when returning this questionnaire.