PGIM FIXED INCOME

The Case for Central Bank Action on Climate Change

An Evolution to Facilitate a Revolution

PERSPECTIVES | JUNE 2021

KATHARINE NEISS, PHD
Chief European Economist

- The traditional view of central banks' role no longer appears to align with government objectives and the public's growing desire to address climate change.
- The effect of climate change on central banks' core functions can be clear, e.g. droughts often result in higher food prices and threaten price stability. Furthermore, the general shortcoming in climate-risk disclosures results in sub-optimal investment allocations amid a significant investment gap.
- Modern central banks face numerous challenges when it comes to addressing climate change, ranging from preventing "mandate creep" to implementing the most appropriate, effective policies.
- The steps that central banks should take, including stress testing, ensuring adequate capital buffers, and monitoring institutions' capital allocations, can support the evolution in monetary policy needed to meet the world's broadening objectives to fight climate change.

The Traditional View of Central Banking

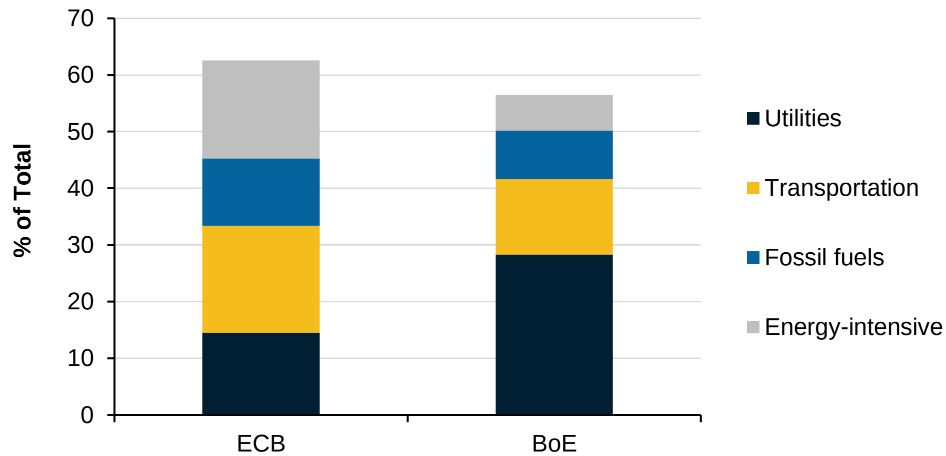
In the decades leading up to the global financial crisis, a consensus emerged around central banking best practice. A monetary policy authority—independent, but accountable to government—tasked with delivering price stability in order to optimize savings, investment, and production decisions while also greasing the labor market wheels to deliver full employment. As momentum to address the climate challenge gathered in the post-global financial crisis period, calls mounted for central bank action.[1] Yet, the traditional central banking view held that doing so risked slippage from their core principles by diluting their focus on price stability and ultimately eroding their hard-won independence.

[1] Neiss, Katharine (Sep 2020), An Altered Trajectory: The Macroeconomic Effects of Europe's Plans to Address Climate Change, PGIM Fixed Income white paper. *https://www.pgim.com/pgim-japan/insights/Climate-Change-and-EA-Economy*

To many observers, the market-neutral approach provided a clear example that monetary policy was not only ignoring climate change, but also actively countered governments' objectives for net-zero emissions by underwriting securities from carbon-intensive issuers.

A key weakness to the traditional view on central banking emerged from their extraordinary action in the aftermath of the financial crisis and in response to the COVID-19 pandemic: their "market-neutral" asset purchase programmes resulted in an unintended bias towards carbon-intensive industries. For example, in the case of the European Central Bank, slightly more than 60% of its corporate bond purchases were in sectors, including utilities, carbon-heavy transport, and fossil fuels (Figure 1), that were responsible for approximately 60% of euro area greenhouse gas emissions, but only contributed slightly more than 20% of the euro area economy's gross value added.[2,3]

Figure 1: Carbon-intensive Corporate Bond Holdings of the ECB and the Bank of England



Source: New Economics Foundation as of July 31, 2020

To many observers, the market-neutral approach provided a clear example that monetary policy was not only ignoring climate change, but was also running counter to governments' objectives for net-zero emissions by underwriting securities from carbon-intensive issuers. These cross currents raise a couple of key issues about the future of central banking. First, surely the policies of these technocratic institutions need to be coherent and consistent with medium-term government objectives. Second, ignoring reasonable public expectations in this context threatens the independence of a central bank should the government feel obligated to step into the void.

The Critique on Central Banks and Climate Change

A body of frontier research indicates that climate change threatens the core functions of central banks, including price stability, financial stability as well as the safety and soundness of financial institutions. For example, rising agriculture and food prices could lift headline inflation rates, while climate vulnerability could affect asset valuations with implications for institution-specific and system-wide risks.[4] Therefore, central banks need to monitor and understand the implications of climate change, much in same way they continue to approach

[2] Matikainen, Sini, Emanuele Campiglio, Dimitri Zenghelis (May 2017), The climate impact of quantitative easing. Grantham Institute on Climate Change and the Environment. Dirk Schoenmaker (Feb 2019), Greening monetary policy, Bruegel working paper.
[3] International Finance Review "Green Bond Black Hole Leaves Investors Exposed" Last Updated: 24 May 2019 https://www.ifre.com/story/1588361/green-bond-black-hole-leaves-investors-exposed-f0mfpbrnvc
[4] See for example Dikau, Simon and Ulrich Volz (March 2021) Central bank mandates, sustainability objectives and the promotion of green finance, London School of Economics and Honohan, Patrick (Oct 2019), Should monetary policy take inequality and climate change into account? Peterson Institute working paper 19-18.

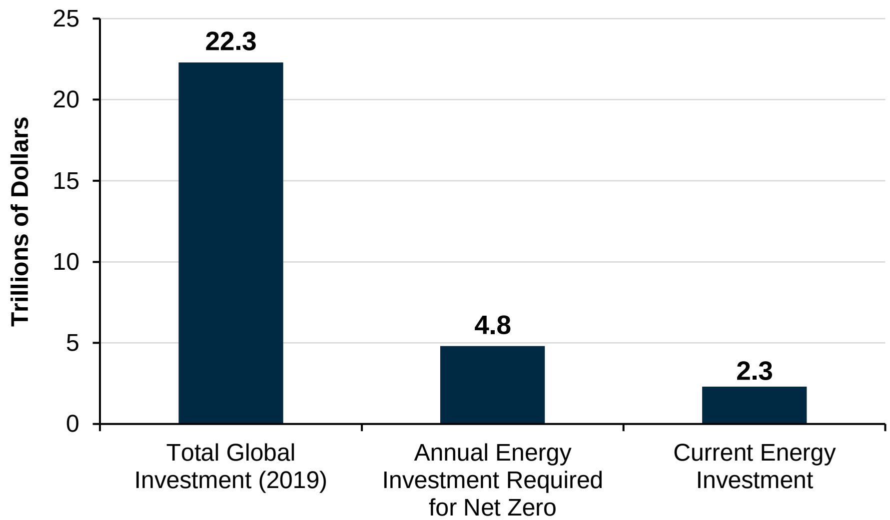
other slow-burn issues outside of their normal purview, such as demographics, globalisation, and technological innovation.

More importantly, institutions' market pricing needs to reflect the risk of climate change in order to optimize their capital allocation decisions, and many significant global institutions have yet to price the risks in. For example, a recent ECB analysis finds that almost none of the institutions that it supervises meet the climate disclosure requirements set out by the Taskforce on Climate-related Financial Disclosures (TCFD).[5] Efficiently allocating capital will be of the utmost importance going forward given the sheer amount needed. The International Energy Agency (IEA) estimates that nearly $150 trillion in cumulative investment—i.e., seven *times* larger than annual U.S. GDP—is needed over the next 30 years to meet the Paris Agreement's climate goals. Moreover, much of that investment needs to be frontloaded over the next decade.

Not surprisingly, the woefully large "investment gap" in the trillions of dollars indicates that capital is not flowing quickly enough to where it is needed the most.

Not surprisingly, the woefully large "investment gap" in the trillions of dollars indicates that capital is not flowing quickly enough to where it is needed the most (Figure 2).[6]

Figure 2: The Investment Gap in Climate Financing



Source: International Energy Agency; World Bank

Given the scale of the climate challenge, alongside central banks' primary objective of optimizing the allocation of scarce resources, it seems difficult to argue that central banks have no role in addressing climate change.

When put another way, in a free society, it would be considered intolerable for a respective central bank to remain unresponsive in the face of mass unemployment. Likewise, a view is coming into focus that it is similarly unacceptable for central banks to ignore the observation that capital is currently mispriced and, as a result, is not flowing to where it is needed most to meet societal objectives. This does not suggest a *promotional* role for central banks in the sphere of climate change. However, it highlights that central banks have a duty to ensure that

[5] ECB report on institutions' climate-related and environmental risk disclosures, (Nov 2020) https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.ecbreportinstitutionsclimaterelatedenvironmentalriskdisclosures202011~e8e2ad20f6.en.pdf?f10a778f9643eb81c72e658f32c95a44

[6] PGIM Megatrends (Spring 2021), Weathering Climate Change: Opportunities and Risks In An Altered Investment Landscape https://www.pgim.com/pgim-japan/insights/pgim-mega-trend-weathering-climate-change

their policy actions are aligned with medium-term government objectives as they seek to maintain their legitimacy and independence.

The Challenge for Modern Central Banking

For those central banks with secondary mandates to support government economic objectives and sustainable growth, such as the ECB and the BoE, many now agree that a change in mandate is neither desirable nor needed.

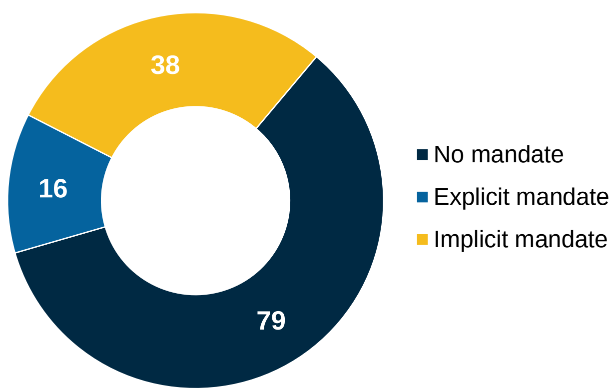
Among developed market central banks, a consensus has emerged that climate change poses risks to the macro financial system.[7] Yet, in order for central banks to conduct monitoring and risk assessment and to ensure financial sector resilience (through stress testing, for example) a disclosure framework is required. The TCFD provides such a framework, but the UK is the only country to make the standard mandatory thus far.

The topic of whether central banks should take an active role, particularly with the use of monetary instruments, to fight climate change is more controversial.[8] For those central banks with secondary mandates to support government economic objectives and sustainable growth (Figure 3), such as the ECB and the BoE, many now agree that a change in mandate is neither desirable nor needed.[9] Indeed, Governing Council member Isabelle Schnabel recently noted that the EU Treaty requires the ECB to take climate change into account.

In the case of the Federal Reserve, its dual mandate is specified in terms of price stability and full employment without the wider objective of supporting government policy. The question of whether the Fed's mandate should expand would ultimately be a matter for the U.S. Congress to decide. In general, central banks requiring legislative measures to adjust their mandates face steeper hurdles in proactively addressing climate change, and those without legislative legitimacy risk their credibility if they appear to be freelancing on the issue.

Yet, other federal entities may not face such restrictions. In the U.S., the Biden Administration recently tasked the Treasury Department with assessing climate-related financial risk to the federal government and the U.S financial system.[10]

Figure 3: Central Banks with Explicit, Implicit, or No Sustainability Mandates
(133 Sampled)



Source: Dikau & Volz (2019)

[7] For example, the Federal Reserve, the Bank of England, The European Central Bank, The Danish National Bank, the Bank of Japan and the Reserve Bank of Australia accept the idea that climate change poses systemic risk to the financial system. See also The Green Swan: Central Banking and Financial Stability in the Age of Climate Change," by Botlon, Depres, Pereira da Silva, Samama and Svartzman, BIS paper January 2020.

[8] Brunnermeier, Markus and Jean-Pierre Landau (Jan 2020) Central banks and climate change, Vox EU

[9] See for example, Dikau and Volz (June 2021), Central bank mandates, sustainability objectives and the promotion of green finance, Ecological Economics Vol 184, and the London school of Economics CEPR CFM Survey, The ECB's Green Agenda (Feb 2021) https://cfmsurvey.org/surveys/ecb%E2%80%99s-green-agenda.

[10] https://www.whitehouse.gov/briefing-room/statements-releases/2021/05/20/fact-sheet-president-biden-directs-agencies-to-analyze-and-mitigate-the-risk-climate-change-poses-to-homeowners-and-consumers-businesses-and-workers-and-the-financial-system-and-federal-government/

In instances where central bank mandates support addressing climate change, the subsequent challenge is to ensure that policy action is fit for purpose and not cycle dependent. For example, it would be counterproductive for central banks to limit themselves to climate change support when in an easing cycle. Moreover, studies have shown that skewing central bank purchases towards green assets would likely be too small to make a meaningful difference.[11] More generally, central banks should avoid picking "winners and losers" in the green transition and instead ensure that market functioning delivers the desired outcome. Similarly, it would be an inappropriate use of macroprudential policy, which is aimed at building balance sheet resilience, to actively direct financing towards sustainable investments. But there is a case to be made for central banks to "walk the talk" on managing and disclosing the climate change risks on their own balance sheets, as required by other financial institutions.[12]

More generally, central banks should avoid picking "winners and losers" in the green transition and instead ensure that market functioning delivers the desired outcome.

An Updated Approach Aligned with Climate Objectives

This essay argues that central bank action on climate change is wholly consistent with the traditional view that central banks should facilitate the efficient allocation of resources and are most effective when free from short-sighted political influence in an effort to achieve longer-term societal objectives. Moreover, those central banks with secondary objectives to support government policy would not need a change in mandate to incorporate climate change, they would simply need to shift their policy emphasis.[13]

Central banks have historically taken a leading role in setting financial regulation, such that prices reflect complete information to incentivise desired investment behaviour. Disclosure of climate related risks will similarly enable prices to drive investment behaviour towards a green transition. Given global capital market linkages, central banks need to work together to develop and implement best practice as we have seen from the Financial Stability Board and the Network for the Greening of the Financial System. Further cooperation will help mitigate regulatory arbitrage, complexity, and greenwashing.

Climate-related disclosures will subsequently enable central banks to effectively conduct surveillance of institution-specific and systemic risks. It would allow for scenario analysis and stress testing, such that capital buffers can be adjusted accordingly to ensure financial system resiliency across a breadth of scenarios.

Central bank monitoring should also include the impact of climate change on the macroeconomic outlook, much in the way that central banks monitor employment trends relative to full employment, but leave the role of labour market policies to governments. Central banks can use their in-house expertise to incorporate climate change into macro models and develop scenario analysis to shed light on questions, such as: is the economy on track to build a capital stock that will achieve its climate goals? Other issues of exploration could include conducting surveys to judge whether firms have sufficient access to financing avenues needed to support their green transition.

[11] Ferrari, Alessandro and Valerio Nispi Landi (Dec 2020), Whatever it takes to save the planet? Central banks and unconventional green policy, ECB working paper 20202500.

[12] In June 2020, the Bank of England achieved a notable first among central banks by publishing a report disclosing financial-related climate risks across all its operations https://www.bankofengland.co.uk/-/media/boe/files/annual-report/2020/climate-related-financial-disclosure-report-2019-20.pdf.

[13] Elderson, Frank (Aug 2019), We all play a vital role, International Capital Markets Conference keynote speech https://www.bis.org/review/r190904c.pdf.

Concluding Thoughts

Yet, mission creep will be a risk. Central banks will need to draw a clear distinction between their unique—but ultimately limited—role in facilitating the efficient flow of capital and proactive government climate policies.

The evolution in central banking that occurred over the course of two crises appears to be on the cusp of a new phase to address the existing crisis of climate change. For many institutions, the changes may be subtle at first. Rather than mandate changes, these central banks may shift policy emphasis to better align with medium-term government objectives. However, overtime, the changes could become more pronounced as central banks' core function of efficiently funneling capital to where it is needed most requires greatly improved climate-risk disclosures—particularly as it pertains to their own policies and balance sheets.

Central banks can act as role models in their own portfolio management by ensuring that their balance sheets account for climate change risks and are consistent with government targets, for example. In line with this concept, the ECB is reconsidering its interpretation of market neutrality as part of its policy framework review, with some Governing Council members suggesting the balance sheet should be "decarbonised."[14] Moreover, central banks' recognition of their unique position to influence capital formation can further enhance their legitimacy and protect their independence.

Yet, mission creep will be a risk. Central banks will need to draw a clear distinction between their unique—but ultimately limited—role in facilitating the efficient flow of capital and proactive government climate policies. Those institutions that navigate the fine line between core functions and activist policies may provide economies with much-needed support in their revolution to fight climate change.

[14] Villeroy de Galhau, Francois (Feb 2021) The role of central banks in the greening of the economy, Banque de France speech https://www.bis.org/review/r210211g.pdf

Notice: Important Information

Source(s) of data (unless otherwise noted): PGIM Fixed Income as of June 2021.

PGIM Fixed Income operates primarily through PGIM, Inc., a registered investment adviser under the U.S. Investment Advisers Act of 1940, as amended, and a Prudential Financial, Inc. ("PFI") company. Registration as a registered investment adviser does not imply a certain level or skill or training. PGIM Fixed Income is headquartered in Newark, New Jersey and also includes the following businesses globally: (i) the public fixed income unit within PGIM Limited, located in London; (ii) PGIM Netherlands B.V., located in Amsterdam; (iii) PGIM Japan Co., Ltd. ("PGIM Japan"), located in Tokyo; (iv) the public fixed income unit within PGIM (Hong Kong) Ltd. located in Hong Kong; and (v) the public fixed income unit within PGIM (Singapore) Pte. Ltd., located in Singapore ("PGIM Singapore"). PFI of the United States is not affiliated in any manner with Prudential plc, incorporated in the United Kingdom or with Prudential Assurance Company, a subsidiary of M&G plc, incorporated in the United Kingdom. Prudential, PGIM, their respective logos, and the Rock symbol are service marks of PFI and its related entities, registered in many jurisdictions worldwide.

These materials are for informational or educational purposes only. The information is not intended as investment advice and is not a recommendation about managing or investing assets. In providing these materials, PGIM is not acting as your fiduciary. Clients seeking information regarding their particular investment needs should contact their financial professional. These materials represent the views and opinions of the author(s) regarding the economic conditions, asset classes, securities, issuers or financial instruments referenced herein. Distribution of this information to any person other than the person to whom it was originally delivered and to such person's advisers is unauthorized, and any reproduction of these materials, in whole or in part, or the divulgence of any of the contents hereof, without prior consent of PGIM Fixed Income is prohibited. Certain information contained herein has been obtained from sources that PGIM Fixed Income believes to be reliable as of the date presented; however, PGIM Fixed Income cannot guarantee the accuracy of such information, assure its completeness, or warrant such information will not be changed. The information contained herein is current as of the date of issuance (or such earlier date as referenced herein) and is subject to change without notice. PGIM Fixed Income has no obligation to update any or all of such information; nor do we make any express or implied warranties or representations as to the completeness or accuracy or accept responsibility for errors. **All investments involve risk, including the possible loss of capital. These materials are not intended as an offer or solicitation with respect to the purchase or sale of any security or other financial instrument or any investment management services and should not be used as the basis for any investment decision. No risk management technique can guarantee the mitigation or elimination of risk in any market environment. Past performance is not a guarantee or a reliable indicator of future results and an investment could lose value. No liability whatsoever is accepted for any loss (whether direct, indirect, or consequential) that may arise from any use of the information contained in or derived from this report. PGIM Fixed Income and its affiliates may make investment decisions that are inconsistent with the recommendations or views expressed herein, including for proprietary accounts of PGIM Fixed Income or its affiliates.**

The opinions and recommendations herein do not take into account individual client circumstances, objectives, or needs and are not intended as recommendations of particular securities, financial instruments or strategies to particular clients or prospects. No determination has been made regarding the suitability of any securities, financial instruments or strategies for particular clients or prospects. For any securities or financial instruments mentioned herein, the recipient(s) of this report must make its own independent decisions.

Conflicts of Interest: PGIM Fixed Income and its affiliates may have investment advisory or other business relationships with the issuers of securities referenced herein. PGIM Fixed Income and its affiliates, officers, directors and employees may from time to time have long or short positions in and buy or sell securities or financial instruments referenced herein. PGIM Fixed Income and its affiliates may develop and publish research that is independent of, and different than, the recommendations contained herein. PGIM Fixed Income's personnel other than the author(s), such as sales, marketing and trading personnel, may provide oral or written market commentary or ideas to PGIM Fixed Income's clients or prospects or proprietary investment ideas that differ from the views expressed herein. Additional information regarding actual and potential conflicts of interest is available in Part 2A of PGIM Fixed Income's Form ADV.

In the **United Kingdom**, information is issued by PGIM Limited with registered office: Grand Buildings, 1-3 Strand, Trafalgar Square, London, WC2N 5HR. PGIM Limited is authorised and regulated by the Financial Conduct Authority ("FCA") of the United Kingdom (Firm Reference Number 193418). In the **European Economic Area** ("EEA"), information is issued by PGIM Netherlands B.V., an entity authorised by the Autoriteit Financiële Markten ("AFM") in the Netherlands and operating on the basis of a European passport. In certain EEA countries, information is, where permitted, presented by PGIM Limited in reliance of provisions, exemptions or licenses available to PGIM Limited under temporary permission arrangements following the exit of the United Kingdom from the European Union. These materials are issued by PGIM Limited and/or PGIM Netherlands B.V. to persons who are professional clients as defined under the rules of the FCA and/or to persons who are professional clients as defined in the relevant local implementation of Directive 2014/65/EU (MiFID II). In certain countries in **Asia-Pacific**, information is presented by PGIM (Singapore) Pte. Ltd., a Singapore investment manager registered with and licensed by the Monetary Authority of Singapore. In **Japan**, information is presented by PGIM Japan Co. Ltd., registered investment adviser with the Japanese Financial Services Agency. In **South Korea**, information is presented by PGIM, Inc., which is licensed to provide discretionary investment management services directly to South Korean investors. In **Hong Kong**, information is provided by PGIM (Hong Kong) Limited, a regulated entity with the Securities & Futures Commission in Hong Kong to professional investors as defined in Section 1 of Part 1 of Schedule 1 (paragraph (a) to (i) of the Securities and Futures Ordinance (Cap.571). In **Australia**, this information is presented by PGIM (Australia) Pty Ltd ("PGIM Australia") for the general information of its "wholesale" customers (as defined in the Corporations Act 2001). PGIM Australia is a representative of PGIM Limited, which is exempt from the requirement to hold an Australian Financial Services License under the Australian Corporations Act 2001 in respect of financial services. PGIM Limited is exempt by virtue of its regulation by the FCA (Reg: 193418) under the laws of the United Kingdom and the application of ASIC Class Order 03/1099. The laws of the United Kingdom differ from Australian laws. In **South Africa**, PGIM, Inc. is an authorised financial services provider – FSP number 49012. In **Canada**, pursuant to the international adviser registration exemption in National Instrument 31-103, PGIM, Inc. is informing you of that: (1) PGIM, Inc. is not registered in Canada and is advising you in reliance upon an exemption from the adviser registration requirement under National Instrument 31-103; (2) PGIM, Inc.'s jurisdiction of residence is New Jersey, U.S.A.; (3) there may be difficulty enforcing legal rights against PGIM, Inc. because it is resident outside of Canada and all or substantially all of its assets may be situated outside of Canada; and (4) the name and address of the agent for service of process of PGIM, Inc. in the applicable Provinces of Canada are as follows: in **Québec**: Borden Ladner Gervais LLP, 1000 de La Gauchetière Street West, Suite 900 Montréal, QC H3B 5H4; in **British Columbia**: Borden Ladner Gervais LLP, 1200 Waterfront Centre, 200 Burrard Street, Vancouver, BC V7X 1T2; in **Ontario**: Borden Ladner Gervais LLP, 22 Adelaide Street West, Suite 3400, Toronto, ON M5H 4E3; in **Nova Scotia**: Cox & Palmer, Q.C., 1100 Purdy's Wharf Tower One, 1959 Upper Water Street, P.O. Box 2380 - Stn Central RPO, Halifax, NS B3J 3E5; in **Alberta**: Borden Ladner Gervais LLP, 530 Third Avenue S.W., Calgary, AB T2P R3.

留意事項

※ 本資料は PGIM フィクスト・インカムが作成したものです。PGIM フィクスト・インカムは、米国 SEC の登録投資顧問会社である PGIM インクの債券運用部門です。
※ 本資料は情報提供を目的としたものであり、特定の金融商品の勧誘又は販売を目的としたものではありません。また、本資料に記載された内容等については今後変更されることもあります。
※ 記載されている市場動向等は現時点での見解であり、これらは今後変更することもあります。また、その結果の確実性を表明するものではなく、将来の市場環境の変動等を保証するものでもありません。
※ 本資料に記載されている市場関連データ及び情報等は信頼できると判断した各種情報源から入手したものですが、その情報の正確性、確実性について当社が保証するものではありません。
※ 過去の運用実績は必ずしも将来の運用成果等を保証するものではありません。
※ 本資料は法務、会計、税務上のアドバイスあるいは投資推奨等を行うために作成されたものではありません。
※ 当社による事前承諾なしに、本資料の一部または全部を複製することは堅くお断り致します。
※ “Prudential”、“PGIM ”、それぞれのロゴおよびロック・シンボルは、プルデンシャル・ファイナンシャル・インクおよびその関連会社のサービスマークであり、多数の国・地域で登録されています。
※ PGIM ジャパン株式会社は、世界最大級の金融サービス機関プルデンシャル・ファイナンシャルの一員であり、英国プルーデンシャル社とはなんら関係がありません。

PGIM ジャパン株式会社
金融商品取引業者　関東財務局長（金商）第 392 号
加入協会　一般社団法人 投資信託協会 、一般社団法人 日本投資顧問業協会
PGIMJ82064