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Financial System Stability, the Timing of Climate Change Action and the Federal Reserve

Abstract: Timely and effective climate action is a precondition for the stability of the global financial system and for long-term, inclusive prosperity. Because the Federal Reserve and other central banks share responsibility with legislative and regulatory authorities and other experts for maintaining financial system stability, the Fed also shares responsibility for effective climate action. For climate action to be effective in reducing greenhouse gas emissions and limiting global warming, it must be widespread, it must be substantive, and it must come sooner rather than later. The new low-interest rate monetary policy environment favors sustainable long-term, but also high-risk, investments. Market participants need timely guidance and support from regulatory and supervisory authorities, including the Federal Reserve, in order to expedite global fund allocations to low-carbon assets.

Keywords: Climate Change; Central Bank Independence; Federal Reserve; Financial System Stability; Low-Carbon Transition.

JEL Classification: E44; E58

Timing Matters

The Great Recession established beyond a doubt that the ability of the Federal Reserve to fulfill its dual mandate of price level stability and maximum sustainable employment critically depends on financial system stability. Therefore financial system stability, as a precondition for these dual goals, must be part of the responsibilities of the Federal Reserve (Dudley, 2009). However, the stability of the

financial system will become increasingly difficult to maintain when confronted with the steep losses in GDP and increases in inequality that are projected for the end of the century if current trends for greenhouse gas emissions continue (Burke et al, 2015; Auffhammer, 2018). To avoid massive economic disruptions from the physical consequences of climate change and a potentially abrupt shift away from high-carbon assets, the Federal Reserve must act now to help orchestrate a smooth transition to a low-carbon economy. Because the responsibility for a stable financial system is widely shared among regulators, lawmakers, the media, academics and other experts (Admati, 2017 and 2019), the responsibility to successfully address the threats from climate change is shared as well (Cœuré, 2018; Campiglio, 2018). Long-term success with either one of these challenging global goals depends on success with the other. Financial monetary and regulatory authorities in other countries have recently come to similar realizations (Scott et al, 2017; NGFS, 2018 and 2019) with 34 central banks and supervisors publishing an open letter on the subject.¹

The urgent need for timely action to reduce greenhouse gas emissions, which increase average global temperatures and induce anthropogenic climate change, has long been recognized (AAAS, 2014). The importance of acting sooner rather than later is also emphasized in Chapter 29 of the Fourth National Climate Assessment (USGCRP, 2018). Climate change from global warming is associated with more extreme weather events that increase physical risks for health, food production, transportation, housing, energy production and distribution, and other critical sectors as well as related asset and financial markets. Thus, the continued rise in average global temperatures is negatively related to the ability of central banks to stabilize the global financial system. Perhaps due to the enormity of the challenge and public inertia, the critical importance of timing is generally underestimated or neglected. Yet early mitigation efforts have stabilizing effects on ecosystems and the climate in the short run and, in the long run, increase the probability that the worst outcomes of climate change may be avoided. From a business perspective, curbing the use of fossil fuels early is important because it influences current forecasts of future demand and, therefore, long-term fund allocations towards fossil fuel production and distribution that are difficult or impossible to reverse. The timing of effective climate action thus critically determines the speed of climate change mitigation and its ultimate success with stabilizing global average temperatures and the many interconnected systems on which our lives depend.

¹ Bank of England, Open Letter on Climate-Related Financial Risks. Available at <https://www.bankofengland.co.uk/news/2019/april/open-letter-on-climate-related-financial-risks>

In addition to the physical risks associated with climate change, there are risks associated with the transition to a low-carbon economy. As businesses, households and governments reduce investments in high-carbon assets and processes in favor of low-carbon innovation, there may be unexpected economic shocks. If the transition initially proceeds too slowly, and later has to be accelerated abruptly, potential disruptions may become disastrous for financial markets. Since the Federal Reserve shares responsibility for the stability of the global financial system, it must move expeditiously to assume its position as key catalyst and supporter of the low-carbon transition.

Will Low Interest Rates Suffice?

Given inflation rates that have tended to remain below its two-percent target in the aftermath of the Great Recession, the Federal Reserve is increasingly considering the possibility that interest rates may have to stay lower for a longer period of time than initially expected (Bernanke, 2019). Del Negro et al (2018) document a secular global trend toward lower real government interest rates during the past several decades that may be attributable to slower economic growth worldwide as well as an increased demand for low-risk assets from aging populations. The global low interest-rate environment supports investments in research and innovation that are needed across all economic sectors to drive the transition to low-carbon assets, processes and systems. Yet, in the early stages of this transition with unfettered markets, low interest rates also increase the risks to financial system stability from the potential building of “bubbles,” especially in markets for fossil fuels and other high-carbon assets.

Asset bubbles are notoriously difficult to spot before they burst unexpectedly and cause the affected asset prices to plummet. Given estimates of a carbon budget, which targets limits to increases in average global temperatures by mid-century, the Carbon Tracker Initiative (2013, 2015) has documented evidence that assets in fossil fuel and related industries are likely overvalued. If the low-carbon transition currently advances too slowly leading to abrupt and destabilizing adjustments in later years, these assets may become stranded thus creating large losses with severe risks to financial system stability (Gros and Schoenmaker, 2016).² Raising interest rates to prick a possible ‘carbon bubble’ is too blunt a monetary policy tool because it would impose higher financing costs not just on high-carbon industries but on all other parts of the economy as well.

² While Delis et al (2019) find some evidence that climate-related risks are priced in bank loans since 2015, little is known about how markets are valuing these risks in the various industries during the low-carbon transition.

If low interest rates continue to prevail, it is possible that some individual economic decision-makers, i.e. businesses, institutional investors, households and local governments, will choose to change course, and some have already done so. The low interest-rate environment does raise the profitability of many investments that are needed for the low-carbon transition, such as R&D, renewable energy, energy efficiency and infrastructure, because these projects tend to have positive payoffs in the more distant future. Low interest rates are less damaging to the net present values of these long-term projects and, thus, may make them more attractive relative to shorter-term, more carbon-intensive projects. Decentralized decision-making, however, requires standardized climate-related financial disclosures and budgeting exercises that consider not only the allocation of financial capital, but also the allocations of atmospheric capital (carbon emissions) across alternative investment opportunities (Schellhorn, 2018). While possible, these fundamental changes are difficult to implement in an economic and political environment that is not supportive. Too much uncertainty and synchronization risk (Abreu and Brunnermeier, 2002) prevent market participants from correcting the mispricing of high-carbon assets in a reasonable time frame. Hence, it is unlikely that decentralized climate action, even if supported by low interest rates, will lead to the required outcomes.

Alternatively, political representatives, legislators and regulators could act collectively and decisively to accelerate a reallocation of resources to the low-carbon economy by imposing regulations to reduce greenhouse gas emissions including carbon pricing schemes. Businesses and investors are unable to price climate risks correctly without government intervention because there are no property rights to the atmosphere (Daniel et al, 2018). Leiserowitz et al (2017) document substantial political will to support some government action to address global warming, and Kotchen et al (2017) find some public support for paying a carbon tax that could at least partially internalize the negative environmental and atmospheric externalities from greenhouse gas emissions. However, progress with the implementation of carbon pricing schemes in the United States has been minimal, possibly because the carbon price that would be required to effectively address the problem is politically unacceptable (Hansen and Kharecha, 2018). Even if sufficient political will to adopt carbon pricing schemes existed, it would be difficult to identify and agree on optimal levels for carbon prices and emission restrictions. If carbon taxes and emission restrictions are too low, they fail to accomplish a low-carbon transition at the required speed. Set too high, they are likely to trigger economic and financial stresses that could jeopardize the stability of the financial system. As long as policymakers are unwilling or unable to address the climate challenge, the low-interest rate environment will continue to facilitate large capital flows

into high-carbon assets.³ While some progress has been made with renewable energy, electrification and improvements in energy efficiency, governments and businesses appear unable to correct this massive market failure in a timely manner. Given the lack of high-level climate leadership in the United States, is it possible that the Federal Reserve could step in to fill this void?

The Fed as Climate Leader of Last Resort

Since the Federal Reserve's inception in 1913, the Fed's influence in the economy has grown over time with its responsibilities adjusting in response to crises and the changing needs of the United States economy. While long perceived to be independent (Waller, 2011), the Fed's independence has always been contested,⁴ and continues to evolve in response to contestation, legislative changes, political pressures, bureaucratic practice, and the preferences of individual Fed Chairs (Boettke and Smith, 2013; Conti-Brown, 2015). Compared to other central banks particularly in Europe, the Fed's independence is relatively weak (Dincer and Eichengreen, 2014) and may have weakened further in recent years due to a change in its operating system in 2008 (Jordan and Luther, 2019).

Measuring central bank independence is not straightforward as definitions and measurements vary and metrics continue to be revised (Jasmine et al, 2019). While some level of central bank independence appears to be necessary for achieving and maintaining low inflation (Radovic et al, 2018), absolute independence is not required for adjusting central bank priorities in response to a changing economy. The Bank of England, which Dincer and Eichengreen (2014) show to be only slightly more independent than the Fed, has begun to address the risks from climate change (Scott et al, 2017) and to support the transition to a carbon-neutral economy. Mark Carney, Governor of the Bank of England, has been one of the main drivers of this development.⁵ The threats to financial stability from

³ A notable exception to U.S. government inaction on climate change is the recent public effort by Rostin Behnam, Commissioner of the U.S. Commodity Futures Trading Commission, to draw attention to the major risks posed by this global challenge to the financial system (Langton, 2019).

⁴ See, for instance, Federal Reserve Bank of Richmond, "Perspectives on Monetary Policy Independence," last updated on October 26, 2016, https://www.richmondfed.org/-/media/richmondfedorg/research/our_perspectives/pdf/perspectives_monetary_policy_independence.pdf

⁵ "Enable, Empower, Ensure: A New Finance for the New Economy." Speech given by Mark Carney, Governor of the Bank of England, at the Lord Mayor's Banquet for Bankers and Merchants of the City of London at the Mansion House, London, June 20, 2019.

climate change pose new challenges for all central banks, and the Fed is no exception. Rudebusch (2019) and Brainard (2019) acknowledge the Federal Reserve's responsibility to address climate change by monitoring and managing the related financial risks. The Fed Chair enjoys some protection from political pressure because there is no precedent for removing a Fed Chair from office and because the law is ambiguous on this issue. Thus, removal would come with significant legal and political hurdles for the United States President. The current Fed Chair could employ his *de facto* removability protection to initiate collaborations between the Fed, the Bank of England and other central banks for designing much needed reforms that would address climate-related systemic risks in a timely manner. In fact, some Democratic presidential candidates running for election in 2020 are urging the Fed to do just that (Lippert, 2019). Recent comments by Williams (2019) suggest receptiveness to broad-based innovation in response to fundamental changes in the economy also at the Federal Reserve.

While there are current limitations on the Fed's ability to act, history shows that past barriers have been neither permanent nor immutable. One example is the creation of the Financial Stability Oversight Council (FSOC) after the financial crisis to address the systemic risks posed not only by banks but also by nonbank financial institutions. As a member of FSOC, the Federal Reserve was given authority to identify large financial institutions that could pose threats to financial system stability and subject them to more stringent regulatory standards. Recent attempts to roll back this expansion of Federal Reserve authority have been met with resistance because the creation of the FSOC is viewed as an effective way to address blind spots in the supervision of systemic risks in financial markets (Hockett, 2015; Schwarcz and Zaring, 2017). The Bank of England, too, supervises nonbanks through its Prudential Regulation Authority. This responsibility has recently enabled the Bank to introduce stress tests that assess climate risks in the insurance industry.⁶ For purposes of safeguarding financial system stability in the case of climate change, waiting for a crisis before initiating reforms is ill-advised. By the time a climate crisis arrives, actions to address it are likely ineffective because they would be coming too late.

In addition to using its supervisory and regulatory authority to address the systemic risks from climate change, the Fed could support the low-carbon transition with its asset purchases. The Fed has traditionally restricted its asset purchases to U.S. Treasury securities in order to avoid political involvement, safeguard its independence, and maintain the separation between fiscal policy and monetary

⁶ See <https://www.bankofengland.co.uk/prudential-regulation/letter/2019/insurance-stress-test-2019>

policy (Broaddus and Goodfriend, 2001). This approach worked well as long as a focus on price level stability and full employment took precedence over financial system stability considerations. Since its inception, the Fed has been responsible for financial system stability and, since the financial crisis, this charge has become increasingly prominent (English et al, 2013). With this shift in the Fed's focus, the question of what kinds of assets the Fed should buy, and to whom the Fed should lend, has taken on renewed relevance. Mehra (2010) argues that the Fed's asset purchases during the financial crisis exceeded its statutory authority. Similarly, Johnson (2011) and Orphanides (2016) warn that central bank balance sheet decisions in times of crises may have fiscal and distributional consequences that are not well understood and may be inconsistent with the governance and purpose of central banks in democratic societies. Ten years after the financial crisis, the Fed continues to hold agency mortgage-backed securities.⁷ Given unresolved questions about the Fed's authority to act in response to crises, it is critically important to consider ways in which the Fed could help prevent a financial system collapse from climate-related risks in the first place.

If the Fed is currently able to buy Treasury and agency-backed securities, the Fed could buy certified climate bonds as long as they are issued by the U.S. Treasury or backed by U.S. government agencies. With organizational support from the Climate Bonds Initiative, governmental organizations at all levels, businesses and NGOs are currently in the process of developing a market for green bonds with a segment devoted specifically to certified climate bonds. The European Central Bank has purchased green bonds under both its Public Sector Purchase Programme (PSPP) and its Corporate Sector Purchase Programme (CSPP) (De Santis et al, 2018). While the Federal Reserve is able to buy only government and government-agency securities, should green U.S. government bonds become available, the Federal Reserve would be able to consider including them in its asset purchases. Thus, it is conceivable that the Federal Reserve's balance sheet would be able to support the financing of low-carbon, climate-related housing, infrastructure and other projects associated with the transition to a net-zero carbon economy.⁸

If reservations prevail in the face of legal ambiguity regarding the Federal Reserve's ability to hold climate-related assets, the Fed should, at the very least, raise awareness in its public communications regarding the risks that high-carbon as-

⁷ See https://www.newyorkfed.org/markets/opolicy/operating_policy_190530

⁸ In fact, Freddie Mac recently announced the issuance of newly designed environmental bonds: <https://freddiemac.gcs-web.com/news-releases/news-release-details/freddie-mac-launch-new-line-environmental-and-social-impact>

sets pose for the global financial system. Kashkari (2017) argues that the Fed should also use its supervisory tools to divert capital flows away from asset markets that are at risk of developing bubbles. While the Fed may not be able to fill a leadership void at the national government level, it could be instrumental in steering investors toward a smooth low-carbon transition that will avoid disruptive shocks to global financial system stability once it becomes abundantly clear that too many resources have been poured into fossil-fuel related industries.

Collaborative Innovation

Public awareness is growing regarding the unprecedented nature of the uncertainty faced by the global economy as a result of accelerating climate change and the need to transition expeditiously out of high-carbon assets. Simultaneously, it is becoming increasingly clear that the Federal Reserve must explore new approaches to dealing with the emerging climate-related risks to financial system stability. Climate stability and global financial system stability are intertwined. Efforts that reduce greenhouse emissions on a large scale to slow human-induced climate change depend on a well-functioning financial system. Financial system stability, in turn, depends on success with climate change mitigation and adaptation. Because both challenges are global in nature, the Fed must collaborate with other central banks to address them together.

In the spirit of Elinor Ostrom's research on the problems posed by "the tragedy of the commons" (Ostrom, 2015), Mark Carney in a 2015 speech at Lloyd's of London⁹ referred to the lack of adequate climate action as "the tragedy of the horizon." Stability of the climate and stability of the global financial system may be viewed as common-pool resources that require timely maintenance by all that rely on them for supporting lives and civilizations. The traditional operating practices of central bankers prevent forward-looking action on climate change risks, because the brunt of the burdens are expected to emerge beyond typical planning horizons and will fall most heavily on future generations.

Breaking the tragedy of the horizon will require the disclosure of climate-related financial risks by businesses and institutional investors, as well as the collaboration of central banks and other regulatory authorities when monitoring and address-

⁹ "Breaking the Tragedy of the Horizon – Climate Change and Financial Stability." Speech given by Mark Carney, Governor of the Bank of England and Chairman of the Financial Stability Board, at Lloyd's of London, London, September 29, 2015. Available at: <https://www.bis.org/review/r151009a.pdf>

ing these systemic risks. The Taskforce on Climate-Related Financial Disclosure (TCFD) has supported voluntary and consistent climate-related financial risk disclosures worldwide since 2015. It is conceivable that governments will choose to use the TCFD recommendations to mandate such risk disclosures in the future. More recently, the Network for Greening the Financial System (NGFS) held its inaugural meeting in January 2018 to support central bank collaboration on these issues. The Federal Reserve is currently free riding on the central banks that have already joined the NGFS and have committed to addressing climate-related issues that, without a doubt, are going to adversely impact financial markets and institutions. To successfully address the climate challenge and accelerate the low-carbon transition, all central banks and other financial regulatory authorities will have to focus on innovation in the areas of data collection and risk management. For purposes of improving the disclosure of material information, the central banks may choose to collaborate also with the TCFD.

While these climate-related initiatives to safeguard the financial system are relatively new, international central bank collaboration to support financial system stability dates back to 1930 when the Bank for International Settlements (BIS) was established. The Basel Process for setting international bank capital requirements was initiated in the mid-1970s and the Financial Stability Institute was created in 1998 to support the international coordination of bank regulatory standards and facilitate communication and cooperation among central bankers. Thus, the recent efforts to address climate change mitigation and adaptation from a financial system perspective are not taking place in a regulatory vacuum. However, Fabris (2018) points out that the new global challenges will require much more international central bank coordination in the future. If the Federal Reserve were to join the emerging central bank collaboration to address the climate challenge, the United States would be in a position to ensure that its interests with respect to information flow and risk management were represented. Climate change is a global problem affecting a global financial system. While the design of effective solutions may vary across individual nations and jurisdictions, collective action must ensure a comprehensive approach that does not allow individual nations to take advantage of the international community.

Concluding Remarks

Timely and effective global climate action is a prerequisite for global financial system stability and for inclusive prosperity in the long term. Currently, market participants and elected officials seem unable to accomplish the required low-carbon transition in the available time. The Federal Reserve, as the central bank

of the United States, could be a powerful catalyst in the low-carbon transition and lead other central banks, fiscal authorities and supervisory agencies by example. Given the magnitude of what is at stake, the Fed must find the will to act, to experiment with new approaches, and to build new coalitions sooner rather than later. Nothing in the Federal Reserve Bank's history prevents it from doing so.

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