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Addressing Climate Change

Does the IMF Have a Role?

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Under Christine Lagarde's leadership, the International Monetary Fund (IMF) has begun to highlight systematically the macroeconomic threats from climate change and the desirable policy responses. In November 2015, Managing Director Lagarde set out a rationale for the Fund's attention to climate change and described a range of areas in which it is engaging (IMF 2015).

The Fund's recognition of climate change as a global concern requiring global responses is by no means new. For example, the April 2008 *World Economic Outlook* devoted a chapter to analyzing the macroeconomic and financial costs of efficient policies for mitigating climate change (IMF 2008). Prior to the Copenhagen Climate Conference (COP15), Carlo Cottarelli, then head of the Fund's Fiscal Affairs Department (FAD), explained the economics of the climate externality and made the case for a "clear, credible, and broad-based carbon pricing strategy . . ." (Cottarelli 2009). This analysis has been the basis for FAD's subsequent important work on the overall costs of fossil fuel subsidies. Most recently, the October 2017 *World Economic Outlook* (IMF 2017) presented research showing that climate change will have an especially big impact on low-income countries—with the median member of this group losing nearly 10 percent of its gross domestic product (GDP) by 2020 under a business-as-usual scenario. These are the very countries that are least able to afford income losses, of course, and they have trivial levels of industrial greenhouse gas (GHG) emissions compared with richer countries. Yet, the fallout from a sharp worsening in their economic conditions will be felt the

world over.

Since the Fund's earliest work on climate change, as financial crises have come and gone, the worrisome effects of anthropogenic climate change have steadily become more visible. Only in December 2015, through the historic agreement by 195 nations at the Paris climate conference (COP21), did solid hope for concerted international action emerge. Now that the Paris Agreement has entered into force (as of November 4, 2016), COP22 and future COPs face the challenge of operationalizing and strengthening the Paris undertakings over time. There remains some controversy, however—outside the Fund and even within—as to the institution's proper role in this ongoing process, one so important for the future of humankind. Here, I wish to make the case that the Fund should play a central role, not only by continuing to highlight the macro-critical aspects of climate change, but by helping countries to adapt and to mitigate in line with their commitments to the community of nations.

I see ten reasons that justify a role for the IMF in addressing climate change:

1. *Mitigating economic coordination failures.* Deep in the Fund's DNA is a desire to avoid collectively suboptimal policies. One immediate rationale for an IMF was to avoid competitive policy practices, which had worsened the Great Depression as countries pursued myopic visions of self-interest at the expense of the global community. The Nash equilibrium of the 1930s included tariffs, exchange restrictions, and competitive currency depreciation—all in the service of a mercantilist pursuit of external surpluses. The IMF's founding Articles of Agreement aimed to steer countries to a collectively superior set of policy choices. Allowing unpriced GHG emissions in pursuit of economic growth, partly at the expense of other countries, may indeed be the *mother of coordination failures*, in that the ultimate macroeconomic costs are very likely cataclysmic if business goes on as usual. The Fund can promote global economic stability by pushing countries to recognize their impact on the global commons, and to act accordingly.
2. *The optimal solution to the coordination failure rests on economic policy.* It is well known that

the lowest-cost means to address climate change is through an appropriate price on emissions, for example, taxes on carbon emissions equal to the social cost of carbon (for an early and crystal clear exposition of the general reasoning, see Solow 1971). The right price is critical not just for static resource allocation; it also provides dynamic optimal incentives for development of clean alternative energy sources. The Fund has already taken a leading role in pointing to the fiscal costs of fossil fuel *subsidies* and pushing for their phased elimination. But in its routine promotion of *smart* fiscal policies that protect public balance sheets while protecting growth, the Fund has a role in pointing out the positive spillovers and *spillbacks*—the feedback effect on oneself owing to the spillover effect—on growth from rational carbon pricing. The Fund's analysis of the short-run domestic macroeconomic impacts of such policies, alluded to earlier, can help governments evaluate the intertemporal trade-offs that carbon pricing involves.

3. *Because emissions abatement is costly and poorer countries will feel those costs more intensely, some resource flows to aid their efforts are appropriate to support global cooperation in reaching a more efficient allocation.* For this reason, developed countries have committed to provide developing countries with $100 billion per year by 2020 to promote emissions mitigation and climate change adaptation. And it is in their long-run interest to do so. This flow of resources, however, will impact balance of payments, investment, and production patterns.

4. *Climate change is a potent source of economic shocks.* Examples abound already. We have seen droughts with negative macroeconomic impacts from the American Pacific Rim to Morocco to Ethiopia. Extreme weather events, such as hurricanes, may now be more intense due to climate change. Ocean level rise threatens low-lying regions from Florida to Bangladesh. Ocean warming and acidification threaten the destruction of coral reefs, fish supply extinctions, waterborne disease proliferation, and frozen seabed methane release as detailed in a recent report from the International Union for Conservation of Nature (IUCN 2016). In general, recent economic research underscores how economic

productivity begins to decline as temperatures rise beyond annual averages of about 13°C (see the work by Burke, Hsiang, and Miguel 2015, extended in IMF 2017). Earlier work by Burke et al. documented how rising temperatures systematically exacerbate human conflict (Burke, Hsiang, and Miguel 2013). Naturally, all these costs fall most heavily on poorer countries, as noted above, but richer countries are far from immune. Climate change has the potential to trigger mass migrations out of stricken poor countries with potent spillovers for the rich.

5. *In line with Sustainable Development Goal targets, adaptation to climate change is critical for macroeconomic resilience.* The Fund can play a role in assessing these efforts and their macro consequences. To promote the integration of climate and energy issues into its regular Article IV surveillance, the Fund established pilot programs in nearly twenty countries ranging from Angola to the United States. While primarily concerned with issues around carbon pricing and fiscal consequences, the pilots also touched on vulnerability analysis and adaptation. The Fund also has ongoing work on small states' resilience to natural disasters and climate change.

6. *Aside from the direct effects of GHG emissions on global temperatures, emission reduction yields co-benefits for health.* These have major direct implications for welfare and labor productivity, as well as for public budgets, and certainly influence the domestically efficient carbon price. For an analysis of co-benefits from the Fund, see Parry, Veung, and Heine (2014).

7. *Low global investment is a drag on aggregate demand.* Investments in new green technologies, as well as in adaptation, can lift demand in an environment of tepid global growth. Morocco's investments in wind parks and solar plants, which are planned to raise its renewable share of energy production to 42 percent by 2020 and 52 percent by 2030, are a case in point.

8. *For such investments, passing the cost-benefit test depends on a discount rate that reflects macroeconomic phenomena.* In general, the discount rate for risk-free investments will

depend on expected future economic growth as well as stochastic elements. But climate investments pay off most strongly through avoidance of disasters, such as those related to tipping points—and the nature of the appropriate discount rate therefore is more complex. But this again is a macroeconomic issue (as illustrated by Christian Gollier's contribution in chapter 3 of this volume), and thus is within the legitimate purview of the IMF's analytical work.

9. *Climate risks imply financial stability risks, and finance for green investment faces market obstacles.* Bank of England Governor Mark Carney famously raised the question of stranded assets in a 2015 speech—and was roundly criticized for overstepping his remit. But he was right. It is legitimate to ask if asset prices fully incorporate such risks, or if other financial contracts such as insurance contracts are appropriately priced. And the answers have implications for investment strategies, as explained, for example, by Andersson, Bolton, and Samama (2016). Jean Boissinot and Frédéric Samama discuss some of these issues in chapter 12 of this volume as well as mobilization strategies for green finance.

10. *Monitoring the nationally determined contributions* (*NDCs*). Only the IMF carries out annual economic health checkups—the Article IV consultations—for 189 countries. These missions would therefore provide a unique opportunity to monitor and publicize progress toward meeting the Paris mitigation commitments (the nationally determined contributions, or NDCs). This scrutiny could occur alongside other elements of climate and energy policy already incorporated in the pilot programs the Fund has already successfully mounted. Such surveillance is squarely within the Fund's remit, as success in meeting and strengthening the NDCs is surely of macro-critical importance.

Even if one accepts only a subset of the preceding answers, the case for IMF involvement in addressing climate change is powerful. If one accepts most or all of them, the case is, to my mind, overwhelming.

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