Building resilience to natural disasters: An application to small developing states

Ricardo Marto, Chris Papageorgiou, Vladimir Klyuev

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Building Resilience to Natural Disasters: An Application to Small Developing States*

Ricardo Marto† University of Pennsylvania

Chris Papageorgiou‡ IMF

Vladimir Klyuev‡ IMF

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Abstract

We present a dynamic small open economy model to explore the macroeconomic impact of a major natural disaster. In addition to permanent damages to public and private capital, the disaster causes temporary losses of productivity, inefficiencies during the reconstruction process, and damages to the sovereign's creditworthiness. We use the model to study the debt sustainability concerns that arise from the need to fully rebuild public infrastructure over the medium term and analyze the feasibility of *ex ante* policies, such as building adaptation infrastructure and fiscal buffers, and contrast these policies with the post-disaster support provided by donors. Investing in resilient infrastructure may prove useful, in particular if it is viewed as complementary to standard infrastructure, because it raises the marginal product of private capital, crowding in private investment, while helping withstand the impact of the natural disaster. In an application to Vanuatu, we find that donors should provide an additional 50% of pre-cyclone GDP in grants to be spent over the following 15 years to ensure public debt remains sustainable following Cyclone Pam. Helping the government build resilience on the other hand, reduces the risk of debt distress and at lower cost for donors.

Keywords: Natural Disasters, Resilience, Adaptation, Debt Sustainability, Small States

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†Department of Economics, University of Pennsylvania. Email address: rmarto@sas.upenn.edu.

‡International Monetary Fund, 700 19th Street, N.W., Washington, D.C., 20431. Email addresses: cpapageorgiou@imf.org, vklyuev@imf.org.