Building portfolios of sovereign securities with decreasing carbon footprints

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Summary  
Focus  
We propose a strategy to build a "net zero" portfolio of sovereign securities that delivers progressively declining carbon footprints. Passive investors could use it as a new benchmark that is consistent with the Paris Climate Accords while keeping the portfolio's financial characteristics as close as possible to a business-as-usual benchmark.  
Contribution  
Our research is among the first to propose a decarbonisation strategy for sovereign securities portfolios. It is easy to implement and suitable for passive investors given the limited impact on the net zero portfolio's financial performance. However, it is a powerful tool to encourage sovereign governments to keep up their commitments in the Paris Climate Accords because of potentially large weight shifts for sovereign issuers after portfolio rebalancing relative to the business-as-usual benchmark.  
Findings  
Our strategy rewards sovereign issuers that have made stronger efforts to reduce the carbon intensity of economic activity in their jurisdiction, measured by total domestic emissions per capita. The net zero portfolio we propose could reduce carbon intensity by 41% between 2014 and 2019 without affecting the portfolio's financial performance. The reduction in carbon intensity is achieved by assigning higher weights to countries with lower carbon emissions. Among advanced economies, portfolio rebalancing increases the shares of France, Italy and Spain while reducing that of the United States. Among emerging market economies, the weights of Chile, the Philippines and Romania would increase at the expense of China. Even when changes in country weights in the net zero portfolio are capped, the portfolio can still achieve a 30% cumulative reduction in carbon intensity, much higher than the business-as-usual benchmark could achieve (14%).  
  
Abstract  
We propose a strategy to build portfolios of sovereign securities with progressively declining carbon footprints. Passive investors could use it as a new Paris-consistent benchmark to construct a "net zero" (NZ) portfolio while tracking closely the risk-adjusted returns of a business-as-usual (BAU) benchmark. Our strategy rewards sovereign issuers that have made stronger efforts in reducing carbon intensity, measured by total domestic emissions per capita. The NZ portfolio would have reduced carbon intensity by 41% between 2014 and 2019, by assigning higher weights to countries that have had lower carbon emissions. Among advanced economies, rebalancing leads to raising shares of France, Italy and Spain in the portfolio at the expense of the United States. And among emerging market economies, this leads to higher shares for Chile, the Philippines and Romania at the expense of China. Importantly, the NZ portfolio retains the same creditworthiness as the BAU benchmark without entailing materially higher foreign exchange risks.  
JEL classification: G11, G24, Q56.   
Keywords: carbon footprints, sovereign debt, portfolio rebalancing, portfolio optimisation, active share, tracking error.