Climate change transition risk impacts sovereign bond markets

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With ESG and climate change increasingly front of mind for global investors in all asset classes, a new study from University of Technology Sydney (UTS), Ardea Investment Management and Fortlake Asset Management drills down and challenges the argument that climate change is not being factored into sovereign bond markets, bond yields and spreads. As Dr. Laura Ryan, head of research at Ardea says: 'finally, with this research, governments and investors in sovereign bond markets will have a transparent and easily replicable way to evaluate climate change transition risk in relation to sovereign bond yields (and spreads) in the future.'

The research paper notes that existing studies have focused on the physical risk of climate change and that, until now, there has been relatively little research on climate change transition risk and its impact on sovereign borrowers.

Climate transition risks arise during a country's process of adjustment towards a green economy. This new research looks at the pace of climate change transition risk using risk variables which can be mapped to specific SDGs – carbon dioxide emissions, natural resources rents and renewable energy consumption (UN SDG Goals 13, 12,7). These variables highlight the ways in which a country can influence how investors analyse creditworthiness through appropriate climate strategy and policy. As Dr Kylie-Anne Richards, Deputy CIO and Chair of ESG Fortlake Asset Management notes: 'these transition risks have an immediate impact and can shape the formulation of climate policy.'

Since sovereign bond markets are the benchmark from which every other asset class is priced, as well as a safe-haven asset and provider of liquidity to the banking sector and governments, the global financial system is highly dependent on them to function well.

According to the paper, climate transition risk has two avenues which can impact yields – directly through risk factors and indirectly through macro-economic variables such as GDP. Investors will penalise developed countries with poor prospects of transitioning away from fossil fuels and they will gauge the impact on a country's future GDP if their economy relies on declining industries.

The study found that carbon dioxide emissions are positively correlated with sovereign yields and spreads for both developed and developing countries – with reduced emissions translating into a lower cost of sovereign debt. Perhaps not surprisingly, renewable energy consumption also resulted in a lower borrowing cost for developed countries.

However, developing countries which are highly dependent on natural resources are also associated with lower sovereign borrowing costs. A possible reason for this is that the cost of transition is high for developing countries which are forced to rely on uncertain support from other nations for their climate mitigation and so investors may focus instead on short-term factors such as a developing country's ability to repay debt and the fact that the profits from high natural resource rents may be higher than the uncertain payoff of transition.

Laura Ryan comments that:

> *'while it is unlikely that institutional investors (such as insurance companies) will completely exclude countries performing poorly in terms of climate transition as their investment guidelines may require investment in government bonds, other investors may trim exposures.'*

She also points out that the Guidance from the UN Principles for Responsible Investing (UNPRI) advises that it is more effective for investors to engage with issuers to highlight their need to take climate mitigation measures and that if investors divest completely, they will 'lose a seat at the table.'

The authors' theses are tested using 10-year bond data from 23 developed countries and 16 developing countries from 2000 to 2019 with macro-economic and liquidity variables (the traditional determinants of bond yields) used to control for domestic specific factors and to filter endogenous issues.

As the table at the end of this piece illustrates, developed countries will see a 0.26 percentage point rise in yields for an increase of 1 percentage point in carbon emissions and a 0.59 percent rise in bond yields for a 1 percent rise in natural resources rent profits. Conversely, a similar gain in renewable energy consumption will result in a drop of 0.008 percentage points in yield.

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As alluded to above, the results are less clear cut for developing economies. While yields will rise when carbon emissions increase, they will fall when earnings from natural resources rise and, perversely, yields will also rise when renewable energy consumption increases – indicating that investors in developing countries' debt prioritise the pursuit of economic growth and profits from natural resources to climate transition goals.

The study suggests that the difference between the correlations of the two (developed and developing) groups implies that climate transition efforts will be more significant in determining sovereign yield spreads of developed countries than for developing countries.

However, Dr Christina Sklibosios, a senior academic at UTS highlights:

'a notable exception is Australia, which is heavily reliant on the fossil fuel industry and a leader in coal production. There, natural resources rents display a negative relationship with 10-year bond yields in contrast with almost all other developed nations, where there is an expected positive correlation of natural resources rents with yields'

The evidence presented in the research paper has clear implications for policymakers, as looking into the future, governments which perform poorly in managing their climate change transition may encounter pricing or liquidity issues. Accordingly, the findings in the paper give sovereign bond market participants a clear case to request greater government transparency in specific climate risk, strategy and policy which impact the bonds they issue.

Sovereign Bond Yields/Spreads and Climate Change Transition Risk – Developed Countries

The table reports the estimation results of the panel fixed effects regressions (1) and (2) between the sovereign bond yields and spreads, respectively, and the climate change transition indicators for the group of the developed countries. Country fixed effects and year fixed effects have been used in all regressions. Standard errors are displayed in parentheses; $p < 0.1$*, $p < 0.05$**, $p < 0.01$***.

Dependent variable	Sovereign bond yields				Sovereign bond yield spreads			
	1	2	3	4	1	2	3	4
Carbon dioxide emissions	0.261***	0.267***			0.283**	0.246***		
	(0.091)	(0.072)			(0.119)	(0.087)		
Natural resources rents	0.589**		0.74**		1.23***		1.345***	
	(0.258)		(0.257)		(0.269)		(0.267)	
Renewable energy consumption	-0.008			-0.069**	0.04			-0.041
	(0.036)			(0.029)	(0.040)			(0.030)
GDP per capita	-5.395***	-5.555***	-5.58***	-5.294***	-2.437***	-2.358***	-2.349***	-2.196***
	(0.416)	(0.330)	(0.356)	(0.392)	(0.436)	(0.349)	(0.366)	(0.413)
Real GDP growth	-0.052**	-0.057**	-0.048**	-0.05**	-0.107***	-0.116***	-0.104***	-0.106***
	(0.023)	(0.023)	(0.024)	(0.023)	(0.024)	(0.024)	(0.024)	(0.025)
Inflation	0.124***	0.134**	0.123**	0.121***	0.255***	0.27***	0.244***	0.265***
	(0.045)	(0.043)	(0.045)	(0.044)	(0.047)	(0.046)	(0.046)	(0.047)
Debt-to-GDP	0.016**	0.014**	0.009**	0.012**	0.033***	0.032***	0.029***	0.03***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)
Trade openness	-1.048	-0.802	-1.021	-0.625	-0.944	-0.522	-0.92	-0.514
	(0.682)	(0.642)	(0.687)	(0.654)	(0.709)	(0.688)	(0.710)	(0.698)
Current account balance	0.016	0.004	-0.003	0.015	-0.014	-0.011	-0.026	0
	(0.024)	(0.021)	(0.023)	(0.022)	(0.024)	(0.022)	(0.023)	(0.023)
R^2	0.589	0.630	0.581	0.613	0.349	0.335	0.339	0.318
Adj. R^2	0.552	0.601	0.547	0.583	0.290	0.283	0.285	0.263

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