

Appendix

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Related Literature

- **Well-established literature on determinants of price of sovereign risk**
 - Domestic macroeconomic fundamentals/fundamentals contagion/financial integration (e.g., Edwards, 1984; Beirne and Fratzscher, 2013; Aizenman, Hutchison, and Jinjark, 2013)
- **Range of channels through which cost of sovereign borrowing may be affected by climate change**
 - Depletion of natural capital, and implications for fiscal sustainability and the price of sovereign risk (e.g., Pinzón et al. 2020)
 - Fiscal impact of climate-related natural disasters (e.g., Schuler et al. 2019)
 - Fiscal consequences of adaptation and mitigation policies for climate change (e.g., Bachner, Bednar-Friedl, and Knittel 2019)

Overview of Variables Used in the Empirical Analysis

Variable	Data Source	Definition
Sovereign bond yield	Bloomberg	10-year government bond yield.
Vulnerability	ND-GAIN and Kling et al. (2020)	The refined vulnerability measure by Kling et al. (2020) comprises all of the components from the ND-GAIN vulnerability index that are not highly related to economic variables.
Resilience	FTSE Russell	Resilience refers to a country's preparedness and actions to cope with climate change.
Current account/GDP	OECD and CEIC	The current account balance to GDP ratio.
GDP per capita	The World Bank	Real GDP per capita at constant 2010 US\$.
Public debt/GDP	IMF International Financial Statistics	The public debt as a share of GDP, defined as general government gross debt to GDP ratio.
Fiscal balance/GDP	IMF International Financial Statistics	The fiscal balance as a share of GDP, defined as cyclically adjusted primary balance to GDP ratio.
GDP growth	OECD and CEIC	The real GDP growth rate.
Crisis	Laeven and Valencia (2018)	The Laeven and Valencia (2018) indicator for the incidence of a crisis event for each country in the sample.
US bond yield	Bloomberg	US 10-year government bond yield.
VIX	Bloomberg	VIX stands for the Chicago Board Options Exchange (CBOE) Volatility Index, a measure of global risk aversion.

Measures for Climate Vulnerability

Sector	Indicators
Food	Projected change of cereal yields Projected population change Food import dependency
Water	Projected change of annual runoff Projected change of annual groundwater recharge Fresh water withdrawal rate Water dependency ratio
Health	Projected change of deaths from climate-induced diseases Projected change in vector-borne diseases
Ecosystems	Projected change of biome distribution Projected change of marine biodiversity Ecological footprint Protected biome Engagement in international environmental conventions
Habitat	Projected change of warm periods Projected change of flood hazard
Infrastructure	Projected change of hydropower generation capacity Projected change of sea level rise impacts Dependency on imported energy Population living less than 5m above sea level

Source: Compiled by authors drawing from Kling et al. (2020).

Resilience Index

Sub-Index	Indicators
Institutional	Intended country C02 emissions in 2030
	Government effectiveness
	Disaster preparedness index
	External debt as % of GDP
Social	Fuel subsidies
	GINI index
	Human Development Index
	Voice and accountability
	People using sanitation services (% of population)
	Access to electricity (% of population)
Economic	Country CDP performance ratio
	Insurance penetration index
	R&D expenses
	Logistics performance index
	Doing business
	Country green bonds performance ratio
	Water productivity
	Agricultural adaptive capacity
Ecological	Annual freshwater withdrawals
	Share of protected areas
	Share of biodiversity threatened
	Biodiversity stock
	Afforestation rate

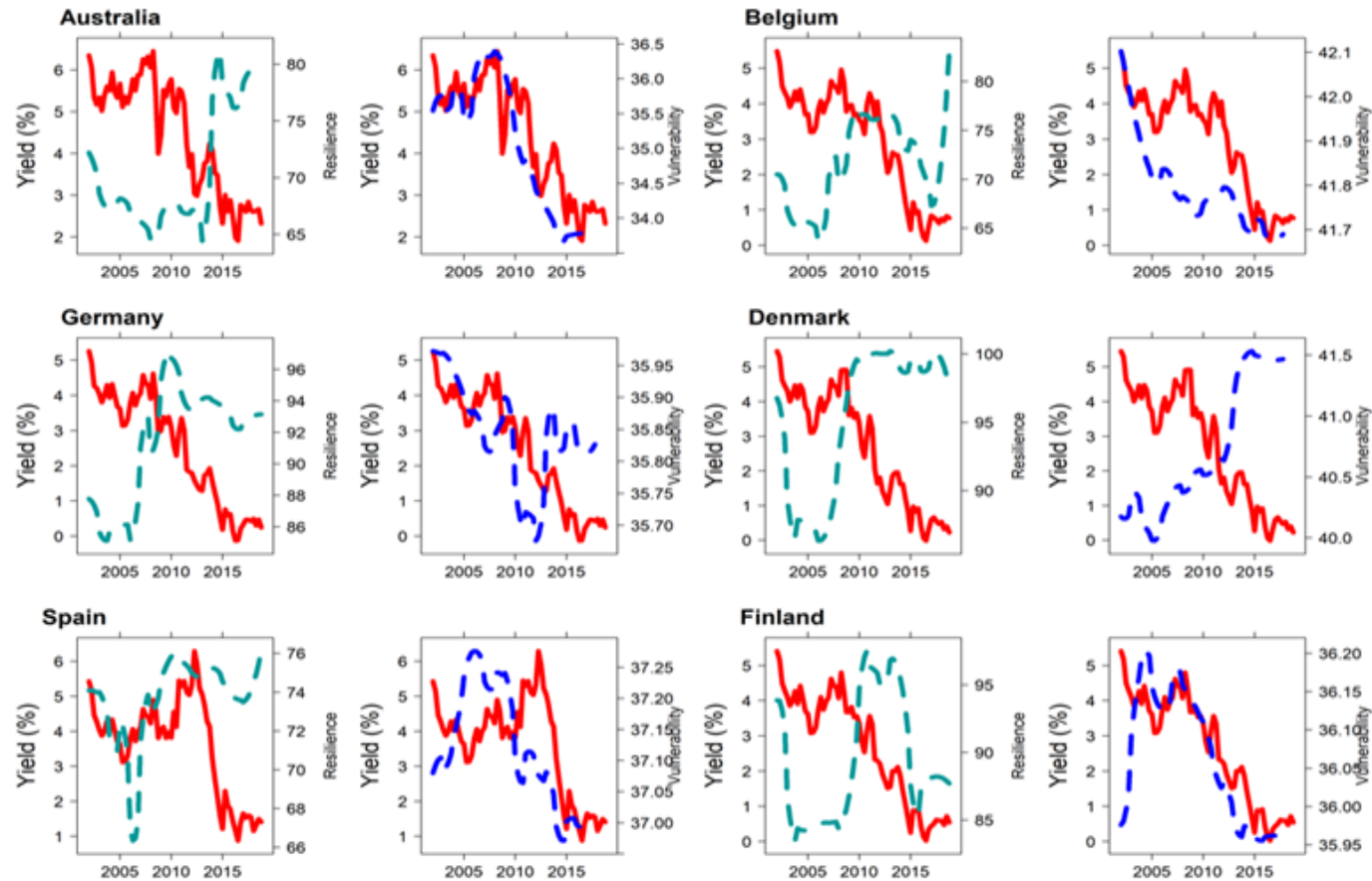
Source: Compiled by authors using data from FTSE Russell.

Physical Risk and Transition Risk Indices

Index	Components
Physical Risk Index	Death caused by climate extremes Sensitivity of agriculture Sea-level rise exposure
Transition Risk Index	Territorial distance to reach compliant emissions target of 2°C by 2050 Greenhouse gas emissions gap between trend and distance to target

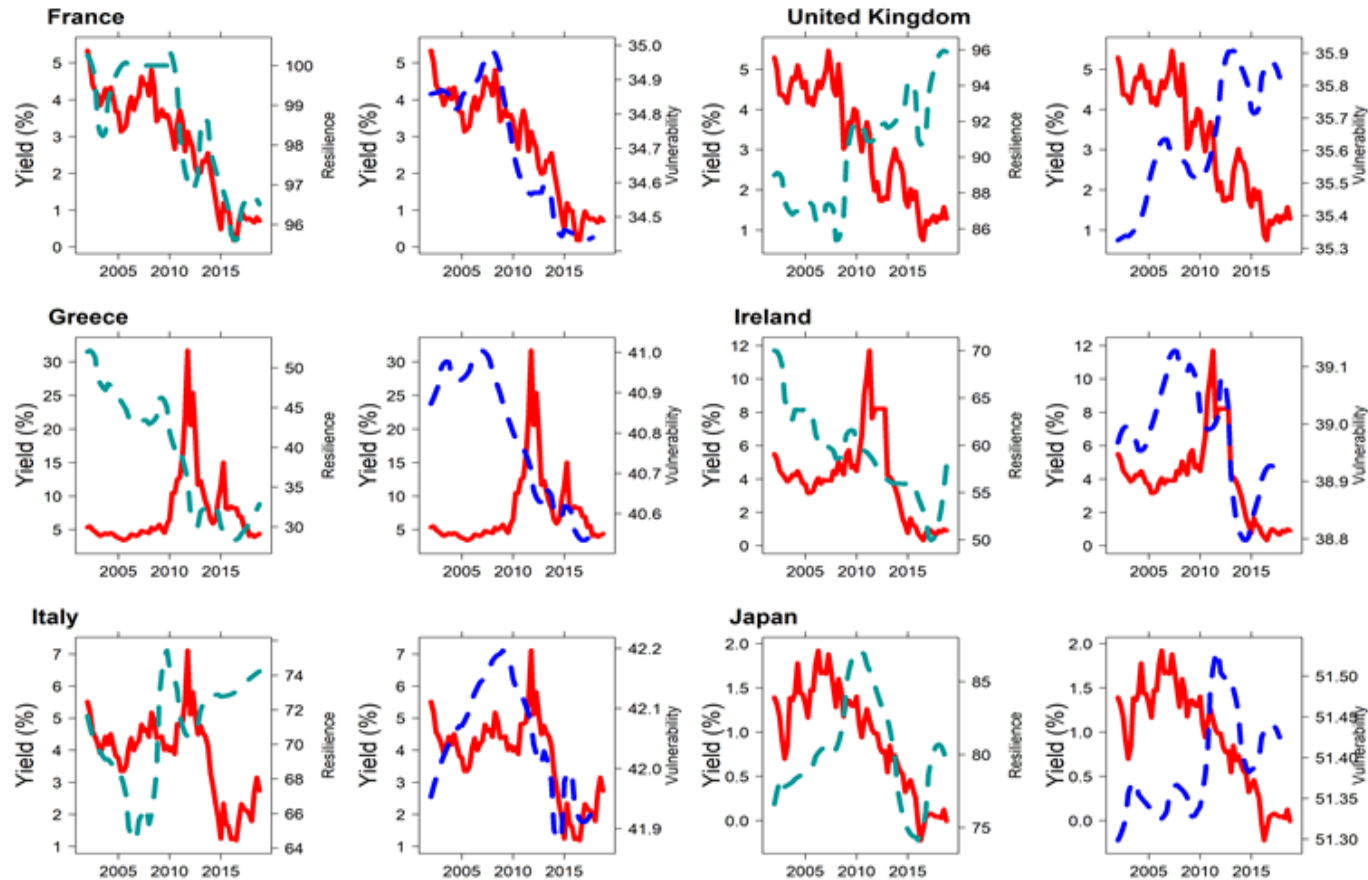
Source: Compiled by authors using data from FTSE Russell.

Sovereign Bond Yield and Climate Risk: Advanced Economies



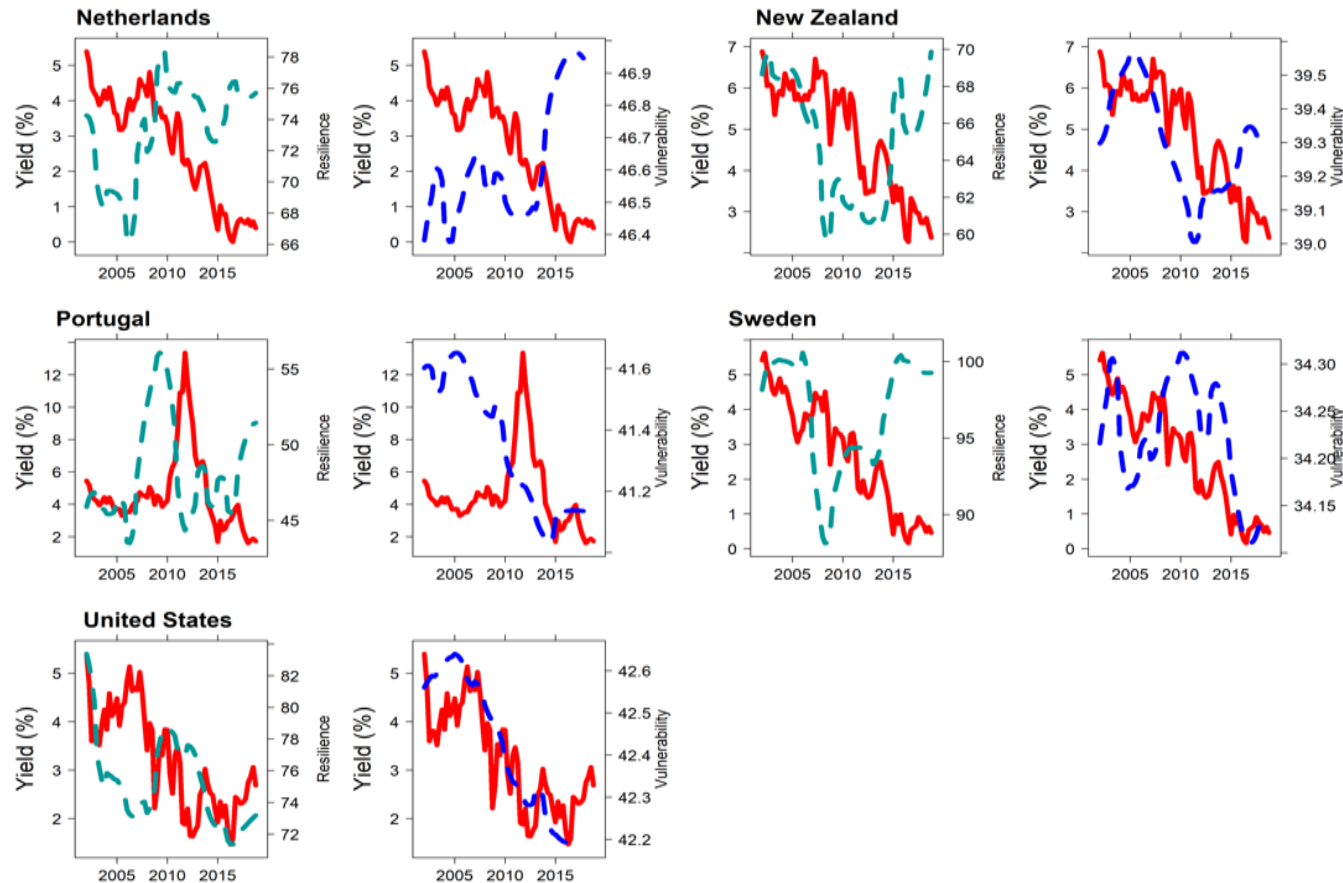
Note: Red line represents government bond yield in percentage. Blue dashed line represents vulnerability. Dark green dashed line represents resilience.

Sovereign Bond Yield and Climate Risk: Advanced Economies



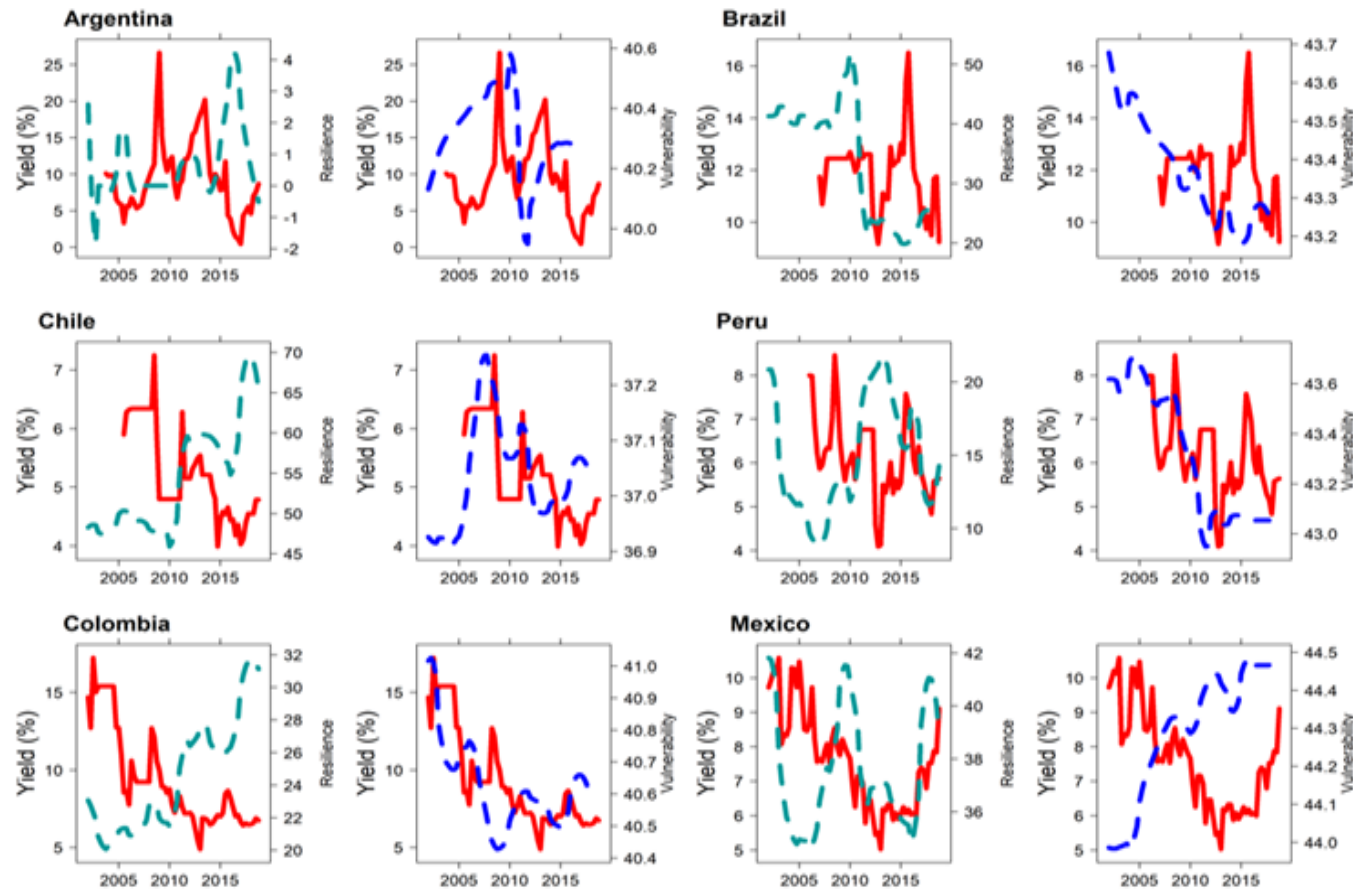
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Sovereign Bond Yield and Climate Risk: Advanced Economies



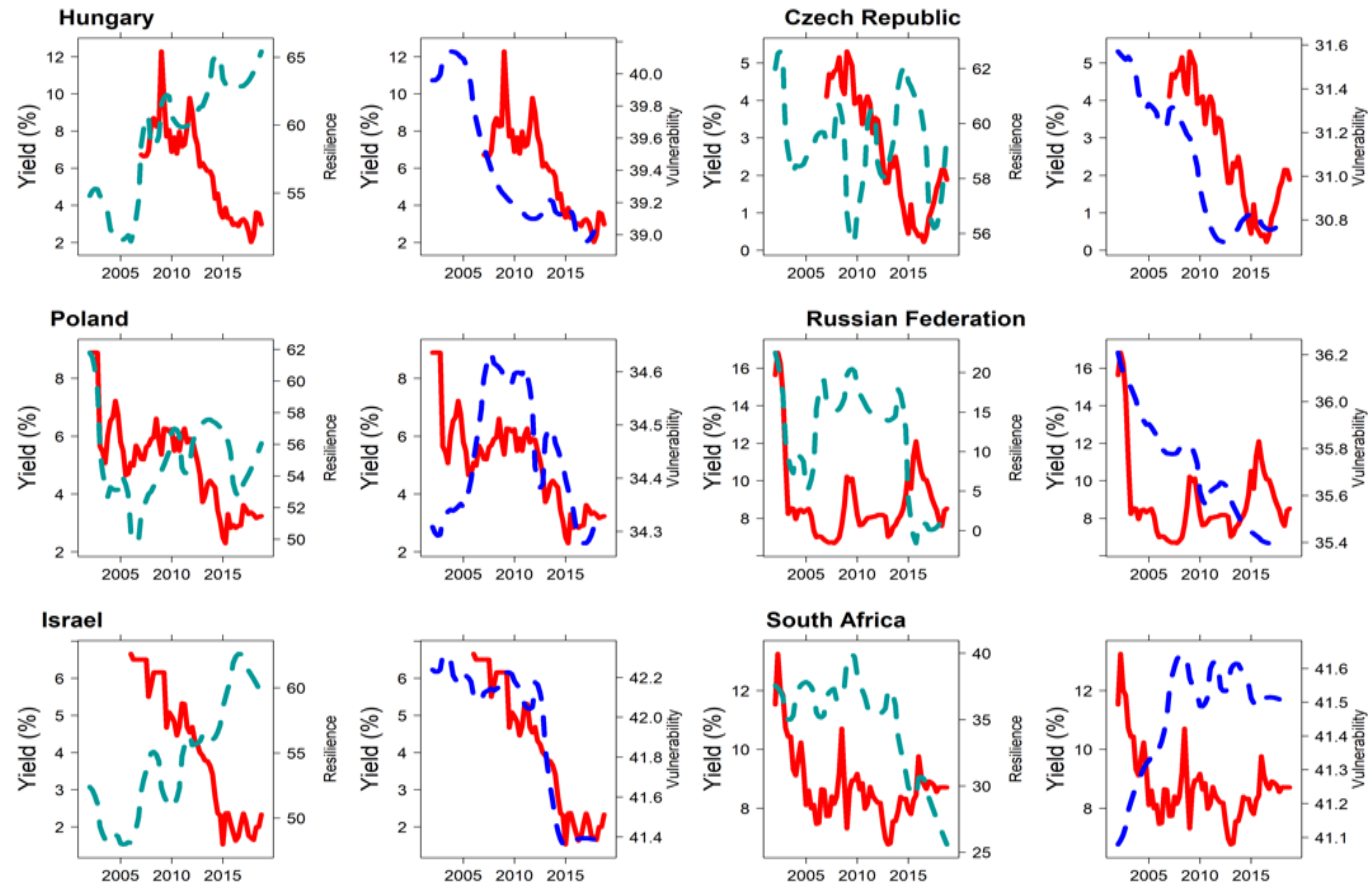
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Sovereign Bond Yield and Climate Risk: Emerging Economies



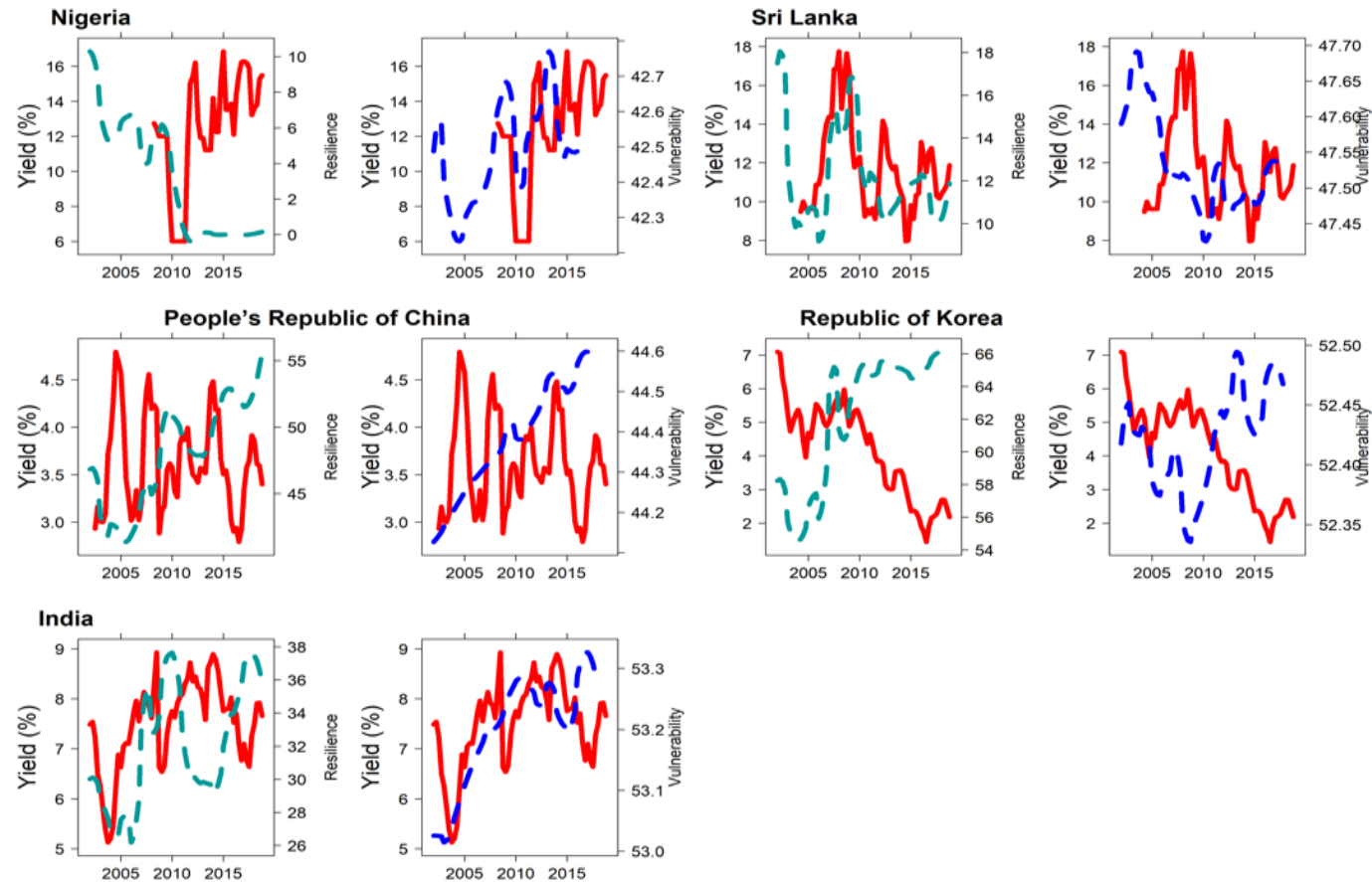
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Sovereign Bond Yield and Climate Risk: Emerging Economies



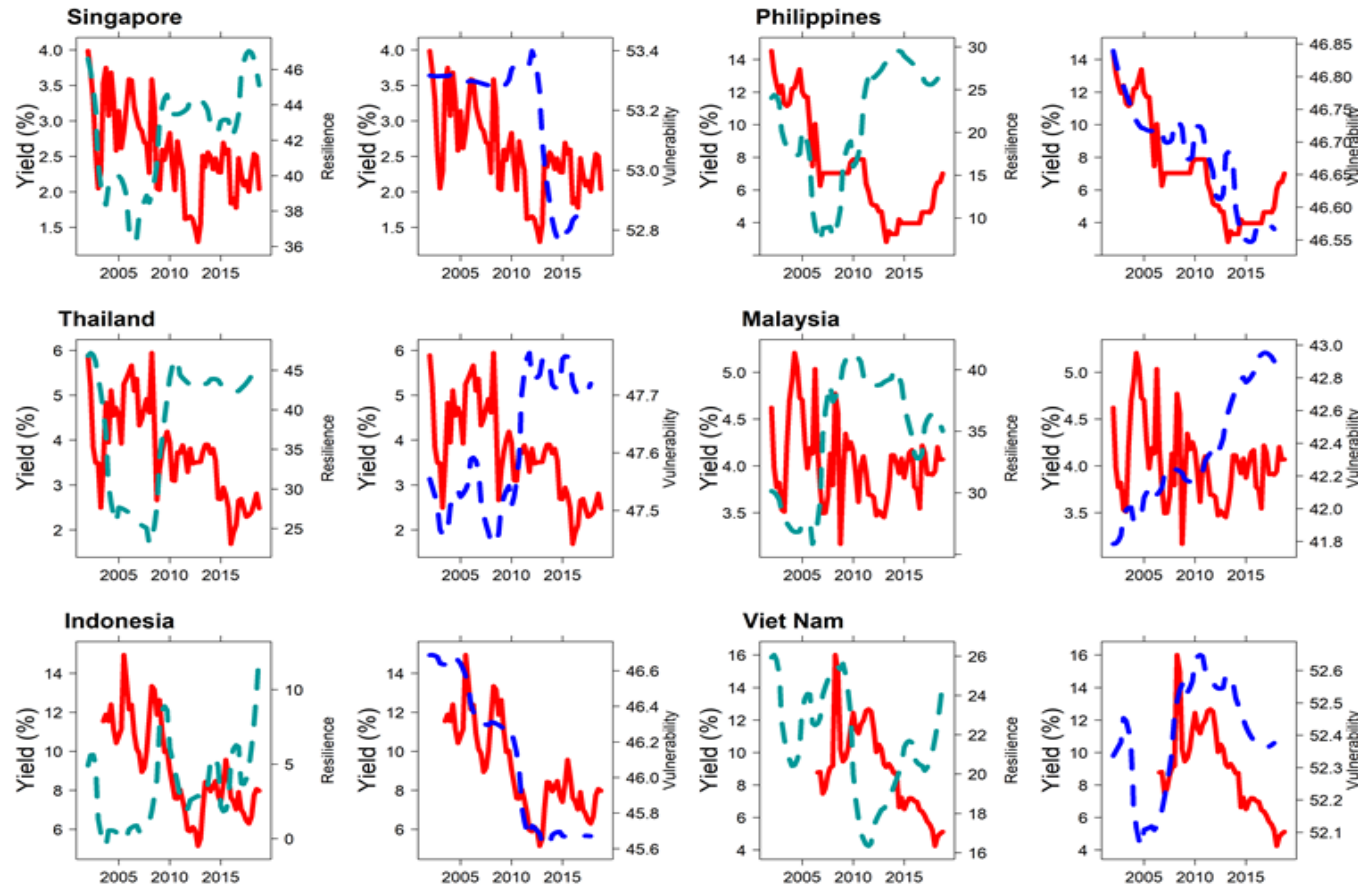
Note: Red line represents government bond yield in percentage. Blue dashed line represents vulnerability. Dark green dashed line represents resilience.

Sovereign Bond Yield and Climate Risk: Emerging Economies



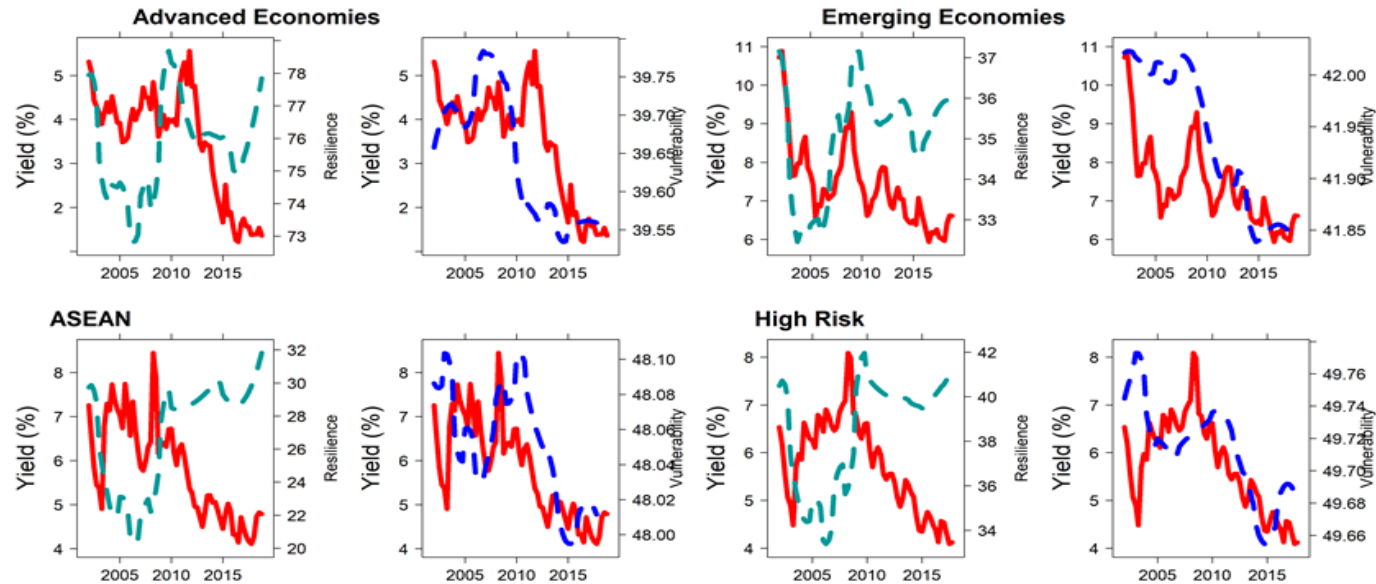
Note: Red line represents government bond yield in percentage. Blue dashed line represents vulnerability. Dark green dashed line represents resilience.

Sovereign Bond Yield and Climate Risk: ASEAN Countries



Note: **Red** line represents government bond yield in percentage. **Blue** dashed line represents vulnerability. **Dark green** dashed line represents resilience.

Sovereign Bond Yield and Climate Risk: Regions



Note: **Red** line represents government bond yield in percentage. **Blue** dashed line represents vulnerability. **Dark green** dashed line represents resilience.