Programme

"Nature, Finance and the Macroeconomy: Risks, Impacts and Feedback effects"

Venue: Asia School of Business, Kuala Lumpur

Thursday, 19 October 2023

09:30 – 10:00
Arrival and registration

10:00 – 10:30
Welcome and introductory remarks

10:30 - 11:00
Keynote speech by Dr Norhana Endut, Assistant Governor, Bank Negara Malaysia

11:00 – 12:00
Session 1: Supervising financial risks

> From Skies to Markets: Exploring the Macroeconomic and Financial Implications of Extreme Weather Events in Central Eastern and South-Eastern European Countries
> *Meri Papavangjeli, Bank of Albania*
>
> Biodiversity-related Financial Risks – why it matters and how can we measure them? Case study of Georgia
> *Elene Nikuradze, National Bank of Georgia*

12:00 – 13:30
Lunch

13:30 – 14:30
Session 2: Understanding macrofinancial implications

Assessing nature-related financial risks at global and national scales: moving from dependencies to scenarios and risk
Nicola Ranger, University of Oxford

The Role of Macroprudential Policies under Carbon Pricing
Maria Theresa Punzi, Singapore Management University

14:30 –15:00
Break

15:00 – 16:00
Session 3: Pricing nature loss and disaster resilience

Nature Loss and Sovereign Credit Ratings
Patrycia Klusak, University of East Anglia and Cambridge University

Nature as a Defense from Disasters: Natural Capital and Municipal Bond Yields
Claudio Rizzi, IESE Business School (tentative)

16:00 – 16:30
Day 1 recap and closing remarks

Friday, 20 October 2023

11.00 – 11:30
Arrival

11:30 – 13:00
Session 4: Improving financial governance

Leakage in the Common Ground: How Misalignment in Sustainable Finance Taxonomies Impacts Cross-Border Capital Flows
Keith Jin Deng Chan, Hong Kong University of Science and Technology (tentative)

Charting the Path to Sustainability: An Overview of Sustainable Financial Regulations and Central Bank Activities in 2023
Siti Kholifatul Rizkiah, WWF Malaysia (tentative)

The greening of central banks through a Chinese mirror: The politics of the People's Bank of China's environmental turn
Monica DiLeo, University of Queensland (tentative)

13:00 – 14:30
Lunch

14:30 – 15:00
Session 5: Harnessing economic opportunities

Malaysia's New Voluntary Carbon Market: Origins, Ecosystem and Prospects
Pieter Stek, Asia School of Business (tentative)

Towards a nature-positive Malaysia: Assessing the vulnerability and resilience of Malaysian corporates towards nature-related risks
Fatin Zani, WWF Malaysia

15:00 – 15:30
Break

15:30 - 16:30
Session 6: Mobilising Finance

Biodiversity Finance
Thomas Giroux, CREST (tentative)

Devising Natural Capital Finance
Jose Luis Resendiz, University of Oxford (tentative)

16:30 - 17:30
Keynote Presentation by Prof. Allan Hsiao, Princeton University

17:30 - 18:00
Closing remarks

Paper Abstracts

Session 1: Supervising Financial Risks

From Skies to Markets: Exploring the Macroeconomic and Financial Implications of Extreme Weather Events in Central Eastern and South-Eastern European Countries

Meri Papavangjeli, Bank of Albania

This study explores the financial and macroeconomic implications of extreme weather events on Central Eastern and South-Eastern European countries. As climate change increases the frequency and severity of these events, it is crucial to understand their impact on economic growth, price levels, and financial stability. Using panel autoregressive vector analysis, our research analyses data from 2000-2022, highlighting the significant role weather conditions play in influencing these critical macroeconomic and financial facets. Notably, we find a significant contraction in GDP, increased vulnerability in financial systems, and inflationary pressures following extreme weather events. Our findings underscore the need for central banks and financial regulators to incorporate climate-related risks into their monetary and financial stability frameworks. By exploring the state of climate and biodiversity finance, this paper provides insights into how these tools can aid in transitioning to a low-carbon economy and promote the protection of ecosystems, species, and genetic diversity. This study ultimately seeks to empower decision-makers to proactively address these challenges and foster more resilient and sustainable economies.

Biodiversity-related Financial Risks – why it matters and how can we measure them? Case study of Georgia

Elene Nikuradze, National Bank of Georgia

The potential consequences of biodiversity and ecosystem services loss can have a significant impact on the stability of economies and financial systems. The following research paper contributes to a growing body of literature that seeks to analyze the connections between biodiversity loss and financial stability. The study focuses on the assessment of biodiversity-related financial risks (BRFR) in Georgia and provides quantitative estimates of the dependencies and impacts of the financial system on biodiversity and ecosystem services. The findings reveal that around 46 percent of Georgian commercial banks' lending portfolio to legal entities could be exposed to biodiversity-related physical risk, being moderately or highly/very highly dependent on one or more ecosystem services. Additionally,

around 54 percent of Georgian banks' business lending portfolio could be exposed to sectors that strongly impact ecosystem services and, thus, may face a high transition risk.

Session 2: Understanding macrofinancial implications

Assessing nature-related financial risks at global and national scales: moving from dependencies to scenarios and risk

Nicola Ranger, University of Oxford

The majority of nature-related financial risk assessments to-date have relied upon dependency analysis between ecosystem services and economic sectors. While important, dependencies do not equate to risk and we argue that such analyses could lead to misdiagnosis of the key nature related risks to an economy and financial system both nationally and globally. We go back to the literature and existing frameworks from risk analysis and suggest a new approach that captures risk that is consistent with best practice in both science and prudential policy. We then aim to populate this new framework using globally available datasets of key risk component to provide a globally consistent analysis of risk suitable for informing nature scenario and risk analyses. We assess the challenges and opportunities given the status of data now and becoming available from the scientific community. We then present clustering analysis based upon a machine learning approach to demonstrate groupings of countries in terms of their key nature financial risk characteristics, and show how this can be used by Central Banks and financial institutions.

The Role of Macroprudential Policies under Carbon Pricing

Maria Theresa Punzi, Singapore Management University

This paper analyzes the effectiveness of macroprudential policy on macro-financial fluctuations when the government enforces carbon pricing to reduce carbon emissions and to achieve the target of net-zero. A carbon tax policy alone can reduce carbon emissions by the 2030, but at the cost of a deep and prolonged recession, with consequential financial instability due to higher probability of default on entrepreneurs in the brown sector. This result suggests that carbon pricing should be coupled with complimentary policies, such as macroprudential policy. In particular, the paper shows that the "one-for-one" prudential capital requirements on fossil fuel financing can be effective in reducing default and moving to a greener economy.

Session 3: Pricing nature loss and disaster resilience

Nature Loss and Sovereign Credit Ratings

Patrycia Klusak, University of East Anglia and Cambridge University

Diversity of life on earth which has been a shaped by over three billion years of evolution is under threat due to rapidly expanding human population, environmental degradation and climate change, and remains one of the biggest challenges we face as a society. Although importance of ecosystems has been long debated in the science community only recently has there been a recognition that biodiversity and nature-related risks pose substantial challenges for the global financial system. However, whilst scientific advances enable us to document various dimensions of environmental degradation in ever greater detail, the ability to reflect these losses within material financial risk assessments has lagged behind. Here we develop a distinct approach for biodiversity and nature-related risks into assessments of sovereign creditworthiness. We extend the ratings model of from a leading credit rating agency to explicitly incorporate nature and biodiversity related risks under a range of future scenarios. This approach offers a 'forward-look', and is capable of providing insights into the future creditworthiness of nations. We find that hypothetical world of partial collapse of ecosystem services would directly impact the creditworthiness and probability of default of lower rated sovereigns in emerging and developing countries. We estimate the additional costs of borrowing imposed on sovereigns will approximate between $ 28bn - 53$bn.

Nature as a Defense from Disasters: Natural Capital and Municipal Bond Yields

Claudio Rizzi, IESE Business School (tentative)

This paper shows that natural capital loss affects financial markets and municipalities' borrowing costs. Using exogenous variation in wetlands change, I find that a loss in wetland area is related to an increase in municipal bond yields in both primary and secondary markets. Municipal bond markets price nature loss risk following an extreme precipitation event. The effect is more prominent for bonds issued by counties more reliant on local tax revenue, farming communities, revenue bonds, and bonds financing infrastructure projects. The results show one of the costs of natural capital destruction on financial markets and local government's finances.

Session 4: Improving financial governance

Leakage in the Common Ground: How Misalignment in Sustainable Finance Taxonomies Impacts Cross-Border Capital Flows

Keith Jin Deng Chan, Hong Kong University of Science and Technology (tentative)

There is an urgent need to direct capital towards climate change mitigation in emerging markets. To enable this, developed countries can endorse the common ground of their taxonomies and those in emerging markets while potentially creating policies and investment incentives to guide global capital in that direction. However, little is understood about the impact which taxonomy misalignment may have on the effectiveness of endorsing the taxonomies of emerging markets. In response, we analyze how misalignment can occur between taxonomies, and construct a micro-economic model to show that four ratios (green bond price ratio, supply elasticity ratio, taxonomy misalignment ratio and preferential treatment ratio) should be considered to ensure the policy is not counter-productive to climate change mitigation.

Charting the Path to Sustainability: An Overview of Sustainable Financial Regulations and Central Bank Activities in 2023

Siti Kholifatul Rizkiah, WWF Malaysia (tentative)

As the global climate and nature crisis continues to escalate, the incorporation of climate and nature-related risks into financial supervision and central banking activities has gained paramount importance. This study assesses how financial regulators, supervisors and central banks integrate climate and broader environmental & social considerations into their supervisory expectations and practices built on WWF's Sustainable Financial Regulations and Central Bank Activities (SUSREG) framework. SUSREG has been developed since 2021 and covers 44 jurisdictions across the Americas, EMEA (Europe, Middle East, and Africa), and APAC (Asia Pacific). The paper concludes by synthesizing the key findings and providing policy recommendations for central banks and financial supervisors to fully integrate climate, environmental, and social risks into mandates and operations, mainly through financial regulations and their supervision, as well as monetary policies.

The greening of central banks through a Chinese mirror: The politics of the People's Bank of China's environmental turn

Monica DiLeo, University of Queensland (tentative)

Central bankers' growing engagement with environmental issues has begun to be analyzed by scholars of international political economy, but the focus of existing analyses has been on European experiences. In what ways might a wider geographical focus generate different understandings of the political economy of the greening of central banks? This analysis of the important Chinese case reveals its neglected pioneering role: the People's Bank of China began to address environmental issues much earlier than its better-studied European counterparts and it subsequently remained ahead of them in introducing a number of important green policies. Some of the Chinese rationales for greening central banking have also been distinctive and more ambitious. Further, institutional design of the Chinese central bank has led it to much closer cooperation with broader government priorities than European central banks. Finally, studies of the greening of European central banks overlook the important role that the Chinese central bank has played in influencing green central banking internationally, including in Europe itself. Taken together, these points highlight not only the risks of generalizing from the European experience but also the importance of studying central banks through a comparative political economy lens that identifies distinct "varieties of central banking".

Session 5: Harnessing economic opportunities

Malaysia's New Voluntary Carbon Market: Origins, Ecosystem and Prospects

Pieter Stek, Asia School of Business (tentative)

Middle-income economies such as Malaysia, which are integrated into global value chains, have both significant domestic carbon emissions as well as sizeable opportunities for nature-based carbon offsets. While they face pressures to reduce carbon emissions from their international trade and investment partners, these countries are also ineligible for official development aid, and they therefore need to mobilize domestic funds to finance reductions in carbon emissions. Malaysia launched a domestic Voluntary Carbon Market (VCM) in December 2022 as part of the government's climate change policies. The VCM appears to have been implemented relatively quickly, having only been announced in September 2021. This paper traces the origins of the VCM and analyzes the economic and regulatory context of the market in terms of the domestic supply and demand for carbon credits in Malaysia. The analysis reveals that Malaysia, as a middle-income economy that has significant potential for nature-based carbon offsets, faces a number of unique domestic political-economic challenges involving carbon trading, which are not faced by high-income economies nor by low-income economies. These domestic challenges explain the difficulties countries like

Malaysia face in formulating policies on carbon pricing and the reason for its rapid introduction of a VCM without a supportive carbon credit ecosystem or clear plans for a carbon tax.

Towards a nature-positive Malaysia: Assessing the vulnerability and resilience of Malaysian corporates towards nature-related risks

Fatin Zani, WWF Malaysia

This paper is contributing to an emerging literature aimed at exploring the exposure of large, listed Malaysian companies towards nature-related risks and understanding corporates' readiness towards mitigating them. Building upon previous studies, the study comprises two components: vulnerability assessment and resilience assessment. The vulnerability assessment uses WWF's Biodiversity Risk Filter (BRF) tool, which combines both sectoral and spatial analyses, is utilised to assess nature-related risks within company operations and supply chains. The resilience assessment involves benchmarking exercises and surveys to evaluate the companies' preparedness in addressing their nature-related risks, including how they are integrating them into their strategy, risk management, reporting and decision-making processes. The study pioneers the use of the BRF tool in ASEAN and provides practical initial insights for companies, financial institutions and policy makers on how they can begin to assess nature-related risks and undertake targeted efforts to mitigate them.

Session 6: Mobilising Finance

Biodiversity Finance

Thomas Giroux, CREST (tentative)

The use of private capital to finance biodiversity conservation and restoration is a new practice in sustainable finance. This study sheds light on this new practice. First, we provide a conceptual framework that lays out how biodiversity can be financed by i) pure private capital and ii) blended financing structures. In the latter, private capital is blended with public or philanthropic capital, whose aim is to de-risk private capital investments. The main element underlying both types of financing is the "monetization" of biodiversity, that is, the extent to which investments in biodiversity can generate a financial return for private investors. Second, we provide empirical evidence using deal-level data from a leading biodiversity finance institution. We find that projects with higher expected returns tend to be financed by pure private capital. Their scale is smaller, however, and so is their expected biodiversity impact. For larger-scale projects with a more

ambitious biodiversity impact, blended finance is the more prevalent form of financing. While these projects have lower expected returns, their risk is also lower. This suggests that the blending—and the corresponding de-risking of private capital—is an important tool for improving the risk-return tradeoff of these projects, thereby increasing their appeal to private investors. Finally, we examine a set of projects that did not make it to the portfolio stage. This analysis suggests that, in order to be financed by private capital, biodiversity projects need to meet a certain threshold in terms of both their financial return and biodiversity impact. Accordingly, private capital is unlikely to substitute for the implementation of effective public policies in addressing the biodiversity crisis.

Devising Natural Capital Finance

Jose Luis Resendiz, University of Oxford (tentative)

Political, technological, and budgetary restrictions have slowed the development of comprehensive environmental measurements and their use to inform and shape policy. This research focuses on overcoming these barriers with a finance-based outlook for the development and use of Natural Capital Accounting (NCA), an essential tool for quantifying and monitoring natural resources. We find that Natural Capital Finance (NCF), defined as an approach that leverages NCA standards to guide financial decision-making, can significantly contribute to the uptake of environmental metrics in decision-making. This assessment is based on an extensive literature review of recent financial developments, and a global expert survey with over 600 responses. We identify three main strategies to facilitate the uptake of NCF: government data stewardship, corporate nature recovery plans, and increased issuance of sustainability-linked finance. This research provides valuable insights for policymakers, financial institutions, and corporations that aim to prioritize environmental sustainability to preserve market integrity and economic stability.