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FOREWORD

This issue of *Nomura Journal of Asian Capital Markets* features articles from experts on a wide range of themes involving financial and capital markets in Asia.

Mushtaq Kapasi, Managing Director and Chief Representative for Asia Pacific of International Capital Market Association (ICMA), introduces ICMA's various initiatives for the development of the global sustainable bond markets. ICMA published the Climate Transition Finance Handbook in 2020 to provide guidance on raising funds for climate transition-related purposes. While ICMA has not published a global, industry-led taxonomy specifically for transition finance, it is currently working on additional market guidance to promote transition finance.

Liangye Song, Financial Industry Analyst at Nomura Institute of Capital Markets Research (NICMR), writes about new rules for China's green and transition bonds. The new rules were introduced in October 2024 to support the issuance of green and transition bonds in the China Interbank Bond Market and strengthen related information disclosure. While the new rules are expected to contribute to an increase in green and transition bonds issuance, enhancing consistency with international standards is considered important to attract foreign investors.

Mohammad Ridzuan Abdul Aziz, Board Advisor of Fintech Association of Malaysia, emphasizes the importance of financial technology (FinTech) for the development of finance and the capital market in Malaysia. Bank Negara Malaysia and Securities Commission Malaysia have introduced various guidelines and regulatory frameworks for FinTech development. The Islamic capital market, which plays an important role in generating economic growth for the country, has vast growth potential with optimal utilization of FinTech solutions.

Roongkiat Ratanabanchuen, Assistant Professor at Chulalongkorn Business School, discusses the regulatory landscape for digital assets in Thailand. Cryptoassets are categorized by Thailand Securities and Exchange Commission's taxonomy which was reclassified from the cryptoasset taxonomy proposed by the International Monetary Fund (IMF). Thai regulators appear to support "Responsible Innovation" and emphasize the need for proper risk management to avoid negative impacts on the stability of the payment and financial systems.

Chakorn Loetnithat, Senior Researcher at Thailand Development Research Institute, provides insights into investor personas in the capital market of Thailand which is transitioning into a fully aged society. While the issue of long-term financial security has become increasingly important, most citizens do not have enough savings for retirement or have not made a retirement plan. Policy responses should be tailored to specific personas, as treating all citizens with one-size-fits-all solutions is not likely to bring meaningful change.

Joseph Cherian, Chief Executive Officer of Asia School of Business, analyzes hedge fund performance over twenty years by using hedge fund strategy indices from North America and Asia. While hedge funds have long been considered to offer diversification and alpha, his study results show hedge funds are increasingly behaving like high-cost vehicles for delivering traditional beta. The hedge fund industry may need to redefine its value proposition in the years ahead.

MUSHTAQ KAPASI

International Capital Market Association

Asia's Sustainable Finance

Introduction

If we accept the scientific evidence that human societies have accelerated climate change, and that the effects on our planet may be wide-ranging and unpredictable, then we must invest to transform our economies to mitigate these effects and also invest to protect the places where we live. The amount of investment required in Asian emerging markets for climate mitigation and adaptation has been estimated as USD1.1 trillion per year. The financial markets have an important role to play to help source and channel capital investment for environmental and social benefit.

ICMA Principles and the Sustainable Bond Market

The International Capital Market Association (ICMA) has been at the forefront of global sustainable finance, with the introduction of the first set of widely used market guidance for financial products dedicated to sustainability. These are the Green Bond Principles (GBP), introduced in 2014, followed more recently by the Social Bond, Sustainability Bond, and Sustainability-Linked Bond Principles. The Green, Social, and Sustainability Bond Principles are based on use of proceeds – in other words, the money raised through these bonds must be directed towards sustainable ends. The Sustainability-Linked Bond Principles (SLBP), by contrast, allow use of proceeds for any purpose, but require an issuer such as a company or a government to set ambitious sustainability metrics and targets, and link the economic payments on the bond to the issuer's progress toward these concrete sustainable goals.

It is worth noting that national and regional market standards such as the ASEAN Green Bond Standards and China GBP both align with ICMA's GBP in terms of their use of proceeds approach and issuance processes.

The two sets of Principles together now serve as the foundation for 97% of the volume of all bonds labelled as "sustainable" worldwide – a total of USD4.6 trillion in issuance (excluding certain Chinese and United States [US] municipal issuances). Approximately USD1 trillion of this total has come from Asia, with USD200 billion last year.

This is considerable progress, but the volumes are still small compared to the total amount of financing needed, not to mention the size of the global fixed income securities market which is USD140 trillion. We also must admit that a large amount of financing, not only in the public bond markets but also in private markets, continues to go toward the fossil fuel and other carbon-heavy industries. Also, though beyond the scope of this article, it may be argued that governments continue to subsidize fossil fuels through inefficient pricing mechanisms as well as undercounting of environmental costs.

Focusing on the debt capital markets, ICMA research has shown that in recent years 10-15% of bonds by volume from Asian issuers are offered internationally, that is, outside the domestic markets, compared to 30-40% of bonds globally. But if we examine the international bonds from Asia, we find that more than 21% of these bonds by volume were sustainable in 2024, compared to 9% of international bonds from all issuers globally. This means that the international capital markets in Asia still have room to grow, and that Asian sustainable finance products are especially sought-after by international investors.

Sustainable Finance in Asia

Of course, Asia is vast and diverse with 4.8 billion people (and 59% of the world's population), and a multitude of markets at all points in the spectrum of development. But it is possible to note some regional characteristics. Asia has greater population density, more coastal megacities, more dependence on agriculture, and therefore more potential physical risk from typhoons, droughts, and floods brought on by climate change. At the same time, Asia's energy supply relies far more on coal than other regions: about 50% for Asia compared to less than 30% globally, and much of this from younger plants in China and ASEAN. Asia also has a much larger emerging middle class, forecasted to grow from 2 billion to 3.5 billion during this decade, which means that efforts to reduce carbon emissions must be balanced against economic development and the eradication of poverty. Indeed, we see that in the sustainable bond markets, Asia issuance is more weighted towards social and sustainability (combining social and green) bonds, with more than 50% of Asian sustainable bonds either fully or partially dedicated to social investment, compared to less than 25% globally.

Overall, this has led to a more pragmatic, yet persistent approach to sustainable finance in Asia, where the questions tend to be less about what is green and what is not green, and more about how to reach our climate goals in the most efficient and realistic way possible.

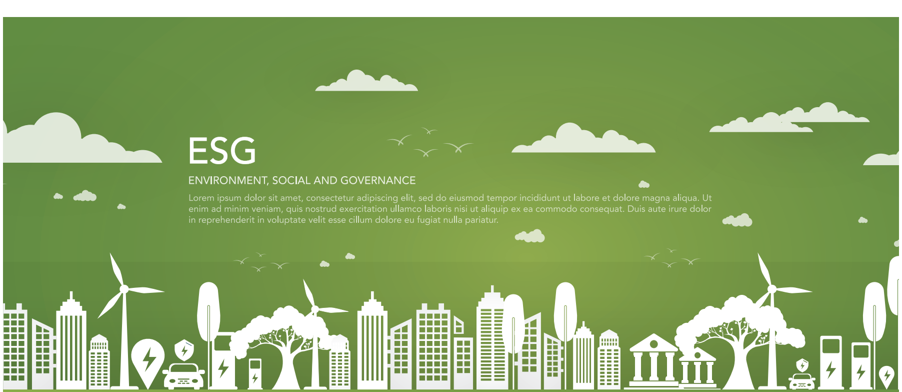
Transition Finance and Related Guidance from ICMA

This is the idea behind transition finance, which seeks not only to provide capital for companies and projects that are *already* green, but to enable companies and industries to become green. Indeed, it is mostly in Asia where transition finance has first taken off and where we have seen much of the innovation that is now driving global growth in the sector.

ICMA's Climate Transition Finance Handbook (CTFH), first published in December 2020, was arguably ahead of its time in recommending minimum suggested steps and standards for sustainable finance issuers to take in order to demonstrate a robust and credible climate transition strategy.

ICMA's transition handbook provides guidance for issuers on raising funds for climate transition-related purposes. The handbook makes four key recommendations:

1. **Climate transition strategy and governance:** The issuer should have a clear and ambitious corporate strategy to reduce climate change risks and have clear governance structures to monitor this strategy.



2. **Environmental materiality:** The climate transition strategy should focus on the issuer's core business activities, especially those related to greenhouse gas emissions.

3. **Science-based targets:** The issuer's climate transition strategy and emission reduction targets should be demonstrably aligned to the objectives of the Paris Agreement.

4. **Transparency in implementation:** Issuers should ensure clear disclosures about their climate transition plans, notably on how funds will be used both for capital investment and operational expenses.

The ICMA transition handbook was updated in 2023 to include guidance on Scope 3 emissions reporting, science-based emissions reduction trajectories, and alignment with well-below-2°C scenarios. It also provides details on carbon cost assumptions, phase-out plans for carbon-intensive activities, and disclosures regarding locked-in emissions, all highly relevant for Asian economies.

The CTFH not only recommends robust governance frameworks around transition planning but also recommends external reviews assessing the credibility of the entity's climate strategy and targets, for example sustainable bond second party opinions.

Since developing a proper transition strategy and ensuring proper implementation may require additional resources, it is legitimate to question whether the benefits outweigh these costs. Each company must consider this in terms of its own operations and markets in which it conducts business. But in most Asian jurisdictions, where the national policy is clearly moving toward decarbonization and climate transition, the capital markets are encouraged to invest in transition-friendly companies and projects. Therefore, as ICMA recommended in the 2024 report "Transition Finance in the Debt Capital Market," there is clearly a benefit for issuers to align their strategy accordingly while early movers can drive competitive advantage from this growing trend.

Also, over the last couple of years we have seen tremendous growth in the resources available to both financial and non-financial companies for transition planning. The regional multilateral development banks have been active especially to advise smaller Asian banks keen to expand their investor base through sustainable finance. Climate consultancies and reviewers have become more numerous and sophisticated. And many jurisdictions including Japan have moved beyond high-level transition frameworks to develop more detailed practical guidance by sector to implement transition strategies.

The CTFH is particularly suited for companies in carbon-intensive sectors, which would normally face some reputational risk when issuing labeled green or sustainable bonds because of the nature of their core business. The additional transparency recommended by the CTFH can help these companies demonstrate to the market that they are on a valid transition trajectory.

In fact, the CTFH may be applied to various sustainable finance debt products that support climate transition. ICMA's guidance considers transition to be a potential theme applied to both use-of-proceeds and sustainability-linked bonds and also recognizes that issuers may also wish to apply a label of "transition bond" to certain transactions.

As of end 2024, over USD30 billion have been raised through transition-labeled bonds, roughly half of which were issued by Japanese issuers, including the Japanese government. Issuers of labeled transition bonds ranged across several sectors, including aviation, automotive, and financial. Proceeds from the transition bond issuances have funded, for example, electric vehicle research and development, decarbonization of in-factory power generation, and upgrading to fuel-efficient aircraft.

Transition Finance Guidance in Japan

Japan has been a global leader in producing tangible initiatives to build a financial ecosystem around climate transition. The CTFH served as an inspiration and model for Japan's Basic Guidelines on Climate Transition Finance (2021), the jurisdiction's first official guidance acknowledging the transition label. Jointly published by the Japan Financial Services Agency (FSA), Ministry of Economy, Trade and Industry (METI), and Ministry of the Environment, the guidelines – just like the CTFH – focus on organization-level disclosures and strategies.

Accompanying the guidance are sectoral roadmaps for industries with high greenhouse gas emissions. These include strategic steps and potential technologies together with timelines to reach carbon neutrality by 2050. Following these, Japan published its Transition Finance Follow-up Guidance (2023), which highlights ways for investors and companies to continue an honest and structured dialogue to help ensure that climate goals can be met and that strategies can be adapted as necessary. In the same year, Japan released its Climate Transition Bond Framework – in line with ICMA's GBP and CTFH – and established the Green Transformation (GX) Acceleration Agency, a first of its kind globally, to help coordinate both public and private sector transition finance efforts.

Market Integrity

As the sustainable finance market has evolved from niche to mainstream, preserving market integrity has become a concern in all markets including Asia. Unfortunately, the term "greenwashing" can mean different things to different people. ICMA proposes a focused definition of greenwashing that could help identify, quantify, and regulate it: "For financial regulatory purposes, greenwashing is a misrepresentation of the sustainability characteristics of a financial product and/or of the sustainable commitments and/or achievements of an issuer that is either intentional or due to gross negligence."

For the green bond market, ICMA argues that the GBP have effectively allayed these concerns. In fact, ICMA research suggests that controversies over greenwashing are very uncommon in the green bond markets, where the bonds' allocations have usually been made to traditional pure green sectors with a high level of transparency on the ultimate use of funds. In the sustainability-linked bond market, an ICMA study of 100 issuances from 2022-2023 did show a higher prevalence of controversy related to the perceived materiality and ambition of targets.

With both types of bonds, though, the risk of exaggeration or misrepresentation related to sustainability is highly mitigated by the presence of multiple stakeholders. In particular, the bond arrangers, investors, and external reviewers all serve as a useful check to make sure that claims of sustainability are truthful and legitimate. On the other hand, the most serious and rare cases of greenwashing have involved either fraud or negligence in terms of a specific product such as a fund, or a claim about a sustainable strategy such as alignment with a net zero pathway.

Official sector guidance or regulations that require or encourage corporate sustainability reporting can help investors evaluate whether sustainable bond issuances are consistent with an issuer's wider transition strategy. In particular, disclosure of transition plans can enable investors and other stakeholders to assess whether a transition-themed green bond or SLB issuance is consistent with an issuer's wider transition strategy.

Several Asian regulators have issued guidance to the market in an effort to address greenwashing concerns. Some of this guidance has been more general or indirect, and some has been focused on a particular product.

For the sustainable fund market – in the absence of international industry standards – there are several regulatory initiatives under way to promote market integrity. The International Organization of Securities Commissions (IOSCO) recommends that regulators and policymakers provide additional requirements or guidance on product-level disclosures and practices that would cover the naming of products, investment objectives, and investment strategies or guidance on product-level disclosures and practices. In 2025, ICMA published a report called "A time for change in the sustainable fund market – Reflections and recommendations in a new regulatory environment" which looks at, among other things, regulatory fund naming, categorization, and labelling rules.

The FSA has, in its Comprehensive Guidelines for Supervision of Financial Instruments Business Operators (2023), noted that the number of investment products which incorporate environmental, social, and governance (ESG) factors in their names and investment strategies has been increasing both in Japan and overseas, sometimes leading to concerns that their actual investments may not be commensurate with their ESG claims. FSA guidelines were amended in March 2023 to include an "ESG fund" definition with accompanying naming restrictions for funds that do not fall under this category, as well as requirements for additional disclosures.

Separately, the Hong Kong Monetary Authority (HKMA) set out expected standards for the Sale and Distribution of Green and Sustainable Investment Products (2023) by registered institutions, indicating that they should ensure adequate management supervision so that investment products are not portrayed as being more environmentally or climate-aligned than they are. More specifically for green bonds, the Securities and Exchange Board of India (SEBI) has advised that issuers should quantify the negative externalities of green projects and obscuring negative effects or selectively disclosing data.

Integrating Transition in Taxonomies

Sustainable finance taxonomies can also be helpful to provide the financial sector reassurance on reputational risks and innovative financial instruments and are an important tool for market participants to align with activities and projects that deliver on climate and social goals. Indeed, the GBP have recommended since June 2021 that issuers disclose the alignment of their projects with official and market-based taxonomies.

ICMA offers some basic suggestions on how to design taxonomies so that they are most effective to promote international sustainable investment. Ideally, taxonomies should be:

1. Targeted in their purpose and objectives.
2. Additional in relation to existing international frameworks.
3. Usable by the market for all intended purposes.
4. Open and compatible with complementary approaches and initiatives.
5. Transition-enabled, incorporating trajectories and pathways.

Perhaps the most fundamental of these recommendations is that a taxonomy should have a clear purpose and application in mind. This will ensure that the taxonomy is usable for that purpose and that it is designed appropriately for those who will use it.

For taxonomies designed primarily to facilitate transition, the energy sector is usually a focus. It is essential to identify transition pathways to allow for investments in activities that may not be green during the initial stage of the investment but are nonetheless intended to achieve significant greenhouse gas emissions reduction. Different jurisdictions have integrated these recommendations into their taxonomies to varying extents. The European Union (EU), which produced the first major official sector taxonomy, has defined transitional activities as (i) having no technologically and economically feasible low carbon alternative; (ii) consistent with the 1.5°C objective by having the best greenhouse gas performance in the sector and the industry; (iii) not hampering the development and the deployment of low carbon alternatives; and (iv) not causing carbon lock-in.

To account for differences in national trajectories to meet the Paris Agreement, as well as key transition industries in different economies, several Asian countries have developed their own taxonomies that better support more nuanced transition efforts. Region-specific frameworks such as the ASEAN Taxonomy for Sustainable Finance and the Singapore-Asia Taxonomy (SAT) aim to broaden access to sustainable financing for a wider range of industries, including those that currently rely on coal-fired power.

Notably, these two taxonomies pioneered the traffic light system to classify sustainable economic activities, though they take different approaches to classification and phase-out of coal. Generally speaking, green denotes activities that substantially contribute to climate goals by operating at near zero emissions or are on a 1.5°C-aligned pathway. Amber represents transitional activities that are not presently on a 1.5°C-aligned pathway but are moving toward a green transition pathway within a defined time frame or facilitate significant emissions reductions in the short term with a prescribed cessation date. Red indicates activities that are neither green nor amber. The ASEAN Taxonomy uses the green and amber categories to classify coal-related activities depending on their relative emissions and how quickly they will be phased out. Coal plants are eligible for financing under the taxonomy as long as they adhere to a dedicated timeline for early retirement, capped at a maximum of 35 years. For an activity to be classified as green, the facility must be aligned with a 1.5°C outcome and be consistent with the International Energy Agency Net Zero Emissions Pathway for the power sector to achieve net zero emissions by 2050. Otherwise, a facility can be classified as amber if it is aligned with a 1.5°C outcome for coal phase-out that is derived from science-based, regional-or country-specific pathways.

Under the SAT, early coal phase-out activities are not classified using the traffic light system but are instead evaluated under a separate set of criteria. This is because, unlike the amber category, coal power plants are not expected to qualify as green anytime in the future. Distinct from the ASEAN Taxonomy which only specifies facility-level criteria, the SAT goes a step further by requiring an entity-level transition plan that includes commitments to not develop or procure new coal power plants or establish new or extend existing fossil-fuel based power purchase agreements.

So far, the SAT has been referenced twice in direct relation to transition. A steel company applied the taxonomy to its green and transition finance framework, which includes six eligible business activities spanning across important technologies for the sector's transition, including direct reduced iron (DRI), electric arc furnace (EAF), carbon capture utilisation and storage (CCUS), manufacture and storage of hydrogen, and renewable energy. On a deal level, a green and transition loan for a real estate company defined green and transition activities directed towards enhancing energy efficiency and decarbonizing the company's key properties over a period of time.

Under the ASEAN Taxonomy, a metals company has applied the amber category to infrastructure of low-carbon alternatives, such as power generation infrastructure co-fired by fossil fuels, that meet the taxonomy's lifecycle greenhouse gas (GHG) emissions threshold, with an intent to switch away from coal or oil power.

In China, the most recent Green and Low-Carbon Transition Industries Guidance Catalogue (2024), classifies green and transition industries into seven themes, including energy efficiency and emissions reduction, environmental protection, resources recycling, green energy transition, ecosystem restoration, green infrastructure, and green services. The revised catalogue does not separate "green industries" from "transition industries," in contrast to other taxonomies.

While Japan does not currently have a taxonomy of its own, the scope of transition finance is effectively defined by the national GX policy, which is focused on energy security and takes into account Japan's domestic industrial infrastructure. The GX policy is reflected in METI's sectoral roadmaps linked to the Japan Basic Guidelines on Climate Transition Finance, which reflect the view that not all countries, regions, and industries can decarbonize at once, and that engagement can be more effective than divestment to support the decarbonization efforts of hard-to-abate sectors. In addition, Japan has made a commitment at the 2024 G7 summit to phase out unabated coal power generation during the first half of the 2030s, or in a timeline consistent with the Paris Agreement goal and in line with its national net-zero pathway.

The Japan Basic Guidelines on Climate Transition Finance and ICMA's guidance are compatible in accommodating a "climate transition" designation for bonds. A bond that is aligned with the relevant ICMA Principles (either Green, Social, Sustainability, or Sustainability-Linked) and that follows the four elements of disclosure recommended by ICMA's transition handbook is eligible to be designated as "transition." Conversely, though, some issuers may be hesitant to finance their transition-focused projects with "green bonds" since the transition projects may not fall within ICMA's (non-exhaustive) eligible green project categories.

Broadening the Sustainable Financing Conversation

ICMA and the Green and Social Bond Principles community have not, as of mid-2025, published a global, industry-led taxonomy or catalogue specifically for transition finance. This is partly due to the technical and dynamic nature of transition finance, but also due to the lack of clear international consensus among stakeholders about the legitimate technologies, sectors and pathways.

Even so, the CTFH is intended to promote transition at the corporate entity level, and the GBP have recently published guidance on products in the value chain of green projects that may not themselves be green. These are called "green enabling" projects and may include for example: mining and metals, building and construction materials, chemicals, telecommunication networks, and manufacturing of industrial components. Such projects are still essential to the transition to a low-carbon economy in line with the goals of the Paris Agreement while recognizing the complexities of value chains and challenges of multiple end-uses.

Under the guidance, green enabling projects do not require a known end-use and can rely on scenario analysis, market share trends or expected future uses to assess the environmental benefits. The guidance also requires green enabling projects to address eligibility issues such as no carbon lock-in, and to demonstrate clear, quantifiable and attributable environmental benefits either through actual impacts or potential outcomes assessed through a life cycle analysis.

It is understandable that the current sustainable bond market is much more focused on those investments that are clearly and traditionally green. Less than 10% of sustainable bonds issued in 2024 came from sectors that the guidance identifies as green enabling. It is possible that the share of issuance from these sectors has been small because there is not enough clear guidance about when and how green-enabling activities can be eligible use of proceeds for sustainable debt. So, it is hoped that recognition of the importance of green enabling, as well as industry guidance on additional disclosures, can help to facilitate more sustainable bond issuance to finance projects along the full length of green value chains.

Next Steps in the Development of Sustainable Finance

ICMA's climate transition finance working group is currently working on additional market guidance based, among other things, on a mapping of transition finance projects and existing official or market guidelines. This work will also help identify any necessary updates to the CTFH, green enabling projects guidance, and other relevant existing Principles guidance.

ICMA is also actively exploring the role of carbon markets and their potential use cases in financing instruments that contribute to global decarbonization efforts. For example, Japan's USD140 billion GX economy transition bond issuance plan is linked to a future carbon pricing mechanism in which the government intends to complete redemption of the bonds through carbon pricing revenues raised. Carbon credits may also be relevant to more innovative sustainable bond structures as well as corporate transition strategies.

Together with stakeholders in the market, ICMA also continues to develop impact reporting guidelines for environmental and social projects funded by sustainable bonds and transition strategies. It is also worth mentioning that technology and AI are playing a more crucial role in sustainable finance on many levels such as data analysis, reporting, and risk assessment, with Asia leading much of this innovation.

In fact, ICMA will be holding the 11th Annual Conference of the Principles in Tokyo in November 2025. This is the premier global annual event for the sustainable bonds market, and holding the worldwide conference in Asia demonstrates the importance of the Asian and Japanese sustainable markets in the global evolution of sustainable finance.

MUSHTAQ KAPASI

Managing Director and Chief Representative for Asia Pacific
International Capital Market Association (ICMA)

Mushtaq Kapasi leads ICMA's work in the Asia-Pacific region. He has been based in Hong Kong since 2002, engaged in senior strategy, capital market and legal roles covering the region at international banks active in Asia. He has worked as a lawyer in debt capital markets and derivatives, a structurer in equities and fixed income, a manager of complex trades with regulatory and accounting considerations, and an adviser to top executives on emerging market strategy. He has also designed financial structures of renewable energy projects in frontier markets. He studied mathematics at the University of Texas and law at Yale University.

LIANGYE SONG

Nomura Institute of Capital Markets Research

New Rules for China's Green Bonds and Transition Bonds

New Rules for Green Bonds and Transition Bonds

On October 10, 2024, China's National Association of Financial Market Institutional Investors (NAFMII)[1] released a "Notice on Further Refinement of Mechanisms for Green Bonds and Transition Bonds" (hereafter "the notice" or "the notice on new rules"). The new rules outlined in the notice include measures to support the issuance of green bonds and transition bonds in the China Interbank Bond Market (CIBM) under the regulatory authority of the People's Bank of China (PBOC) and measures to strengthen-related information disclosures.

This paper begins with an overview of the current state of green bond and transition bond issuance in China and then presents the main points of the new rules and concludes with a brief summary of future challenges and prospects for the green bond and transition bond markets in China.

Overview of China's Green Bond and Transition Bond Markets

This section presents an overview of the current state of the green bond and transition bond markets in China and the related regulations. The Chinese government has stated that transition bonds include transition bonds that specify the areas where raised funds can be used and sustainability-linked bonds (SLBs) that do not have any restrictions on the use of procured funds.[2] Transition bonds broadly consist of two types: transition bonds issued in the CIBM and low-carbon transition corporate bonds issued on the Shanghai, Shenzhen, and Beijing stock exchanges. SLBs have the same two types: bonds issued in the CIBM, and low-carbon transition-linked bonds issued on the Shanghai, Shenzhen and Beijing stock exchanges.[3]

Current state of China's green bond and transition bond markets

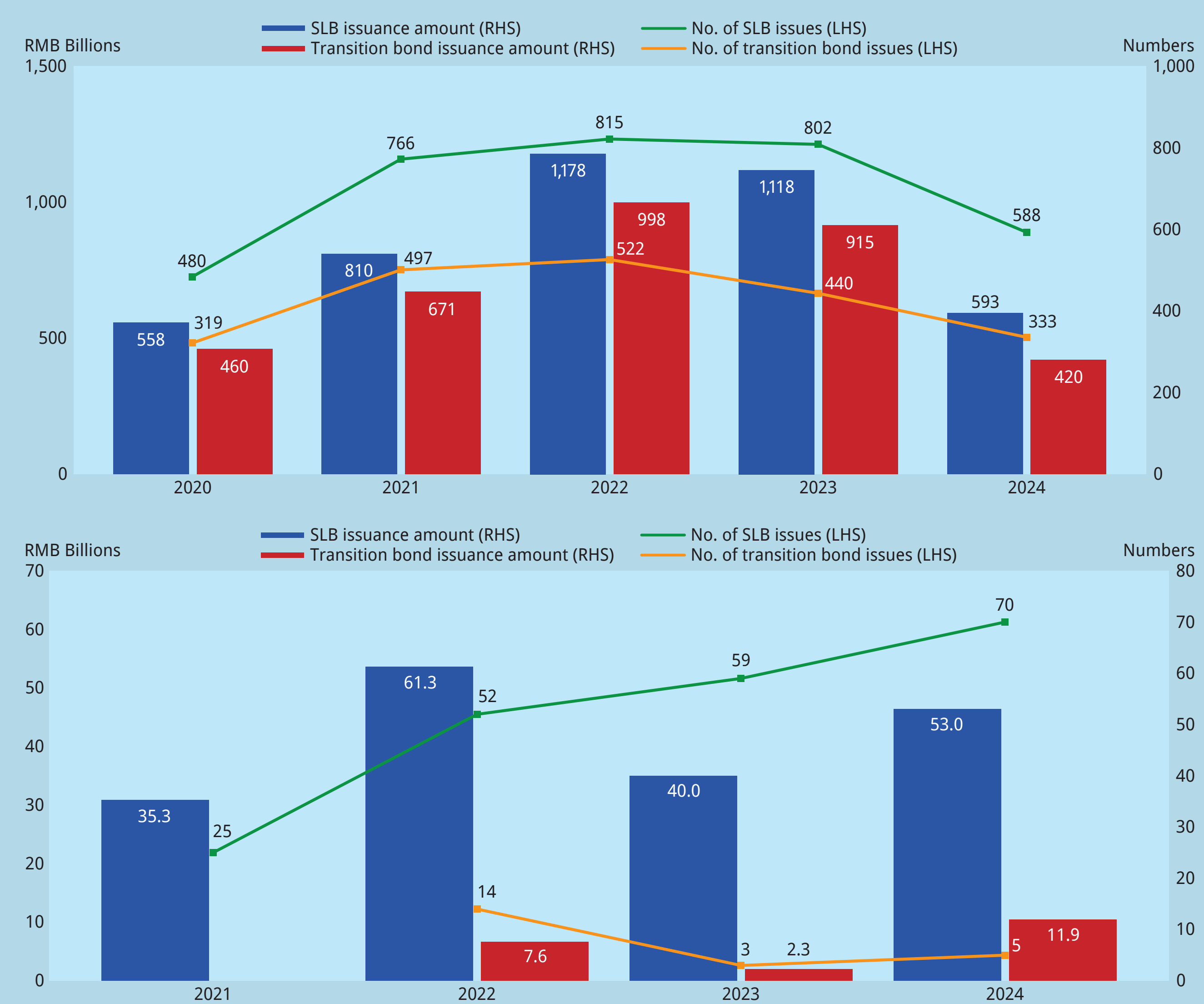
- **Green bond market has seen a decline in bond issuance**

China's green bond issuance[4] has been on a downward trend since peaking at RMB1,178.2 billion in 2022. Total issuance in 2023 was RMB1,118.1 billion, down RMB60.1 billion (5.1%) year-on-year, while issuance in 2024, as of November 20, was just RMB592.9 billion, a year-on-year decline of RMB319.2 billion (35%) (Figure 1). The main reasons for the downtrend in green bond issuance are a decline in issuer incentives due to deteriorating market conditions and a decrease in green projects.

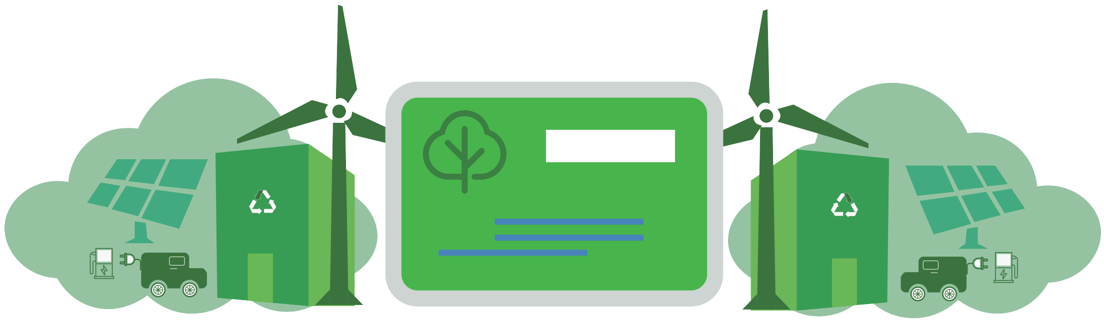
- **Transition bond market still in the pilot stage**

China's transition bond market began with the introduction of SLBs in 2021. A comparison of SLBs and transition bonds shows the number of SLB issues and their total issuance amount are much greater than that for transition bonds. However, while the number of SLB issues continued to increase from 2021 through 2024, the total issuance declined rather sharply in 2023, from RMB61.3 billion in 2022 to RMB40.0 billion, and continued to fall in 2024. Meanwhile, transition bond issuance (including low-carbon transition corporate bonds), which began with pilot operation in May 2022, totaled only five issues in 2024 but the total issuance amount was a record high RMB11.9 billion, thanks to a single large issue (RMB10 billion) by China Baowu Steel Group Corporation Limited, a major steel company.

Figure 1: Green Bond Issuance in China



Notes: (1) Data on CIBM green bond issuance includes bonds issued at the same time on securities exchanges.
(2) SLBs data includes issues of low-carbon transition-linked bonds. Transition bond data includes issues of low-carbon transition corporate bonds.
Source: Nomura Institute of Capital Market Research (NICMR), based on data from Wind



Regulatory structure of China's green bond and transition bond markets

In China, the issuance of green bonds and transition bonds is subject to a regulatory system in which rules are set by various supervisory authorities, with rules for individual issues set by the authority responsible for overseeing the targeted area. The issuance of green bonds is guided by uniform standards that apply to all green bonds, as stipulated in the China Taxonomy and the China Green Bond Principles (CGBP). However, as of November 2024, China had no uniform standard for transition bonds across all markets (Table 1). In addition, the main issuance markets are broadly divided into the CIBM, which is under the regulatory authority of the PBOC, and the securities exchange markets (Shanghai, Shenzhen, and Beijing), which are regulated by the China Securities Regulatory Commission (CSRC). The notice on new rules applies to green corporate bonds and transition bonds (including SLBs) issued in the CIBM.

Table 1: Current Rules in China's Green Bond and Transition Bond Markets

Green Bond Types	Green State-owned Enterprise (SOE) Bonds	Green Corporate Bonds	Green Finance Bonds	Green Debt Financing Instrument/ Green Corporate Asset-backed Securities (ABS)
Green Bond Uniform Standard	Green Bond Endorsed Projects Catalogue (2021 Edition) (China Taxonomy)			
	CGBP			
Rules for Issuance of Individual Green Bonds	Shanghai-Shenzhen Stock Exchanges: "Notice Regarding Trial Use of Green SOE Bonds"	National Development and Reform Commission: "Green Bond Issuance Guidelines"	PBOC: "Notice Regarding Issuance of Green Finance Bonds in the Interbank Bond Market"	NAFMII: "Guidelines for Non-Financial Enterprise Green Debt Financing Instrument"
	China Securities Regulatory Commission: "Guiding Opinions on Support for Development of Green Bonds"		PBOC: "Notice Regarding Regulatory Oversight of Green Finance Bonds over Entire Duration Period"	NAFMII: "Notice on Further Refinement of Mechanisms for Green Bonds and Transition Bonds"
Green Bond Issuance Markets	Securities exchange markets	Securities exchange markets & CIBM	CIBM	
Transition Bond Types	Low-carbon Transition SOE Bonds	Low-carbon Transition-Linked Bonds	SLBs	Transition Bonds
Rules for Issuance of Individual Transition Bonds	Shanghai Stock Exchange: "Guidelines for Application of Rules for Examining Listing Criteria for SOE Bonds No.2 - Specific Varieties of SOE Bonds (Revised in 2022)"		NAFMII: "10 FAQs about SLBs"	NAFMII: "Notice Regarding Trial Use of Transition Bonds"
			NAFMII: "Notice on Further Refinement of Mechanisms for Green Bonds and Transition Bonds"	
Transition Bond Issuance Markets	Securities exchange markets		CIBM	

Source: NICMR, based on various materials

Main Content of the New Rules

The new rules evidently are intended to reinvigorate and stimulate issuance of green bonds and transition bonds in China. The new rules also include provisions to strengthen information disclosures that take into account the interests of investors (Table 2). This section introduces the main content of the new rules, based on this perspective.

Measures promoting the issuance of green bonds and transition bonds

- **Measures easing restrictions on the use of funds procured by green and transition bond issuance**

The new rules include provisions easing restrictions on the use of funds raised through the issuance of green bonds and transition bonds in CIBM. First, in addition to the traditional use of green bonds for the construction and operation of green projects, supplementing the working capital of supporting projects, or repayment of interest-bearing debts of green projects, green bond issuers can now use the procured funds to recover their own capital spent on green projects or used for the repayment of green interest-bearing loans

Table 2: Main Content of the New Rules

	Category	Content
Measures to Support Issuance of Green Bonds and Transition Bonds	Green Bond Finance-related	Issuers should establish a supervisory management account for the funds raised. The account custodian should ensure that raised funds are used to finance green projects.
		Assuming the planned use of raised funds is unaffected, the issuer can temporarily invest any surplus funds in government bonds, policy-bank financial bonds, local government bonds, etc.
		Issuers can use procured funds to recover own funds spent on green projects or used for the repayment of green interest-bearing loans within the past three months. In addition, if certain criteria are met, issuers can use procured funds to replace an equity investment in green projects previously funded by own-capital within one year of the bond's issuance.
	Transition Bond–related	Expansion of issuers able to issue transition bonds (no longer limited to issuers in eight previously designated industries.
		Expansion of projects that can be financed by transition bond proceeds (all projects aligned with the transition taxonomy).
	SLB-related	Relaxation of factors selected as key performance indicators (KPIs) for SLBs. Previous requirement that operating revenue from a selected business account for at least 30% of the issuer's total operating revenue has been eliminated, and issuers are now encouraged to use sustainability goals, development goals in prioritized regions, and development plans highly relevant to their core business as KPIs.
		Changed the evaluation of issuer's financial and structural conditions to one that considers the achievement of sustainability performance targets (SPTs) and suggested offering lower interest rates as an incentive for achieving SPTs.
		Issuers are encouraged to disclose environmental, social, and governance (ESG)-related information and set an SPT that is linked to the issuer's ESG-related score.
	Intermediaries-related	Issuance and underwriting of green bonds and transition bonds will be used as regular indicators to evaluate the performance of lead underwriters.
		Market makers (securities firms, etc.) are being encouraged to undertake market-making activities that will support issuance of green bonds and transition bonds.
	Support Measures for Central State-owned Enterprises (CSOEs) and Private-sector Issuers	A certain percentage of debt related to the issuance of green bonds and transition bonds will be excluded from CSOE liabilities when calculating their asset-liability ratios (total liabilities/total assets).
		Securities companies and other financial institutions are being encouraged to provide credit enhancement measures to private-sector companies issuing green bonds and transition bonds.
Measures That Take into Account Interests of Investors	Optimization of Green Bond Information Disclosure Mechanisms	Registration stage: Required disclosures include only the type of green project to be funded, the project selection criteria and selection process, and the plan for using bond proceeds. No disclosure is required if the specific project has not yet been decided.
		Issuance stage: Issuers are sorted into two types: mature companies and other companies. The former are simply required to disclose the same information that they provided at the registration stage. Other issuers will need to disclose more detailed information in their issuance documents, such as their plans for using and managing the raised funds, project compliance compatibility, and the expected indicators of the project's environmental impact.
		Bond's duration: Issuers are required to disclose their use of bond proceeds, project progress, etc., on annual and semiannual bases by 30 April and 31 August each year.
Other	Expansion of the Range of Green-related Products	Recommending issuance of bonds linked to carbon emission credits and corporate bonds secured by carbon emission credits.
		Encouraging the use of green asset-backed securities.

Source: NICMR, based on China's NAFMII release: "Notice on Further Refinement of Mechanisms for Green Bonds and Transition Bonds" within the past three months.[5] In addition, issuers can now temporarily invest surplus funds from a previous green bond issue in government bonds, policy-bank financial bonds,[6] and local government bonds.

Second, restrictions on the use of funds procured through the issuance of transition bonds also have been relaxed. Previously, transition bond proceeds could be used only for (1) green projects related to economic activities included in the China Taxonomy that do not meet certain technical standards, and (2) five types of projects[7] that comply with the goals of achieving carbon peak-out and carbon neutrality.[8] Taxonomies in China include municipal taxonomies, such as Huzhou and Shanghai's catalogue for supporting transition finance activities, and the National Development and Reform Commission's *Green and Low-Carbon Transition Industry Guidance Catalog (2024 Edition)*.

- **Relaxation of transition bond and SLB issuance requirements**

The new rules include two main measures that ease the restrictions on issuance of transition bonds and SLBs. The first is the expansion of potential bond issuers. To date, transition bond issuance was targeted at issuers in eight industries—electric power, building materials, steel, nonferrous metals, petrochemicals, chemicals, paper manufacturing, and civil aviation. However, the new rules make issuance possible for all industries that have transition needs.

The second measure includes changes to the factors that SLB issuers select as KPIs and a revision to the evaluation of issuers' financial and structural conditions that indicate achievement of SPTs. Regarding KPIs, the requirement that the operating revenue of the selected business accounts for 30% or more of the issuer's total operating revenue has been replaced by an emphasis on such selection factors as the issuer's sustainability goals, development goals in prioritized regions, and development plans with high business relevance. Issuers are expected to select factors that will make a strong contribution to achieving sustainability. As for the revision to evaluations of issuers' financial and structural conditions, in addition to the existing penalty of imposing a higher interest rate for not achieving SPTs, it has been suggested that setting a lower rate if SPTs are achieved should be introduced as an incentive.

- **Measures to support issuance that respond to the needs of state-owned and private enterprises**

The new rules include the introduction of measures to support issuance by state-owned enterprises[9] and private enterprises. These measures include (1) excluding from a state-owned issuer's total liabilities a certain percentage of debt taken on when issuing green bonds and transition bonds when calculating the issuer's asset-liability ratio (total liabilities/total assets)[10], and (2) encouraging securities companies and other financial institutions to provide credit enhancement measures to private-sector companies issuing green bonds and transition bonds. The first measure will mitigate the impact on a state-owned issuer's asset-liability ratio when it raises funds, while the second measure will reduce private-sector companies' credit risk and therefore facilitate their issuance of green bonds and transition bonds.

Strengthen information disclosures for investors

The new rules' measures to strengthen information disclosures divide the green bond issuance process into three stages: (1) registration with NAFMII, (2) the time of a bond's issuance, and (3) the full length of a bond's duration. Information disclosure requirements at the registration and issuance stages were eased, while disclosures required during a bond's duration were expanded.

The new rules limit the disclosures required at the time of a bond's registration to (i) the type of green project to be funded by the issue, (ii) the selection criteria and process, and (iii) the plan for using bond proceeds. Disclosure of concrete project details is not required if a specific project has yet to be decided at the time of the issuer's registration with NAFMII. At the time of a bond's issuance, issuers are divided into two types: mature companies[11] and other companies. Mature companies are simply required to disclose the same information that they provided at the registration stage, while all other companies are required to disclose more detailed information in their issuance documents, such as their plans for using and managing the raised funds, the project's compliance compatibility, and expected indicators of the project's environmental impact. Lastly, the new rules for disclosure for the entire period of a bond's duration require all issuers to make annual disclosures for the previous fiscal year by April 30, and semiannual reports for the first half of the current fiscal year by August 31. If a specific green project has not been disclosed at the time of a bond's issuance, the issue's lead underwriter must conduct due diligence every six months.

The revised disclosure requirements at the registration and issuance stages benefit green bond issuers by simplifying the registration process and shortening the review period, which contributes to a more efficient issuance process. Strengthening information disclosures during a bond's duration will enable investors to deepen their understanding of green bonds, which may lead to more rational investment decisions. Expanding information disclosures is also expected to increase the transparency of green bonds and transition bonds, which may lead to increased investment in these bonds.

Future Challenges and Prospects

The new rules governing the issuance of green and transition bonds in China are a significant development that, in addition to promoting green efforts seen to date, clearly indicate support for a "green transition" that promotes the decarbonization of industries that have been key to China's economic development but also have been responsible for the emission of large amounts of greenhouse gases. These rules for China's Interbank Bond Market, while not a nationwide standard, are expected to contribute to an increase in the issuance of green bonds and transition bonds in China.

Meanwhile, green finance and transition finance in China still face many challenges. Although China has established uniform standards for its green finance sector, such as the China Taxonomy and the CGBP, green bonds issued in China under these standards do not necessarily comply with international standards and therefore may not be attractive to foreign investors.[12] As a result, there currently is a lack of investment by foreign investors in China's green bonds and transition bonds.

In November 2024, the regulatory authorities of China, the European Union (EU), and Singapore unveiled the Multi-Jurisdiction Common Ground Taxonomy (M-CGT), which adds the Singapore-Asia Taxonomy to the previously established EU-China Common Ground Taxonomy (CGT).[13] The M-CGT aims to enhance the interoperability of taxonomies across China, the EU, and Singapore to establish a standardized international taxonomy that will be relatively easy for overseas investors to accept. The application of international standards, such as M-CGT, to new and existing China green bonds is considered to be an important measure for making them more attractive investments to a greater number of overseas investors.[14]

Meanwhile, issues needing to be addressed in the area of transition finance include (1) the lack of transition finance standards, such as a nationwide transition taxonomy, and (2) existing regional-level transition taxonomies that lack medium to long-term science-based transition strategies and technology roadmaps aligned with the timelines for achieving carbon peak-out and carbon neutrality. In response to these issues, the PBOC is in the process of establishing a transition taxonomy for certain industries (steel, building materials, agriculture, and coal-fired power generation).[15] In addition to the need for a nationwide transition taxonomy, experts have called for the establishment of transition finance standards that include the aforementioned regional-level transition strategies and a technology roadmap.

In conclusion, China's revised rules applied to its green and transition bonds need to be consistent with international standards in order to make the bonds more attractive to overseas investors. Increasing the bonds' appeal to overseas investors and attracting green money from overseas investors will be key factors for expanding China's green bond and transition bond markets. From this perspective, China's future policy moves in the green and transition bond sector bear close attention, as they can provide key insights for policymakers in other countries seeking to develop their green and transition bond markets.

Notes

1 NAFMII is a self-regulation organization with membership including participants in the interbank bond market under the regulatory authority of the PBOC.

2 China Central Depository & Clearing Co., Ltd., "White Paper on China Transition Bonds," October 2024.

3 The new rules apply to SLBs and transition bonds issued in the CIBM.

4 The issuance amount covers all green bonds that meet China's domestic standards (i.e., China Taxonomy and China Green Bond Principles). As such, the amount stated here is larger than the amount issued to meet the Climate Bond Standards (CBS) published by the Climate Bonds Initiative (CBI).

5 If certain criteria are met, it is also possible to use green-bond procured funds to cover own-capital financed equity investments in green projects within one year.

6 Policy-bank financial bonds are bonds issued by so-called policy banks (e.g., the China Development Bank), which are state-owned financial institutions engaged in business that supports government policies.

7 Specifically, these projects include (1) high-efficiency coal-fired power generation (clean coal), (2) natural gas clean energy, (3) replacement of production capacity in eight industries, including electric power, building materials, steel, nonferrous metals, petrochemicals, chemicals, paper manufacturing, and civil aviation, (4) applications of green facilities and technologies, and (5) other projects that contribute to the transition to low-carbon emissions.

8 Carbon peak-out refers to reaching a peak in carbon dioxide (CO2) emissions by 2030. Carbon neutrality refers to achieving net zero CO2 emissions and absorption by 2060.

9 State-owned enterprises (SOEs) refer to those that report directly to the State-owned Assets Supervision and Administration Commission (SASAC) of the State Council.

10 The SASAC holds an annual meeting of directors of SOEs under its supervision, at which it asks for the submission of performance indicators, including asset-liability ratios. In 2022, it set 65% as the target total asset-liability ratio of all SOEs. While no specific numerical target was set for 2023, the Commission issued a qualitative directive to stabilize asset-liability ratios at a certain level (SASAC website used as a reference).

11 A mature enterprise is an issuer that has previously issued three or more bonds in the interbank bond market in the past 36 months with a total issuance value of more than RMB10 billion.

12 CBI, "China Sustainable Debt State of the Market Report 2023," May 2024.

13 Monetary Authority of Singapore, "The International Platform on Sustainable Finance presents the Multi-Jurisdiction Common Ground Taxonomy to enhance interoperability of taxonomies across EU, China and Singapore," November 14, 2024.

14 In September 2024, a group of experts working with the China Foreign Exchange Trade System (CFETS) issued the "CGT-Labeled Green Bond Practical Report," which included a list of outstanding green bonds in China verified to be CGT-aligned green bonds. As of the end of November 2024, there were 245 CGT-aligned green bonds, with a total issuance value of more than RMB360 billion (Source: Green Finance Committee (GFC) of China Society for Finance and Banking, "GFC's 'Common Ground Taxonomy,' Labeling Expert Group Meeting held in Shanghai," December 10, 2024).

15 Ma Jun, "Cover shortcomings, strengthen synergies, and deepen green finance reform," *China Securities Journal*, July 11, 2024.

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FinTech's Islamic Finance and Capital Market Frontier: Opportunities, Challenges, and the Malaysian Landscape

Introduction

Malaysia is a nation of approximately 34 million people with diverse ethnicity originating from the Malay Archipelago, mainland China, the Indian subcontinent and other surrounding nations in Southeast Asia. It is geographically small and democratically governed with a constitutional monarch, and Islam as its official religion.

Malaysia practices an open economy and firmly advocates fair and transparent trade. As a champion and strong advocate of Islamic finance, it puts Islamic finance as one of the key economic drivers for economic growth. Since the early 1980s, the Malaysia government has established a dual regulatory structure that allows conventional and Shariah-based regulations to co-exist as the main parameters for financial and capital market activities.

In the current day, the development of financial technology (FinTech) and digital innovation have brought new dynamism to Malaysia, including to Islamic finance and capital market. Innovativeness from FinTech compelled Shariah scholars and the Islamic finance industry to review their current practices, as well as outlook, albeit it is not really a new element. The challenges are on the renewed perspectives on the existing strategy and approaches, impact on stakeholders' mindset and mostly, the importance of data in the digital structure, narratives that shaped customers' expectations, business model evolution and security in the cyber environment.

This article will explore the vital aspects being considered by the key stakeholders of Islamic finance and capital market in the Malaysian context.

Overview of FinTech in Malaysia

The development of FinTech in Malaysia, specifically around the regulated financial and capital market sector, began with several landmark initiatives.

One notable initial boost for FinTech development was the issuance of a consultation paper on the guidelines for equity crowdfunding (ECF), by the Securities Commission of Malaysia (SC) in September 2014. This encouraged the financial and capital market industry to regroup by establishing the Fintech Association of Malaysia (FAOM) in December 2015, with one focus, among others, to work with the relevant enablers, including financial regulators, in advancing the development, enhancement, and deployment of FinTech in Malaysia.

The central bank of Malaysia, Bank Negara Malaysia (BNM), responded with the establishment of the Financial Technology Enabler Group in May 2016, and launched the Regulatory Sandbox in October 2016 to facilitate a conducive environment for FinTech experimentation and growth by providing regulatory oversight. In February 2024, BNM enhanced the Regulatory Sandbox[1] by creating two tracks – the Standard Sandbox which is the continuation of the earlier version to allow unlicensed entities to experiment with their innovations, and the Green Lane, an accelerated track for licensed financial institutions with a proven risk management track record to test their innovations that face regulatory impediments. Useful details about the BNM Regulatory Sandbox are available in the Appendix.

Concurrently, the SC has also launched a regulatory sandbox[2] to facilitate testing of innovative capital market products and services by eligible Malaysia-based entities, regardless of their licensing status. Eligible applicants needed to apply between 15 April 2025 and 31 May 2025, subject to pre-consultation with the SC's Affinity team that manages the regulatory sandbox. Useful details about the SC regulatory sandbox are available in Appendix.

These regulatory sandboxes demonstrate that Malaysia adopted a multi-pronged approach toward FinTech development, by facilitating industry-led experimentation, and a balanced approach to encourage proportionality on innovation and comprehensive risk awareness, as well as a pragmatic regulatory environment for ize their ownership and/or economic returns into an affordable and tradeable unit, thus allowing creation of a new investment asset-class that is affordable and unlocking values of RWAs. Further elaboration on the application of tokenization of RWAs can be found in the section on FinTech Development in Capital Markets below.

A second example is the creation of micro-sukuk that has shorter tenure (i.e., less than 12 months), using the issuer's business drivers as the underlying asset and is tokenizable. This would improve cost-effectiveness of issuance, enhance access to wider investor segments, and create an alternative source of business funding, especially for micro, small and medium-sized enterprises (MSMEs) as potential issuers. This is an interesting innovation as it provides multiple solutions in the area of fund-raising and financial discipline for MSMEs, unlocking untapped potential to scale faster, as well as creating liquidity in the sukuk market with wider accessibility and affordability, especially for new and novice retail investors.

Another example is an experimental solution on Portfolio Accelerator (PA) that focuses on addressing a gap in the retirement needs of those with low basic income. The PA will use leveraged financing for a diversified investment portfolio which will enable low basic income individuals to improve their retirement savings through proportional pairing of micro-investing with micro loans. This is not meant as a replacement for the government-run provident funds but rather as a supplementary mechanism targeting lower income employees, gig workers, and blue-collar migrant workers.

These latest FinTech solutions are uniquely established in Malaysia largely because of the regulatory framework that oversees conventional and Islamic capital market ecosystems with clear demarcation and dynamism, as well as proportionality between innovation with governance, risk management and regulatory compliance.

Current State of FinTech in Malaysia

As of November 2024, Malaysia had 280 FinTech companies (21 companies i.e.,7.5% under Islamic FinTech) broken down as follows: payments (22%), lending (12.5%), e-wallet (11.9%), blockchain (7.6%) and cross-border payment (7.6%)[3].

Specific to the capital market, besides the regulatory sandbox, the SC has issued several relevant regulations that have facilitated FinTech developments, as per the following list:

- Digital Investment Management (DIM)
- Digital Broker
- Online Distributor
- ECF, Peer-to-Peer (P2P) Financing, Property Crowdfunding (PCF), E-Services
- Digital Asset Exchange (DAX)
- Initial Exchange Offering (IEO), Digital Asset Custodian (DAC)
- Guidelines on Management of Cyber Risk

These regulations, which are applicable to both the conventional and Islamic capital markets, have catalysed innovations on the creation of new ecosystems, business models, and solutions as a service, and initiated new perspectives beyond the typical path. For instance, regulations on PCF, DIM and DAC started innovations on tokenization of real-world assets (RWAs) that enable owners to tokenize and fractional-

Compatibility of Islamic Finance Principles with FinTech Solutions

Islamic finance is the practice of following the Shariah principles called "Fiqh Muamalat" or Islamic economic law that regulates financial transactions, contracts, and economic interactions. A key focus of Fiqh Muamalat, among others, is prohibition of interest (usury or Riba), fairness, honesty, and compassion amongst stakeholders. Fiqh Muamalat also emphasizes moral and ethical considerations in economic activities, such as prohibition of fraud, deception, and exploitation of others.

The majority of FinTech solutions are focusing on innovative, creative, and efficient solutions. For instance, the DIM solution, commonly known as robo-advisor, utilizes artificial intelligence (AI) to profile investors based on their risk appetite, and automates portfolio investing and asset allocation, as well as utilising both leading and lagging data as a foundation for portfolio analysis and strategy.

It is obvious that the principles of Islamic finance and FinTech solutions are aligned and have great potential to catalyse the creation of fair, transparent, and efficient ecosystems that is vital in promoting trustworthiness among key stakeholders, new services to be delivered by innovative and cost-effective entities, as well as new perspectives on the strategic formulation for investing in financial and capital market. From a national perspective, Malaysia's position, with banking industry assets second only to those of the Gulf Cooperation Council countries, would be further enhanced as the alignment of Islamic finance and FinTech solutions would stimulate inbound and outbound digital-based initiatives relevant to the Islamic capital market.

The following five sections outline the specific building blocks of the potential growth of Malaysia's Islamic capital market including opportunities, challenges, and relevant use cases as illustrations.

FinTech Development in Capital Markets

As shared above, the sandbox created by the SC is an opportunity for aspiring innovators to conduct a variety of experiments involving capital market products, services, and related elements. The examples of tokenization of RWAs, micro-sukuk and the PA are among the potential innovations that would enhance the depth and breadth of Malaysia's capital market through democratizing access for a wider segment of investors, improving cost effectiveness of capital raising, and improving governance and risk management through better transparency and financial discipline.

However, it is foreseen that shifts in mindset and paradigm, legacy concerns and as yet unproven results of technology implementation are likely to delay swift adoption of innovative FinTech solutions. Current decision makers at the senior management and board level are sceptical of the capability, relevancy and viability of these innovations, partly because they are viewed through a legacy and lagging perspective, instead of as potential and leading indicators. In addition, there is also an inferiority complex among the decision and policy makers, mostly due to a lack of knowledge and blind spots about key aspects of technology. This is apparent as the average age of directors at Malaysia's financial institutions is 60 years old and nearly half of these directors have accounting and/or legal backgrounds[4], which highlights their lack of strategic understanding about FinTech, as well as of key perspectives on matters such as governance, data management and talent.

Infrastructure Development and Interoperable Data Framework

There are two main challenges for FinTech to be effective, operationalize effectively and become functionally scalable: the outdated legacy infrastructure and secure interoperable utilization of various data.

The existing financial infrastructure such as the Bursa Malaysia Securities, PAYNET, RENTAS (the BNM's Real-time Electronic Transfer of Funds and Securities) and the capital market in general, are yet to be updated with the relevant technology to manage functioning innovative FinTech solutions such as tokenized RWAs, micro-sukuk and the PA. Although Bursa Malaysia's daily trading volume improved between 2022 and 2024 by 89.1% year-over-year to 5.3 billion units[5], it was not optimized through technology. The recent growth was driven by proprietary and local nominees' investors, indicating that FinTech innovation was not a contributing factor. Other infrastructure such as RENTAS is still settling institutional payments through the delivery versus payment (DVP) mechanism, instead of the payment versus payment (PVP). The main concern is on unresolved key settlement and counterparty data transparency risks that could pose financial and reputation losses to various stakeholders, especially between the central banks and wholesale banks, as well as between corporate and institutional customers. It is a known fact that the shift from DVP to PVP could be resolved with FinTech solutions such as the distributed ledger technology, but the lack of willingness on the part of policy and decision makers to shift mindsets and paradigms remains a key obstacle to the needed changes.

The other key challenge is to establish an interoperable data management framework (IDMF) at various levels – i.e., entity, industry, ecosystem, and infrastructure – that is secure, real-time and trustworthy, for both the capital market and financial industry. It is imperative for the IDMF to be established in this manner to facilitate orchestrated real-time data sharing for transaction settlements, effective risk management, and stable ecosystem interoperability. Currently, a matrix of disjointed data flows creates security concerns, undermining the effectiveness, and efficiency of value-creation activities, as well as increasing the information asymmetry among stakeholders at various levels.

The impediments described above are potentially solvable with FinTech. For instance, RTGS.Global[6] is one of many private firms that could offer central and wholesale banks settlement utilizing the PVP mechanism running on distributed ledger technology. This is a realistic potential solution that could solve both impediments, as well as provide an efficient, cost-effective, secure alternative cross-border settlement mechanism for both wholesale and retail transactions. Enroute to implementing such solutions, policy makers at central banks need to consider, first, amending existing laws and regulations to allow commercial banks to utilize the statutory reserve account (SRA) currently maintained at their respective central banks to be used as the settlement account. Second, the SRA shall be the primary identifier on the distributed ledger platform shared by all counterparties that would facilitate real-time interoperable data sharing and importantly, making the shift from DVP to PVP mechanism.

Islamic Capital Market and FinTech

Given the developments and progress shared above, the Islamic capital market in Malaysia has vast growth potential with optimal utilization of FinTech solutions as one of its key catalysts. In addition, its position as a mature Islamic capital market would provide sufficient depth and breadth of relevant data for various key stakeholders in developing FinTech solutions.

For instance, sukuk[7] which accounted for about sixty percent[8] of Malaysia's debt market, could be further democratized to make issuance more cost-effective, by digitalizing the issuance processes to cater to small-volume issues by micro and small enterprises. Currently, sukuk are issued with a minimum value of USD200,000 and tenure of not less than 12 months, making them only affordable and suitable for large entities such as listed corporations, national or state government agencies, and large corporations. In addition, the current processes, from pre-issuance, underwriting, primary market to secondary market, are primarily focused on institutional and accredited, investors as well as High-Net Worth Entity (HNWE) and High-Net Worth Individual (NHWI) segments, as per the SC's Guidelines[9].

The above discussion describes an opportunity for FinTech solutions to enhance sukuk issuance by MSMEs, as well as adding individuals not categorised as HNWI as investors. Firstly, micro-sukuk with lower values (between USD2,500 up to USD25,000) with shorter tenure (from 3 months up to 12 months) and utilizing predetermined Shariah contracts could be issued, on an experimental basis, on a digital advisory platform. Secondly, these innovations need to be tested for at least 12 months on the SC's regulatory sandbox and closely monitored and calibrated with the existing guidelines on sukuk approval processes, credit rating, shariah compliance and advisory, underlying assets, and prospectus, as well as the necessary structure to protect retail investors.

Experimenting with micro-sukuk is a continuation of the concept the Malaysia Government used with the issuance of Sukuk Prihatin[10] in 2020 to 2022, a step which galvanised participation by public retail investors, despite a large federal government subsidy and tax breaks that lowered issuance costs. As stated, Malaysia's vast experience in sukuk-related activities backed by credible historic data over three decades has put the country at the forefront, but these elements need to be utilized through innovative experimentation, fresh perspectives, and facilitation by the SC with industry players to enhance the sukuk market in Malaysia.

Case Studies of Successful FinTech Applications

Malaysia's issuance of Sukuk Prihatin in 2020 as the first digital sukuk was a purpose-driven innovative digital solution adopted as a collective way to galvanize various resources, proven talents, and institutional collaboration during trying times. The funds raised through Sukuk Prihatin were used to enhance connectivity of schools in rural areas, facilitate business operations of MSMEs (focused on female-led enterprises), and support research on fighting infectious diseases.

Among the key factors driving the issuance of Sukuk Prihatin were:

- High deposit rates among Malaysians. According to BNM's key indicators for financial inclusion, deposit accounts per 10,000 adults grew from MYR29,860 to MYR30,460 from 2011 to 2019.

- The Covid-19 pandemic was a major factor that consolidated common purpose among Malaysians for collaboration to revive the collapsing economy and establish a digital platform where corporations and individuals could channel their contributions to the predetermined purposed, as approved by the financial regulators, and with less bureaucracy that would normally slow the approval and distribution of the funds raised through the issuance.

A key result of Sukuk Prihatin is that it galvanised many industry stakeholders to explore and experiment with the notion of issuing digital sukuk. One notable lesson was that issuance of sukuk should be direct, with clarity of purpose, and that a digital platform played a key role for managing subscriptions and communication of relevant narratives, as well as utilizing relevant contract structures to facilitate interaction and operability among stakeholders and counterparties.

However, issuance of Sukuk Prihatin was not the norm and it was an extraordinary effort under a unique circumstance. Despite its success, policy makers, financial institutions, and key players in the sukuk market are still sceptical of the idea of utilizing a private-sector digital platform to facilitate sustainable and viable issuance of micro-sukuk that is affordable and purpose-built for MSMEs' business growth and scalability.

Another case of successful implementation of FinTech is the establishment of Islamic Finance Knowledge Repository (I-FIKR) by ISRA Institute, a subsidiary of INCEIF University, a post-graduate university owned by the BNM. The knowledge repository was established in 2010, and it has successfully positioned itself as the primary one-stop resource for information, research references, and Shariah resolutions in relation to Islamic finance, capital market and economics. I-FIKR is being used as one of the main reference sources by various central banks, securities commissions, Shariah and ethical boards of banks and capital market intermediaries, and the Accounting and Auditing Organization for Islamic Financial Institutions (AOIFI).

I-FIKR is being enhanced through deployment of generative and explainable AI features to broaden its capability, including, among other things, alignment of Shariah principles (especially Fiqh Muamalat) with the environmental, social and governance (ESG) requirements. It is expected that the upgraded version of I-FIKR would enable future Shariah-compliant innovations to be more comprehensive by encompassing broader perspectives such as viability, ethical considerations, and technology requirements as its output, as well as cognitive learning loop capability for continuous self-learning.

Regulatory and Compliance Considerations

The regulatory landscape of the Islamic capital market in Malaysia is at an advance stage. As a leader in many aspects, Malaysia has two financial regulators, namely, the BNM and the SC that drive the advancement of both financial and capital markets.

BNM's primary focus is on banking, insurance, payments, monetary and fiscal strategy, and government economic policy levers, as well as the systemic risks in management of financial institutions.

The SC's key focus is on the capital market ecosystem, investors' confidence and protection, exchanges' operational robustness, fair intermediation and trading, and information transparency.

Malaysia's unique dual financial regulatory regime – conventional regulations based on English common law, and Shariah regulations based on the Fiqh Muamalat principles –has benefited Malaysia greatly as it provides greater flexibility for experimentation, interpretation, and perspective for variety of issues to be solved innovatively. As an example, the creation of sukuk as an alternative to bonds has

positioned Malaysia as the leader for several decades. It provides Malaysia with creativity that others may not even consider as additional options in solving financial issues, evidenced by the digital issuance of Sukuk Prihatin. Another example is the establishment of Islamic banking that is regulated independently from conventional asset and liability management (ALM) principles. One of the key differences is the allowance for Islamic banks to utilize a certain percentage of depositors' funds (subject to prior consent by each depositor) in a profit-sharing investment between the bank and its depositors; such arrangement is not permissible for conventional banks. This unique provision allows Islamic banks to collaborate with suitable licensed capital market institutions and use profit-sharing Islamic contracts to enhance depositors' income, on top of the typical ALM strategy. Such collaboration between financial and capital market regulations has provided Malaysia with the dynamic to expand and/or collaborate where needed.

Nonetheless, in ensuring compliance with both regulatory bodies, Shariah-compliant institutions are compelled to invest in competent resources, technology solutions and operations. Among the additional requirements are, first, to establish an internal compliance function that supervises adherence with relevant Shariah requirements, and second, to conduct periodic independent reviews to address findings and remedial actions.

Conclusion

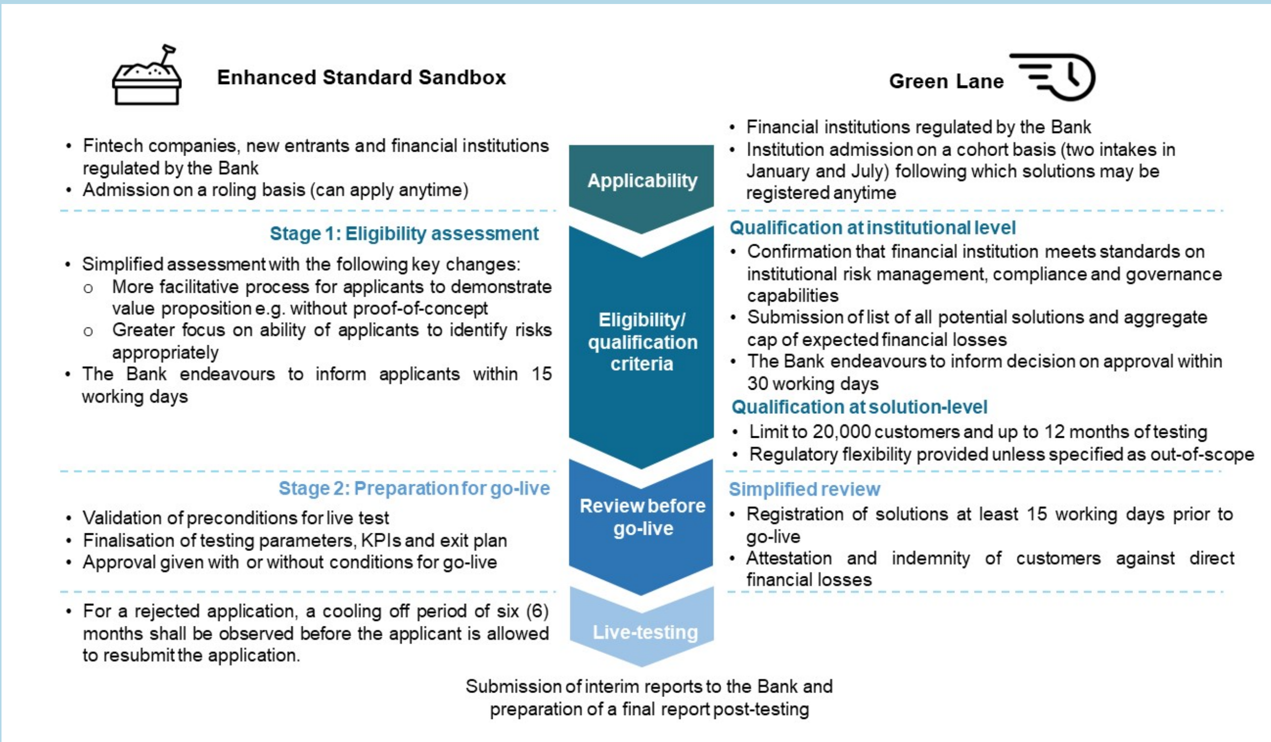
Malaysia is well-established in the Islamic finance and capital market arena. As the leader in this space, the main challenge is staying ahead of other countries and continuously innovating rather than chasing the pack.

As the global dynamics are shifting away from the typical norm, Malaysia is at a crossroads – whether to continue as an expert user of innovative solutions built by others or to move towards being the originator of solutions based on the first principle thinking approach. Adopting the existing stance would put Malaysia somewhere at the middle of the pack, i.e., as a neutral country rarely seen as a rival. However, the alternative is to have Malaysia become viewed differently by other countries, which would require shifts of mindset, strategy, and action plans.

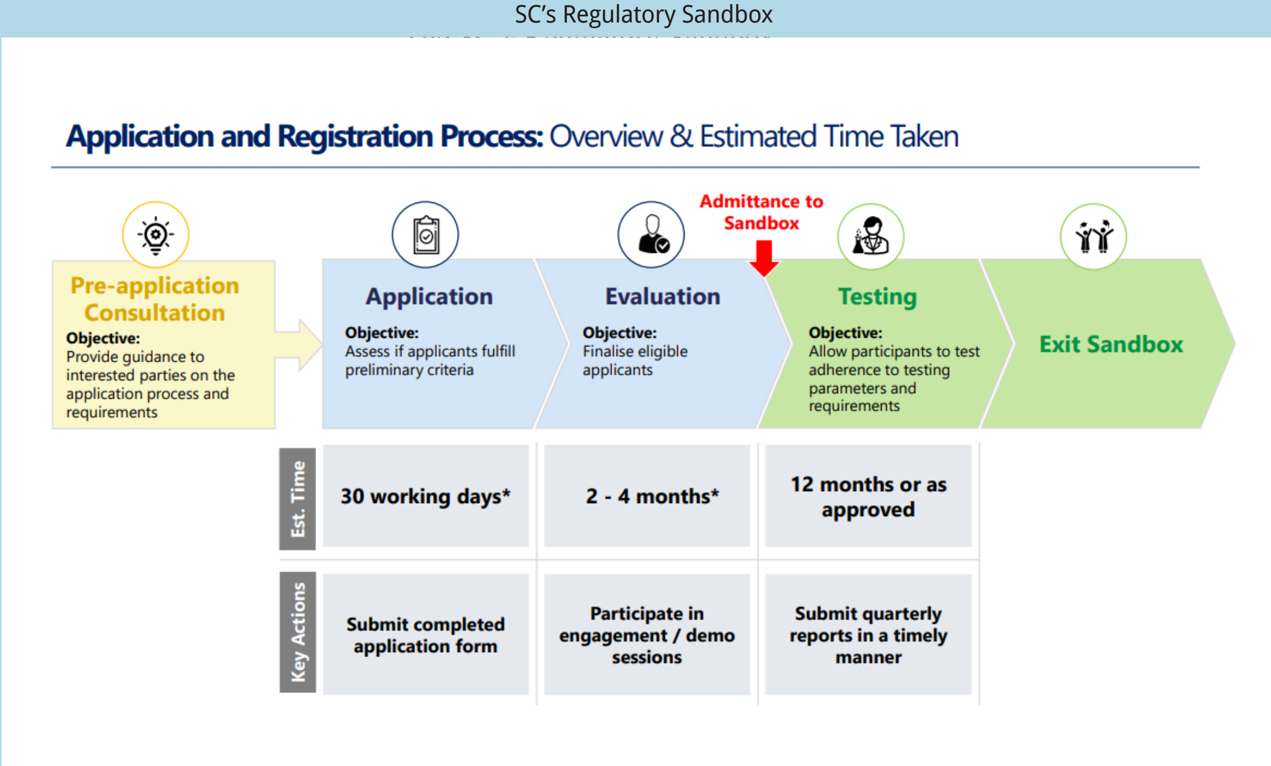
Islamic finance and capital market capability, coupled with ESG alignment is a great advantage that could benefit Malaysia, both on its own and especially in collaboration with the emerging nations of the ASEAN region. The versatility of Fiqh Muamalat with relevant narratives would facilitate Malaysia's navigating the choice between remaining as is or shifting towards being an originator of innovation. Having said all of the above, the Islamic finance and capital market in Malaysia could be different going forward.

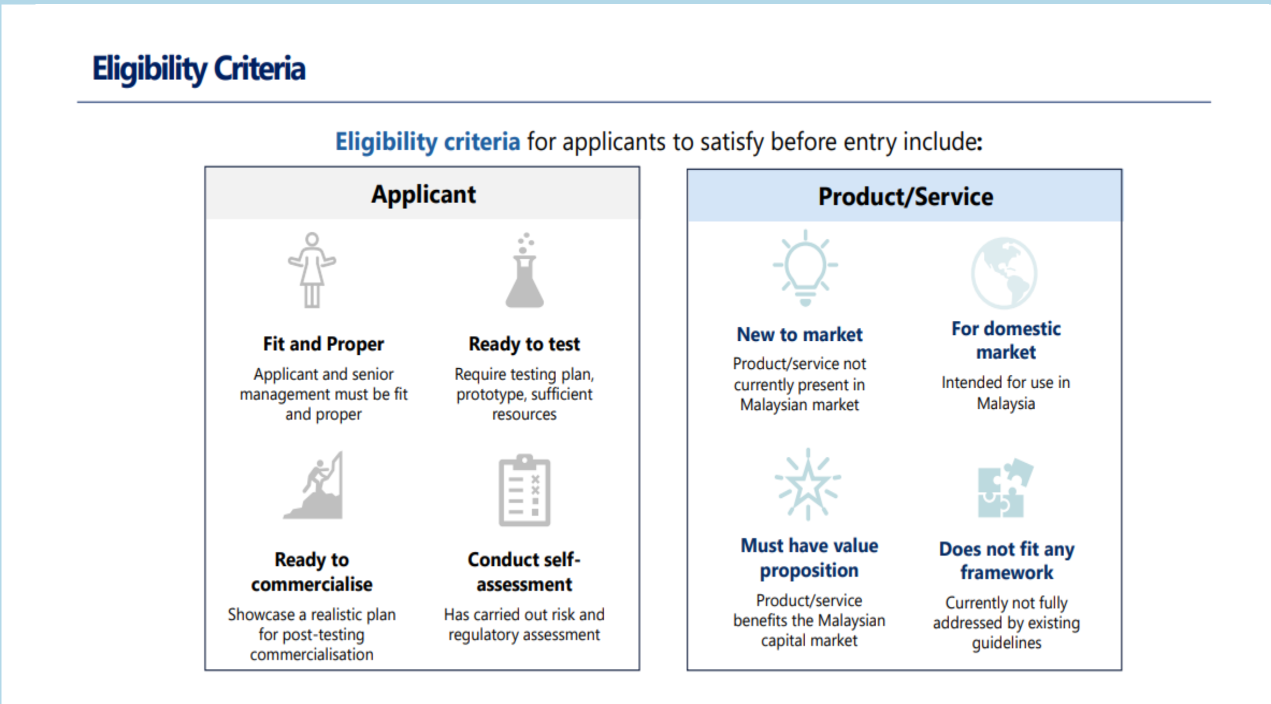
Appendix

BNM's Regulatory Sandbox



SC's Regulatory Sandbox





Source: BNM, SC

Notes

1 Source: BNM, “Regulatory Sandbox.”

2 Source: SC, “Regulatory Sandbox.”

3 Source: Fintech News Malaysia, “Malaysia Fintech Report 2024.”

4 Source: WTW, “Unlocking potential: Board diversity can help drive business success,” 1 April 2025.

5 Source: CIMB Securities, “Malaysia market outlook by CIMB Securities,” 28 June 2024.

6 Source: RTGS.global, “RTGS.global completes another successful instant settlement cross-border transaction between five banks across Georgia, Tajikistan and Uzbekistan,” 26 February 2024.

7 Source: “What Is a Sukuk? Sharia-Compliant Bond-Like Financial Instruments,” *Investopedia*, 8 June 2024.

8 Source: FitchRatings, “Malaysia’s Debt Capital Market Likely to Slow on Fiscal Consolidation; Sukuk Leadership Sustained,” 19 March 2025.

9 Source: SC, “Guidelines on categories of sophisticated investors,” 5 February 2024.

10 Source: Malaysia International Islamic Finance Centre “Malaysia’s first digital sukuk,” 4 February 2021.

MOHAMMAD RIDZUAN ABDUL AZIZ

Board Advisor, Fintech Association of Malaysia

Mohammad Ridzuan Abdul Aziz has over 25 years of commercial, regulatory compliance and technology experience in Malaysia and the Asia-Pacific region. On financial technology (FinTech), Ridzuan is a member of the Fintech Association of Malaysia advisory board, with focus on raising Malaysia’s unique combined values of a mature onshore FinTech eco-system, nimble Labuan mid-shore framework and wealth of depth and breadth from the Islamic digital economy ecosystems.

Ridzuan is currently an independent director of WorldRemit Malaysia, a subsidiary of a global cross-border digital remittance brand, Zepz. He is also an independent director with AEON Bank Berhad, the first Islamic digital bank in Malaysia. He also sits on the board at Dear Time Insuretech, Malaysia Rating Corporation Berhad, and Rolling Pay.

Ridzuan was also the Secretary General for the ASEAN Chapter of the Global Impact FinTech Forum, a global thinktank that focuses on FinTech initiatives with significant potential impacts, and a founding member of Faster Community focusing on MENA FinTech founders and business leaders.

Ridzuan graduated from the University of Wales, Aberyswyth with a BSc Economics, majoring in Accounting and Finance, and later obtained his MBA, specializing in Management Information Systems, from the International Islamic University Malaysia (2006).

ROONGKIAT RATANABANCHUEN

Chulalongkorn Business School

An Analysis of Thailand's Regulatory Landscape on Digital Assets: The New Path of Growth for Thailand's Capital Market

Introduction

In Thailand, the trading of cryptocurrencies has been legal since 2018 under a law known as the Emergency Decree on Digital Asset Businesses B.E. 2561 ("the 2018 Decree"). The digital asset market in Thailand has experienced significant growth since then. The number of accounts opened with digital asset exchanges reached 2.49 million as of March 2025, with approximately 168,000 accounts actively trading each month since 2024.[1]

In terms of trading value, the majority of investors in Thailand's digital asset market still comprise retail investors, making up about 60% of the total. However, the trading value of institutional investors has increased consistently over the past 5 years from just 7.6% in November 2020 to 40% in March 2025 as shown in Figure 1. Monthly trading value has ranged from around THB40 billion to as high as THB140 billion recently.

The number of cryptoassets traded on digital asset exchanges increased significantly, from just 54 in November 2020 to 168 in March 2025 as shown in Figure 2. The top four most traded digital assets are Tether (USDT) with a 39% share of trading, followed by Bitcoin (BTC) at 16%, XRP at 9% and Ethereum (ETH) at 5% as of March 2025.[2]

To ensure robust growth in Thailand's digital asset market and establish the country as a leader in digital assets, the Securities and Exchange Commission (SEC) has continuously introduced additional regulations and guidelines. These measures aim to address ambiguities in the definition of digital assets, clarify the business operations of various digital asset businesses, introduce new types of licenses, and provide opportunities for businesses to present innovations through a regulatory sandbox.

The objective of this article is to analyze the various regulations and guidelines that have been implemented in Thailand, providing readers with an understanding of the future growth trajectory of the country's digital asset market. Additionally, the article will examine the criteria set forth by the Bank of Thailand (BOT), offering insights into how the regulatory framework for stablecoins and cryptoassets is established.

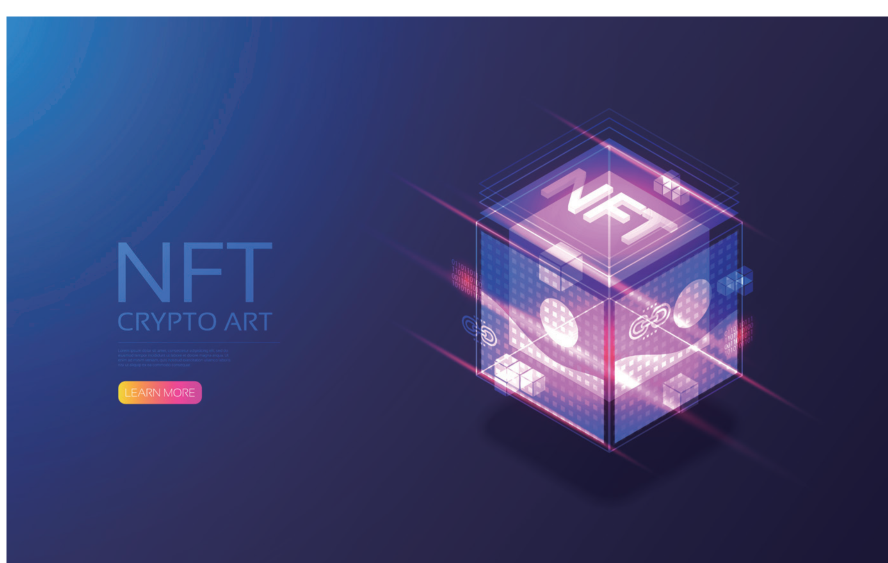
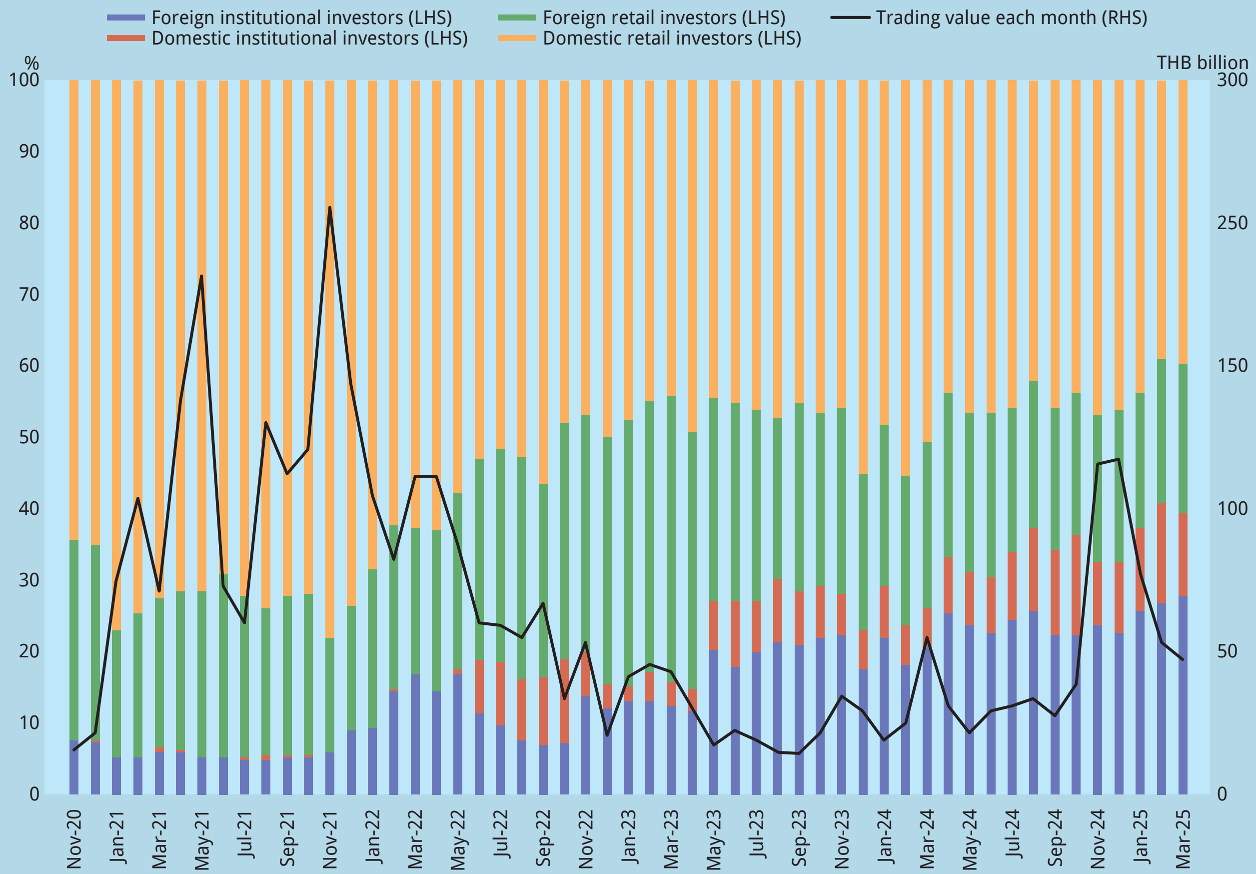
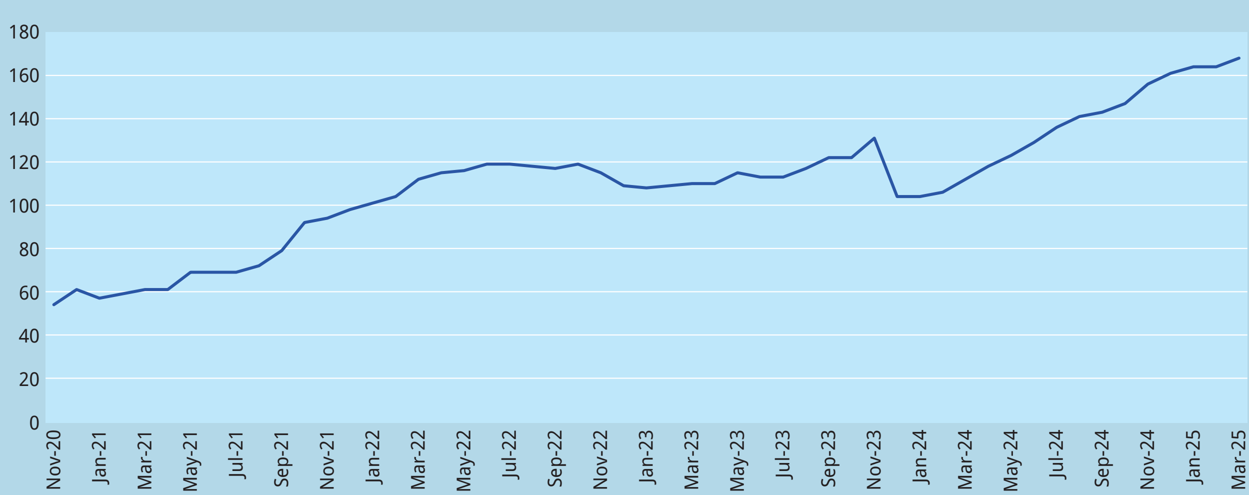


Figure 1: Monthly Trading Values and the Share of Trading by Investor Types



Source: Data obtained from the Securities and Exchange Commission (SEC)

Figure 2: Number of Cryptoassets Traded Each Month on Thailand Digital Asset Exchanges



Source: Data obtained from the SEC

Cryptoasset Taxonomy in Thailand

One example of the effort to categorize cryptoassets is the approach proposed by the International Monetary Fund (IMF) (2022)[3], which classifies cryptoassets into six categories, namely 1) non-fungible tokens (NFTs), 2) security tokens, 3) utility tokens, 4) unbacked cryptoassets, 5) stablecoins, and 6) central bank digital currencies (CBDCs). This article will compare this taxonomy with Thailand's proposed categorization of cryptoassets.

In Thailand, the SEC has made efforts to reclassify digital assets to better align with its primary responsibilities. As of 2024, cryptoassets under SEC regulation must meet four key criteria: 1) They are issued and represented in digital form; 2) They are intangible assets; 3) The owner has the right to control them; and 4) They are transferable. Additionally, these cryptoassets must be traded on decentralized ledger technology (DLT) or similar systems and possess economic value.

In addition to the basic definitions of cryptoassets mentioned earlier, the SEC has reclassified digital assets under its supervision. Compared to the cryptoasset taxonomy proposed by the IMF, this new classification can be aligned as shown in Table 1.

All types of NFTs are excluded from SEC regulation and are not permitted to trade on digital asset exchanges. If an NFT simply stores the underlying digital file (like an image, audio, or video) using blockchain technology, without granting any additional rights to the holder and if the token cannot be separated from its digital file, it will not be classified as a digital asset under SEC regulations and Thai digital asset law.

Regarding security tokens, the SEC

Table 1: Cryptoassets Taxonomy in Thailand

IMF Taxonomy	SEC Taxonomy and Its Regulatory Approach
1.NFTs	1. NFTs are excluded and not allowed to be traded on authorized digital asset exchanges.
2.Security tokens	2. Investment tokens – regulated by the Securities and Exchange Act B.E. 2535 (1992) and under specific rules and conditions written by the SEC. 2.1 Equity digital tokens 2.2 Debt digital tokens 2.3 Real estate digital tokens 2.4 Infrastructure digital tokens 2.5 Sustainability-labelled tokens and sustainability-linked tokens 2.6 Carbon credit tokens 2.7 Project-related digital tokens
3.Utility tokens	3.1 Ready-to-use utility tokens - Group 1: Basic and straightforward utility tokens related to customer relationship management, promotional purposes, consumption purposes, or acting as certificates or rights are not considered digital assets and not allowed to be listed in digital asset exchanges. - Group 2: utility tokens related to blockchain and applications, such as native/governance tokens, Decentralized Finance (DeFi) /Centralized Finance (CeFi) tokens, and exchange tokens are considered digital assets and required to follow the SEC rules. 3.2 Not ready-to-use utility tokens - Both Group 1 and Group 2 are considered digital assets and are required to follow the SEC rules.
4.Unbacked cryptoassets	4.1 Meme coins and fan coins are banned from trading on authorized digital asset exchanges. 4.2 SEC whitelist of unbacked crypto assets are allowed to be listed on digital asset exchanges.
5.Stablecoins	5.1 Stablecoins not denominated in THB are allowed to be listed on digital asset exchanges. 5.2 Stablecoins denominated in THB are banned from digital asset exchanges and are regulated by the BOT.
6.CBDCs	6. CBDCs are not under the regulation of the SEC. They are proposed, tested and managed by the BOT.

Source: Author's summary from the various sources of Thailand SEC documents refers to them as investment tokens and defines them as any digital asset that qualifies as a security under the Securities and Exchange Act B.E. 2535 (1992). Recently, the SEC has expanded the scope of investment tokens beyond stocks and bonds. These tokens are composed of the following.

1. Real estate digital tokens that are specifically backed by completed and ready-to-use properties, without any property rights issues or disputes. The property's value must be at least THB500 million and the value of the digital token must be at least 80% of the property's value.[4]

2. Infrastructure digital tokens that are backed by infrastructure assets or whose cash flow originates from such assets. These tokens can also represent the shares of a special purpose vehicle (SPV), either a limited or public company, established to invest in the infrastructure project.[5]

3. Green tokens, social tokens, sustainability tokens, and sustainability-linked tokens must meet the criteria of the green bond principle, sustainability-linked bond principles and Thailand taxonomy.[6]

4. Carbon credit tokens represent the trading of carbon reduction instruments by business operators under SEC supervision. The SEC aims for this initiative to help Thailand become a regional center for carbon credit trading.[7]

To accommodate the approval of the these investment tokens, the SEC amended the Securities and Exchange Act B.E. 2535 (1992) in 2023. This amendment expanded the definition of "securities" to include digital tokens that qualify as investment instruments as specified by the SEC. Additionally, the regulations governing traditional stock exchanges were revised to encompass digital asset exchanges that list investment tokens.

The SEC also encourages innovation by allowing issuers to offer multiple batches of tokens under the same shelf (i.e., a single application). Eligible tokens must have underlying or invested assets of a similar nature or related projects, as defined by the SEC. This also includes digital tokens related to soft-power industries, such as music, movies, drama, and arts.[8]

Regarding utility tokens, they are categorized into "not ready-to-use" and "ready-to-use" utility tokens. Ready-to-use utility tokens, which are straightforward and intended for customer relationship management, promotional purposes, consumption purposes, or acting as certificates or rights, are no longer considered as regulated digital assets by the SEC. Therefore, these Group 1 ready-to-use utility tokens are prohibited from being listed on digital asset exchanges, and businesses offering these tokens do not need to obtain a digital asset business license from the SEC.[9]

However, Group 2 ready-to-use utility tokens which are tokens related to blockchain and applications such as native/governance tokens, DeFi/CeFi tokens, and exchange tokens, must obtain SEC approval before being listed on digital asset exchanges for initial coin offerings (ICOs). If these tokens are not intended for listing on digital asset exchanges, approval is not required but businesses dealing with them must still obtain a digital asset business license from the SEC.[10]

Additionally, the SEC prohibits a digital asset exchange from listing Group 2 ready-to-use utility tokens if the token issuer is directly related to or a subsidiary of such digital asset exchange. This measure aims to prevent potential conflicts of interest which might affect the trading and pricing behavior of such tokens.

For not ready-to-use utility tokens, approval for their offering is required, along with the submission of a filing and draft prospectus.[11] These tokens must be offered through an authorized ICO portal. The SEC has chosen to closely regulate these tokens due to their potential for speculative trading by investors.

Unbacked cryptoassets, typically referring to common cryptocurrencies traded globally, are subject to specific regulations by the SEC. The SEC has banned the trading of meme coins and fan coins on Thai digital asset exchanges.[12] Regarding stablecoins, only tokens not pegged to THB are allowed to trade.

Stablecoins pegged to THB fall under the regulation of the BOT. Currently, the BOT permits private companies to offer THB-backed stablecoins if they are qualified as e-money. However, more complex stablecoins that involve minting, burning, or using smart contracts for payment conditions must seek approval to be tested in the BOT's Enhanced Regulatory Sandbox which will be discussed more later in this article.

Additionally, the SEC has introduced further regulations requiring digital asset exchanges to establish listing rules for selecting digital assets. These rules stipulate that assets must not be privacy coins, must disclose their source code or smart contract, and must have a whitepaper detailing key project information. If a digital asset shows significant negative changes or fails to comply with listing rules, procedures must be set for delisting the asset, including specifying the date and time for suspending trading, deposits, or withdrawals, and informing investors in advance to protect their rights.[13]

Digital asset trading platforms must also establish transparent and fair trading rules that ensure asset prices are efficient and follow market mechanisms. Additionally, they must have clearing and settlement rules that guarantee the secure and reliable delivery of digital assets after payment. Market maker rules should also be set to ensure that market makers maintain liquidity in digital asset trading according to market mechanisms, without exploiting other investors.

Digital Asset Businesses in Thailand and Their Key Regulations

In late 2022, the SEC expanded the categories of digital asset businesses from the original five types, namely 1) digital asset exchanges; 2) digital asset brokers; 3) digital asset dealers; 4) digital asset advisory services; and 5) digital asset fund managers to include a sixth category, digital asset custodians. This new category accommodates businesses that provide services for the custody or safekeeping of digital assets and the management of cryptographic keys or other confidential items necessary for authorizing transfers or transactions involving digital assets, either fully or partially.

The emergence of digital asset custodial wallet providers aims to assure investors of the long-term security of their digital asset holdings. The SEC sets out rules for safekeeping of digital assets. For instance, digital asset businesses must store no more than 50% of the customer's digital asset value in hot wallets. The remaining assets should be kept in the custody systems of digital asset custodial wallet providers.[14]

Additionally, in January 2025, the SEC issued new guidelines to allow digital asset custodial wallet providers to be businesses with experience or expertise in keeping direct custody of other traditional financial assets.[15] This allows traditional securities custodians to immediately offer digital asset custody services. However, digital asset custodial wallet providers must have an independent business structure to comply with the SEC's independence rules. Specifically:

1. The digital asset custodial wallet provider must not hold more than 5% of the total shares of the digital asset business it serves, including shares held by related parties.

2. The digital asset business being served must not hold more than 5% of the total shares of the digital asset custodial wallet provider.

To enhance the flexibility of digital asset offerings and custody, the SEC has issued additional guidelines allowing digital asset issuers to temporarily hold digital assets issued for customers during the issuance process.

Given that some digital assets currently provide various forms of returns during holding and safekeeping, the SEC aims to prevent misleading advertising about these returns. Therefore, the SEC has implemented strict regulations on providing returns to investors. Digital asset businesses must not promise or provide returns from the safekeeping of digital assets, except in the following cases:[16]

1. Returns generated as part of a consensus mechanism of certain blockchains.

2. Returns generated from blockchain upgrades (hard fork or soft fork).

3. Returns from airdrops by the digital asset issuer.

4. Returns that comply with promotional guidelines.

Additionally, digital asset businesses may provide factual information or knowledge about using DeFi systems without soliciting or encouraging customers to use these services. This rule is to limit the use of investment tokens in DeFi applications.

For new digital asset offerings, the SEC has issued regulations to support fundraising through ICOs. In Thailand, ICOs do not need to be limited to investment tokens. They can also include Group 2 ready-to-use utility tokens and not ready-to-use utility tokens. For a digital token to be eligible for an ICO, the issuer must aim to raise funds from the public. Additionally, the token should grant investors the right to invest in a specific project or business, or offer the right to receive certain goods, services or benefits.

Furthermore, to support private companies in issuing ICOs, the Revenue Department issued a Royal Decree in 2023 to exempt taxes related to the offering of investment tokens. This includes exemptions from corporate income tax and value-added tax (VAT) for ICOs in the primary market. Additionally, the trading of investment tokens on digital asset exchanges (secondary market) will also be exempt from VAT. These changes aim to align digital investment tokens with the same regulatory framework as securities.[17]

Investors eligible to participate in ICOs include:

1. Institutional investors, ultra-high-net-worth investors, or large investors as defined by the SEC.

2. Non-large investors can invest up to THB300,000 per offering, except for ICOs backed by real estate revenue streams or infrastructure project revenue streams.

For the issuer, the maximum amount that retail investors can invest in each round of offering is the greater of either up to four times the issuer's shareholders' equity or up to 70% of the total offering amount per round.[18]

Currently, the SEC in Thailand authorized a fund management company to participate in the offering of spot Bitcoin exchange traded funds (ETFs) in 2024.[19] The SEC has also updated regulations to allow Thai investors to directly invest in digital assets through fund management companies. In March 2025, the SEC amended the rules to exempt securities companies (SC) and asset management companies (AMCs) from needing a digital asset fund manager license if SCs and AMCs already hold licenses for mutual fund (MF) and private fund (PF) management.[20] These amended regulations will enhance the growth of investments in digital assets and provide diversification benefits for MF and PF investments.

The SEC also places significant emphasis on advertising practices. The updated regulations require digital asset operators to inform the SEC about their advertising campaigns. All advertisements, especially those featuring key figures like influencers or prominent spokespeople, must adhere to content standards to prevent misleading or exaggerated claims. Furthermore, these advertisements can only be distributed through the official channels of the business operator and must include relevant disclosures about the risks associated with digital assets.

One more key innovative regulation by the SEC is about allowing digital asset service providers to use certain cryptocurrencies as a medium of payment for the purchase of investment tokens and utility tokens. These cryptocurrencies include: BTC, ETH, Ripple (XRP), Stellar (XLM), USDT, USD Coin (USDC), and stablecoins used in programmable payment tests under the Enhanced Regulatory Sandbox, as specified by the BOT.[21] This regulatory adjustment broadens the use of cryptocurrency as a medium of exchange for regulated businesses to facilitate transactions beyond fiat currency.

Additionally, the government and the SEC are considering the creation of a national blockchain infrastructure to support small and medium-sized enterprises (SMEs) that lack the funds to develop their own blockchain or face limitations in joining private blockchains. This government blockchain initiative is named "Chain Aue Arthorn", which means the "blockchain for all".[22]

While the SEC is encouraging digital asset businesses in Thailand, the BOT has not permitted financial institutions under its supervision to freely invest in or participate in cryptoasset-related activities. The BOT has established regulations that cap commercial banks' investments at 3% of their capital funds to balance the advantages of new innovations with proper risk management.[23]

THB Stablecoin and Regulation Approach by the BOT

In 2024, the BOT launched the Enhanced Regulatory Sandbox, which differs from the regulatory sandbox established in 2019. The Enhanced Regulatory Sandbox aims to foster the development of innovative financial services that have not yet been introduced and are not currently regulated by Thai law. This initiative allows regulatory authorities to study and develop appropriate oversight measures, thereby minimizing potential impacts on the stability of the payment system and the overall financial system of the country.

Under the Enhanced Regulatory Sandbox, businesses can experiment with services related to stablecoins that have automated conditions for payments (programmable payments). One example of a company testing stablecoins in the Enhanced Regulatory Sandbox is Siam Commercial Bank (SCB) 10X, which is introducing the Rubie wallet.[24] The purpose of this wallet is to allow tourists to exchange digital assets and stablecoins from the global market into THB issued by Rubie wallet, called THBX. Users can immediately use the Rubie wallet with Thailand's payment systems, such as QR code payments.

In addition to the possibility of offering a tourist wallet as mentioned above, businesses can also present other business models under the Enhanced Regulatory Sandbox. These include escrow payment services that use DLT and smart contracts to manage funds and set conditions for money transfers, asset tokenization that creates stablecoins backed by other assets, or THB programmable payments to support the exchange of digital assets across different blockchains.

However, the BOT still does not permit the use of created stablecoins for investment or speculative purposes, such as staking. Businesses must also ensure that the assets used to back the value of stablecoins are kept separate from other assets in the form of deposits at financial institutions. Additionally, businesses must ensure that holders of stablecoins can convert these units back into THB under the terms, methods, and conditions agreed upon in the Service Level Agreement (SLA). Know Your Customer (KYC), Know Your Merchant (KYM), and Customer Due Diligence (CDD) are just a few minimum processes that businesses need to implement.

According to those regulatory developments, it appears that the BOT is relatively open to allowing certain types of digital assets to be used as a means of payment, provided there is sufficient regulatory oversight.

In addition to allowing the private sector to introduce innovations related to digital assets and their use as a medium of payment, the BOT has also been experimenting with and presenting CBDC. This includes both retail CBDC for the general public and wholesale CBDC for financial institutions. As of 2023, the BOT has completed testing the use of retail CBDC through a project called the Project Bang Khun Phom, which applied smart contracts to enable programmability on the CBDC.[25]

Regarding wholesale CBDC, studies began with the development of CBDC for financial institutions to use domestically through the Project Inthanon in 2018. This was followed by the Project Inthanon-LionRock between the BOT and the Hong Kong Monetary Authority (HKMA) from 2019 to 2021, focusing on using wholesale CBDC for international money transfers. This project later evolved into the mBridge project, which involved testing with the HKMA, the Digital Currency Institute of the People's Bank of China (PBC DCI), the Central Bank of the United Arab Emirates (CBUAE), and the BIS Innovation Hub (BISIH) in Hong Kong.[26]

Conclusion

Encouraging financial innovation in Thailand through various regulations for digital asset businesses and the creation of stablecoins is one of the policies that aim to drive the country's economic growth. With appropriate regulations, private companies will gain confidence in developing and utilizing digital tokens to explore new growth opportunities. Financial service providers will assist companies in fundraising and expanding their investor bases, while investors will have access to a diverse range of digital investment tokens that cater to their needs.

Thai regulators appear to support "Responsible Innovation" and emphasize the need for proper risk management to avoid negative impacts on the stability of both the payment and financial systems. Given the current regulations, Thailand's digital asset market is expected to grow significantly and will become one of the leading capital markets in Asia.

Notes

1 Data as of March 2025 obtained from the Securities and Exchange Commission.

2 See note 1 above.

3 IMF (2022), Regulating the Crypto Ecosystem: The Case of Unbacked Crypto Assets.

4 https://www.sec.or.th/EN/Pages/News_Detail.aspx?SECID=8839

5 https://www.tilleke.com/insights/thailand-sec-implements-new-ico-regulations/

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7 https://www.sec.or.th/Documents/PHS/Main/1071/hearing112568en.pdf

8 https://www.sec.or.th/Documents/PHS/Main/996/hearing252567en.pdf

9 https://www.sec.or.th/EN/Pages/News_Detail.aspx?SECID=11020

10 See note 9 above.

11 See note 9 above.

12 https://www.sec.or.th/EN/Pages/News_Detail.aspx?SECID=8994

13 https://www.tilleke.com/insights/thailand-updates-requirements-for-digital-asset-business-governance-and-exchange-rules/

14 The Notification of the Securities and Exchange Commission No. GorThor. 19/2561 Re: Rules, Conditions and Procedures for Undertaking Digital Asset Businesses.

15 https://www.sec.or.th/EN/Pages/News_Detail.aspx?SECID=10470

16 The Notification of the Securities and Exchange Commission No. GorThor. 19/2561 Re: Rules, Conditions and Procedures for Undertaking Digital Asset Businesses.

17 https://assets.kpmg.com/content/dam/kpmg/th/pdf/2023/03/th-tax-news-flash-issue-138.pdf

18 https://www.sec.or.th/EN/Pages/News_Detail.aspx?SECID=8285

19 https://www.bangkokpost.com/business/investment/2804674/thai-sec-approves-first-bitcoin-fund

20 https://www.sec.or.th/EN/Pages/News_Detail.aspx?SECID=11640

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26 https://www.bis.org/about/bisih/topics/cbdc/mcbdc_bridge.htm

ROONGKIAT RATANABANCHUEN

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Assistant Professor Roongkiat of Chulalongkorn Business School earned a Ph.D. in pension fund management from the London School of Economics and Political Science. He has expertise in Financial Planning, Capital Markets and Bank Management. His research has been recognized: the 2018 Securities and Exchange Commission (SEC) Best Paper award for the study of mutual fund performance in Thailand and 2017 Chartered Financial Analyst (CFA) Institute Best Paper award for the study of market microstructure. During 2022-2024, he has undertaken two research projects on digital financial services and cryptocurrency markets in Thailand. The first project received a grant from the National Research Council of Thailand (NRCT) while the second one is in collaboration with the Thailand SEC.

CHAKORN LOETNITHAT

Thailand Development Research Institute

From Savers to Investors: Mapping Investment Personas in Thailand's Capital Market[1]

Introduction

As Thailand transitions into a fully aged society, the issue of long-term financial security has become increasingly important. With a growing share of the population approaching or entering retirement, there is heightened pressure on individuals to ensure they have sufficient savings and investments to support themselves in later life. While national surveys consistently show that most Thai people are aware of the need to save for retirement, many still feel unprepared both financially and emotionally to meet that goal (Bank of Thailand, 2022). In fact, despite placing retirement savings as a top priority, over 80% of Thai respondents report that they have either not started planning for retirement or believe their current savings are insufficient. This mismatch between intention and action reflects a deeper issue often referred to as the stockholding puzzle: why so many people, even those with the capacity to invest, remain absent from capital markets.

This article aims to explore that puzzle through a people-centered lens. Using a combination of design thinking and empirical behavioral research, the study maps the diverse personas of savers and investors in Thailand. It identifies the key turning points that influence financial behavior, such as the transition from saving to investing, and the obstacles that people face along the way. By categorizing individuals into relatable personas, the study offers new insights into how different groups experience financial decision-making. The article is structured into six sections: it begins by outlining Thailand's savings and investment landscape in an ageing society, followed by a review of barriers to capital market participation. It then presents saver personas, their investment journeys, and investor personas, before concluding with policy recommendations. Ultimately, the paper advocates for financial policies that start with understanding people, not just economics, to effectively promote inclusive investment in Thailand.

Savings and Investment Landscape in Thailand's Ageing Society

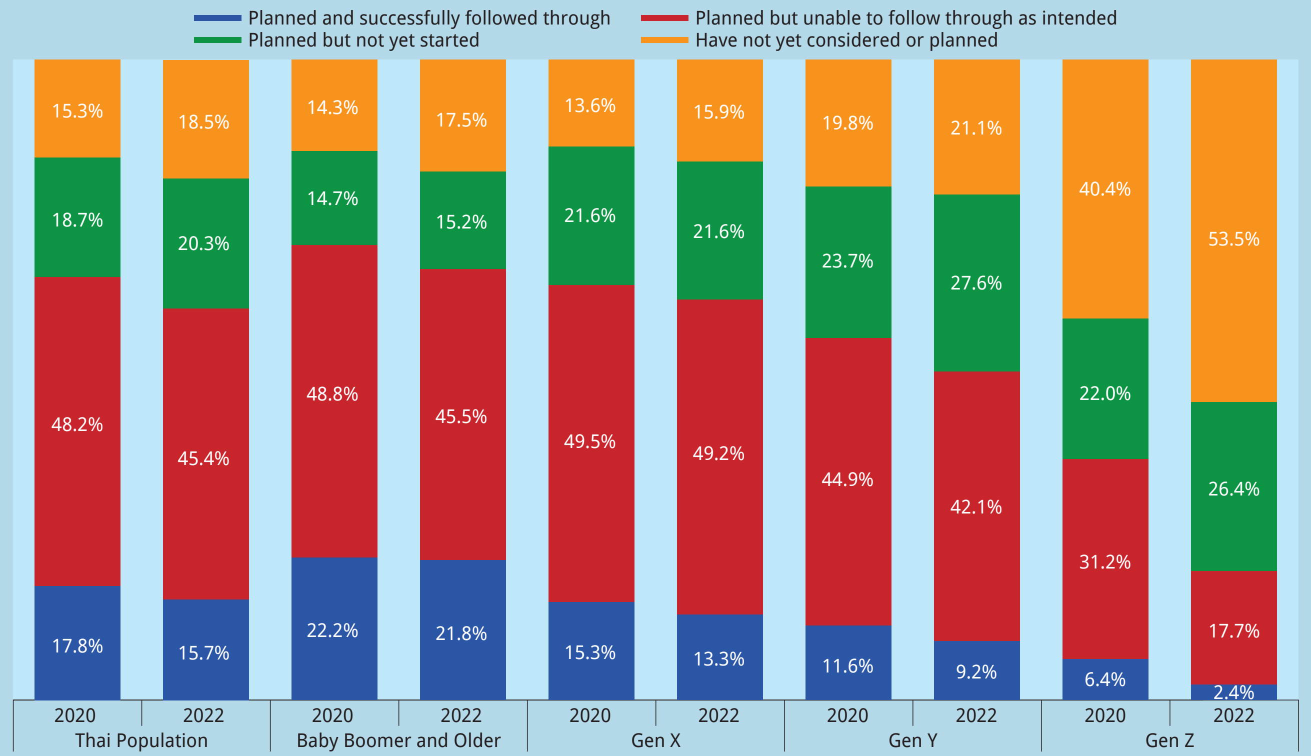
Thailand has officially entered the stage of a fully aged society, where more than 20% of the population is aged 60 or above. This demographic shift has made financial preparedness for post-retirement life more important than ever. One of the key aspects of this preparation is the ability of individuals to save and invest effectively throughout their working years. However, recent evidence suggests that many Thais still face serious challenges in planning for their financial future.

According to a financial literacy survey conducted by the Bank of Thailand (2022), retirement saving is consistently identified by Thai respondents as one of their main saving goals. Despite this awareness, a large proportion of people still report being unprepared. In fact, between 82% and 84% of respondents stated that they either do not have enough savings for retirement or have not made a retirement plan. Only 16% believe they are on track with their savings plans (Figure 1).

One critical issue is how to expand access to the capital market for the general population. A significant portion of Thai citizens in 2022, around 45%, still feel unprepared for retirement and unable to follow their saving plans (Bank of Thailand, 2022). For this group, the capital market may offer an opportunity to potentially gain higher returns and improve retirement outcomes. Moreover, another 39% of the population has not yet begun any serious planning or action for retirement. Raising awareness about long-term investment and the potential for wealth accumulation could inspire this group to start planning early.

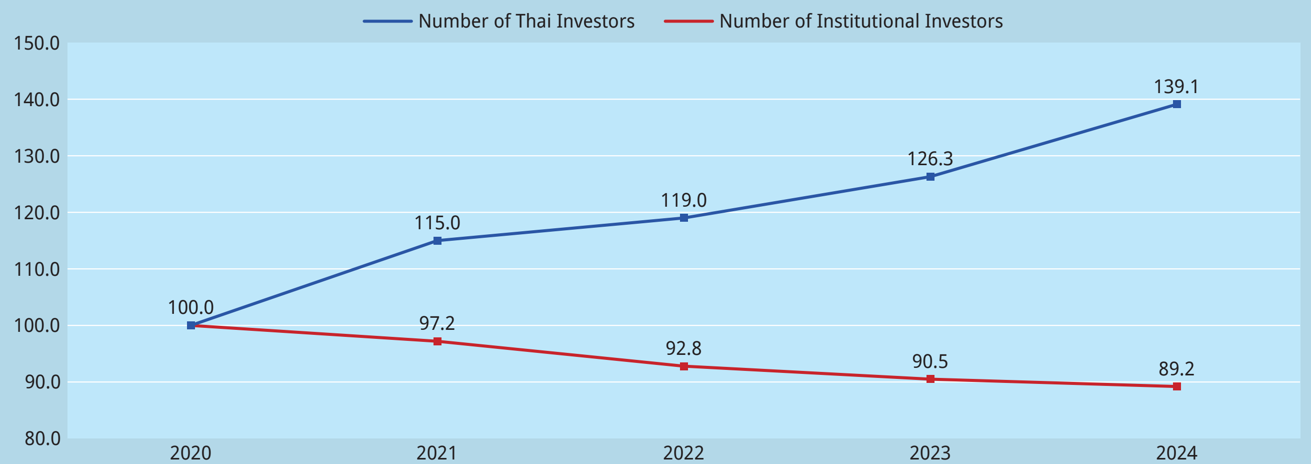
Recent data from the Securities and Exchange Commission of Thailand (2024) shows a growing number of retail investors entering the capital market. As of Q3 2024, there were approximately 2.08 million retail investors in mutual funds, growing at an average annual rate of 8.6%, and increasing by 39.1% since 2020. In contrast, the number of institutional investors has declined by 10.8% over the same period, averaging a 2.8% annual drop (Figure 2).

Figure 1: Retirement Saving Plans by Age Group in 2020 and 2022



Notes: (1) Due to limitations in sample size, the survey results for Gen Z may not fully reflect the characteristics of the entire age group across the country.
(2) Generational Definitions (based on age in 2022): Baby Boomer and older: Aged 57 years and above (born before 1966), Gen X: Aged 42–56 years (born 1966–1980), Gen Y: Aged 22–41 years (born 1981–2000), Gen Z: Younger than 22 years (born in or after 2001).
Source: Bank of Thailand (2022)

Figure 2: Changes in the Number of Retail and Institutional Investors, 2020–2024 (Base Year: 2020)



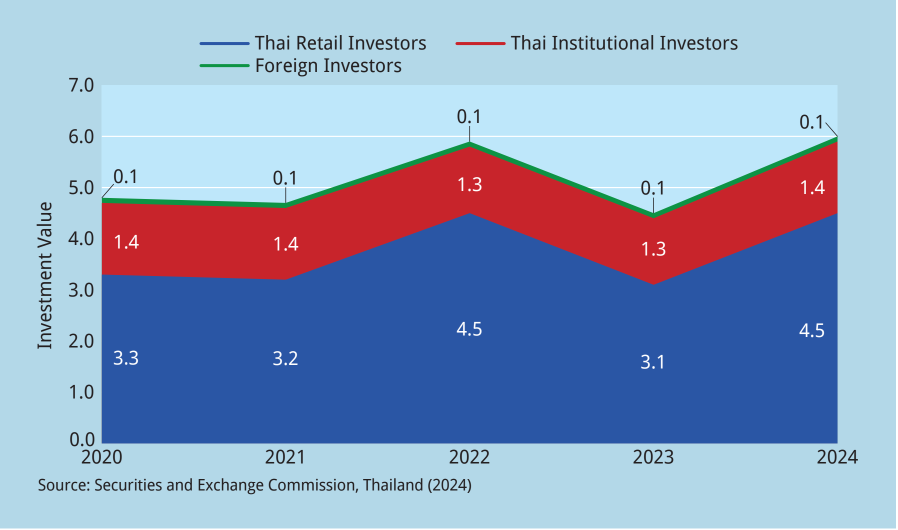
Source: Securities and Exchange Commission of Thailand (2024)

Retail investors now contribute significantly to total investment value. As of Q3 2024, their investment in mutual funds amounted to approximately TBH4.5 trillion, three times higher than the 1.4 trillion baht invested by institutional investors (Securities and Exchange Commission of Thailand, 2024). Figure 3 shows that the role of individual investors in the Thai capital market is growing, despite persistent inequalities in access and investment literacy.

However, capital market participation in Thailand remains relatively low in absolute terms. By the end of 2021, only 5.2 million securities trading accounts were active (Research Division, The Stock Exchange of Thailand, 2022), representing around 8% of the total population. This reflects the ongoing challenge known as the stockholding puzzle, where many individuals who could benefit from investing still choose not to participate.

Understanding the root causes of this puzzle, such as behavioral barriers, limited access, and trust gaps, is essential for designing better policies to promote broader and more inclusive financial participation.

Figure 3: Total Investment in Mutual Funds Categorized by Investor Type (Unit: Trillion Baht)



Source: Securities and Exchange Commission, Thailand (2024)

Empirical Framework: Barriers to Capital Market Participation

Understanding why many individuals do not participate in the capital market is a key step in solving the broader issue of financial under-preparedness, particularly in ageing societies like Thailand. Two main theoretical frameworks help explain this phenomenon: transaction cost theory and behavioral economics.

The transaction cost perspective, as discussed by Vissing-Jorgensen (2004), suggests that retail investors often have limited financial assets. Because of this, the benefits they might gain from investing may not outweigh the costs involved. These costs include both direct costs such as transaction fees and other indirect costs, like the mental effort and knowledge required to make investment decisions. People with a stronger financial background are more likely to view these costs as manageable. In contrast, for those with limited financial literacy, the cost of processing financial information becomes a major barrier to entry.

While traditional models assume people act rationally and evaluate the costs and benefits before making decisions, behavioral studies suggest otherwise. Research shows that in real life, people often rely on shortcuts or "heuristics" in decision-making (Tversky & Kahneman, 1974; Kahneman & Tversky, 1979; Thaler & Benartzi, 2004). This means even when investing seems beneficial, people might avoid it due to cognitive biases or fear of making mistakes.

Building on both theoretical frameworks, this article identifies four key dimensions that shape individuals' participation in the capital market: (a) financial readiness, (b) financial literacy, (c) behavioral biases, and (d) environment and trust. These factors help explain why many people hesitate or delay investing, despite having the potential to benefit.

Financial readiness

One major barrier is whether individuals feel financially "ready" to invest. While institutions like the Organisation for Economic Co-operation and Development (OECD) suggest having liquid savings before investing (International Organization of Securities Commissions [IOSCO] & OECD, 2019) and covering emergency expenses for about six months (Bank of Thailand, 2022), personal perceptions of readiness vary greatly. Many Thais may already meet this basic threshold but still delay investing. This delay leads to opportunity costs and missed chances for long-term wealth growth. It also highlights the need to consider the first determining factors in the investment decision journey for the saving persona.

Financial literacy

Financial literacy plays a dual role: it helps individuals begin investing and enables them to invest wisely. Research has shown that people with greater financial knowledge are more likely to invest in capital markets (van Rooij, Lusardi, & Alessie, 2012). Understanding key financial concepts like compound interest or inflation encourages individuals to recognize the value of early investment. For instance, knowing about inflation makes people aware that keeping money idle leads to value loss over time, pushing them toward investment.

However, many investors still lack the necessary knowledge to make informed decisions. Studies in both Thailand and abroad have found a strong link between low financial literacy and common behavioral biases, such as overconfidence where investors think they know more than they actually do, leading to risky or poor investment choices (Britainthinks, 2021; World Economic Forum, 2022; Fiscal Policy Research Institute, 2024).

Attitudes and behavioral biases

Attitudes and psychological biases also prevent many people from starting to invest. Even when they understand the importance of investing, emotional hesitation remains. Bias factors like inertia, present bias, loss aversion, peer pressure, overconfidence, narrow thinking, and limited attention all affect decision-making (Thailand Development Research Institute [TDRI], 2022; Stango & Zinman, 2023; Deloitte Center for Financial Services, 2016).

These attitudes are often shaped by life stage. Young adults, for example, may prioritize spending on housing or education over saving for retirement, leading them to postpone investment (IOSCO & OECD, 2019).

Environment and trust

Finally, trust in the system is a crucial factor. A lack of confidence in financial institutions or the market environment can stop people from investing altogether (World Economic Forum, 2022; Guiso, Sapienza, & Zingales, 2008). Social norms and community beliefs also shape investment behavior. Therefore, creating a supportive environment and improving public trust is essential to expanding capital market participation (Britainthinks, 2021).

Saver Personas in the Thai Context

Understanding people's financial behaviors is essential for designing policies that effectively promote saving and investment, especially in a society transitioning toward full ageing. In Thailand, TDRI (2022; 2024) applied design thinking and experimental economics to better understand Thai savers. Through in-depth interviews and behavioral experiments involving a large sample of working-age individuals, the research team identified 6 distinct saver personas, each reflecting a unique mindset and barrier to saving.

Mr./Ms. YOLO (You Only Live Once)

This persona values living in the moment and prioritizes short-term happiness over long-term planning. Although aware of financial risks, they believe future planning creates stress and uncertainty. For this group, spending money on present enjoyment is more fulfilling than saving for uncertain outcomes.

Mr./Ms. "I Can Save… Maybe"

This individual earns a stable income and is aware of the need to save but struggles with self-control. They want long-term financial security but are drawn to short-term pleasures. As a result, their expenses often exceed savings, leading to paycheck-to-paycheck living.

Mr./Ms. "How Do I Save?"

This persona has the discipline to manage money and wants to improve saving behavior but lacks knowledge and guidance. They are uncertain about how to begin or which tools to use and typically rely on basic saving methods they already know.

Mr./Ms. "I Save, But I Don't Know What I Don't Know"

This saver has a steady income, saves regularly, and believes their current methods are sufficient. However, they lack awareness of better financial strategies and rarely seek new information. Their stability is based on limited knowledge and confidence in familiar practices.

Mr./Ms. Burdened-by-Expenses

This persona faces high monthly costs from family responsibilities and unexpected emergencies. Although they try to manage their budget, limited cash flow leaves little room for saving. They are financially active but often fall short of monthly goals due to overwhelming obligations.

Mr./Ms. Low-Income Since Birth

This persona has low income, limited education, and few work skills. They try to minimize spending but cannot save enough to escape the poverty cycle. Without better income opportunities or support, their ability to save or invest remains very limited.

These personas highlight how different barriers, ranging from mindset and knowledge to income constraints, affect people's ability to save. These barriers align with three critical turning points: income sufficiency, access to financial services, and financial literacy. The third factor, financial literacy, is especially important, as it includes attitudes and beliefs that shape saving behavior. For example, the Mr./Ms. "How Do I Save?" persona illustrates how a lack of financial knowledge hinders confident decision-making. Meanwhile, Mr./Ms. YOLO demonstrates how psychological biases like present bias dominate financial thinking.

Each persona is also linked to specific behavioral biases, such as loss aversion, narrow bracketing, and overconfidence (TDRI, 2022; 2024). For example, the YOLO group exhibits strong present bias and tends to ignore the effects of compound interest. These patterns suggest that generic financial education or saving policies may not be equally effective across all groups.

Instead, policy tools should be matched to specific personas. For example, automatic enrollment and default saving rates might help YOLO-type savers overcome their reluctance to plan. Likewise, targeted guidance could help "How Do I Save?" individuals begin their journey with greater confidence.

In conclusion, understanding the diversity of saver personas allows policymakers to design more inclusive and tailored financial strategies. Rather than assuming a one-size-fits-all approach, recognizing differences in needs, behaviors, and psychological tendencies can help create more effective policies for increasing retirement savings through capital markets.

The Journey from Saving to Investing

While many Thai individuals demonstrate some level of saving behavior, especially those in the first four saver personas identified earlier, only a small portion make the transition to actual investing. This gap between saving and investing is a key challenge in addressing the stockholding puzzle in Thailand, where large numbers of people who could benefit from investing remain outside the capital market. To design effective policy responses, it is important to understand how individuals move or fail to move along the path from saving to investing.

Recent research by TDRI (2025) applied design thinking combined with extensive fieldwork, including in-depth interviews and surveys (Figure 4). From this process, the research identified 5 key turning points in the investment journey and categorized individuals into 6 groups depending on where they become "stuck" in the process.

The first turning point is interest in investing. People may be motivated by positive factors, such as tax benefits or the desire to provide for their families, or by negative factors like fear of inflation or financial insecurity in retirement. However, some remain uninterested due to lack of information or perceived complexity.

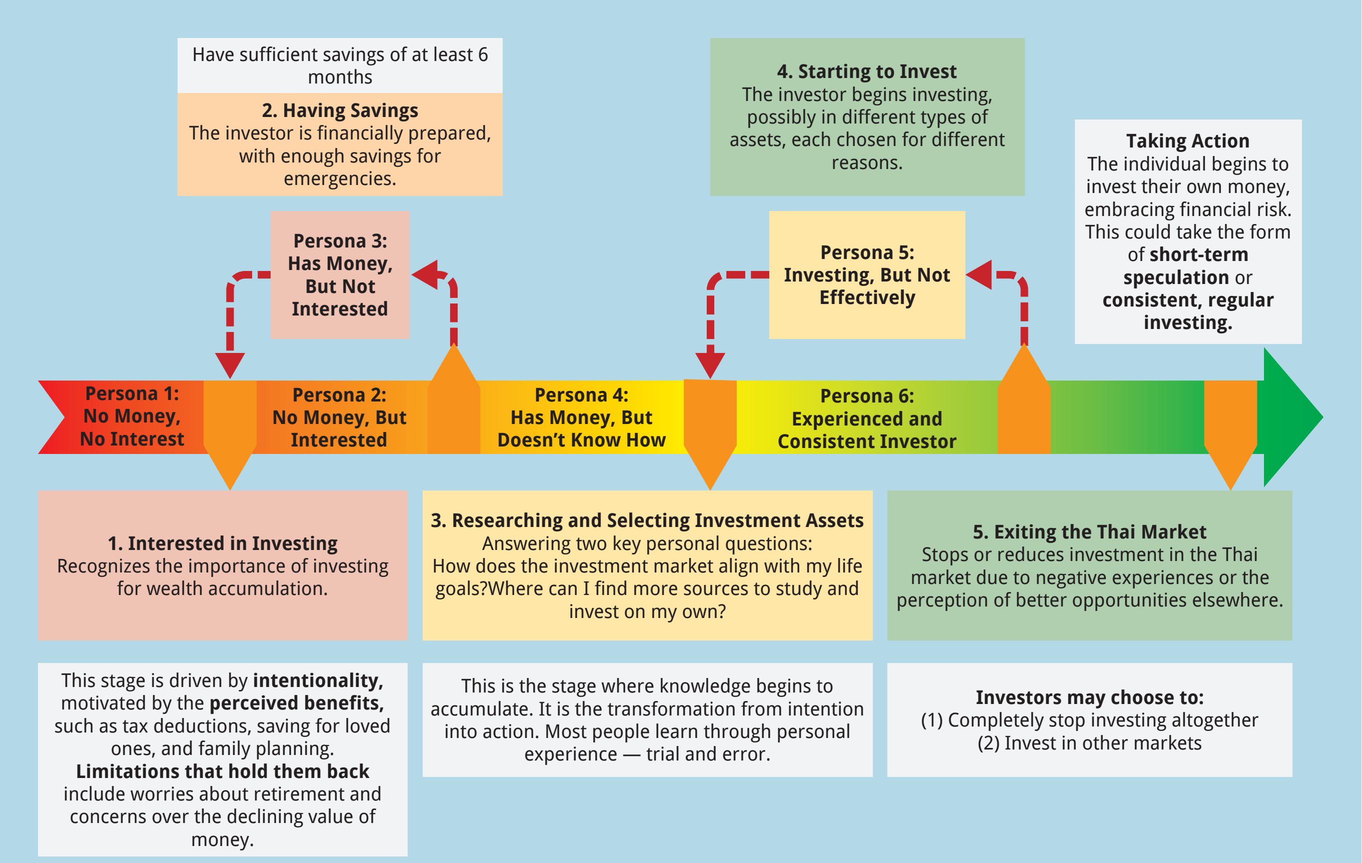
The second turning point is having sufficient savings. While global guidelines often recommend having emergency funds of at least six months (Bank of Thailand, 2022), many people either don't meet this threshold or don't perceive themselves as financially ready. Importantly, those who do invest usually use "cold money", funds not needed in the short term.

The third point is learning about investment products and making informed choices. This stage requires people to understand how different investment options align with their goals and risk tolerance. In practice, this stage often involves trial and error, and many report struggling due to lack of education or structured support.

The fourth point is actually making an investment, which can take two forms. The first is experimental investing, often driven by trial, emotion, or peer influence, without a clear plan. The second is habitual investing, where individuals find a personal system that fits their lifestyle and risk level.

The final stage is leaving the capital market. Some regular investors exit due to dissatisfaction with returns, many expect annual returns of 7–10%, which the Thai market often fails to deliver. Survey data show that 42% of investors are considering reducing their market exposure. Some explore foreign investments but hesitate due to language or product complexity.

Figure 4: Investment Journey Turning Points and Investor Personas



Source: TDRI (2025)

Understanding these stages can help tailor financial interventions more effectively, encouraging those who save to take the next step into long-term investing.

Investor Personas and Investment Readiness

To better understand how people engage with the capital market, the research by TDRI (2025) continues to identify 6 distinct investor personas, each representing different levels of readiness, knowledge, and confidence. These personas offer valuable insights into the barriers and motivations behind investment decisions and help guide more targeted policy interventions to increase capital market participation.

No Money, No Interest

This group lacks all three essentials: financial resources, knowledge, and interest in investing. Although they make up a small share of the population (around 4%), they include people from financially vulnerable groups such as the poor, over-indebted individuals, and the youth. For this group, the focus should be on raising awareness and building basic financial knowledge before encouraging investment.

No Money, But Interested

These individuals want to invest but lack the financial means. Representing about 7% of the population, they understand the importance of investing and often seek out information. However, financial hardship prevents them from taking action. Supporting this group requires mechanisms that lower the entry barrier such as matched savings programs or gradual investment plans.

Has Money, But Not Interested

This is the second largest group, making up an estimated 41% of the population. They have the financial means, often holding "idle money", but are not actively interested in the capital market. Common reasons include lack of time, prioritizing career, or feeling that investing is not relevant to them. These individuals could benefit from financial education early in life, especially through school curricula, to increase awareness of long-term benefits.

Has Money, But Doesn't Know How

Comprising around 45% of the population, the largest among all groups, this segment is financially ready and aware of the benefits of investing, yet they feel unprepared to start. They express uncertainty, fear of mistakes, and difficulty finding accessible guidance. Their hesitation often reflects a lack of financial literacy and confidence, which underscores the need for simplified tools, mentorship, and investment "onboarding" programs.

Investing, But Not Effectively

These individuals have started investing, but often without adequate knowledge. Many rely on personal beliefs or incomplete information and may display behavioral biases such as overconfidence. They make up about 21% of investors surveyed (around 1% of the total population). While well-intentioned, their lack of informed strategies exposes them to avoidable risks. They would benefit from targeted investment education and product transparency.

Experienced and Consistent Investors

This small group, around 2% of the population, represents seasoned investors who follow a clear strategy. They diversify investments, assess risk appropriately, and make decisions based on research rather than emotion. For instance, some prefer mutual funds for simplicity, while others invest in stocks directly to reduce fees and maintain control. These investors show high levels of financial literacy and confidence, with limited reliance on cognitive shortcuts.

Understanding these 6 investor personas allows policymakers and financial institutions to design differentiated strategies. Instead of treating the public as a uniform group, interventions can now be tailored through financial education, incentives, or simplified access based on where individuals stand on the spectrum of investment readiness.

Policy Implications: Understanding People to Solve the Stockholding Puzzle

Thailand's ageing society has made it more urgent than ever to help people prepare financially for retirement. While many Thais recognize the importance of saving, far fewer take the next step into investing. This gap, known as the stockholding puzzle, reflects not only financial limitations, but also psychological, behavioral, and informational barriers. Solving this challenge requires more than general financial education or product promotion. It starts with understanding people as they truly are.

Findings from previous research suggest that people are not homogenous. Both savers and investors in Thailand fall into diverse groups, each facing different pain points along the financial journey. For savers, six personas were identified from those who prioritize spending today (like the YOLO group), to those who save regularly but don't realize they could do more. Similarly, six investor personas show that while some people are curious but cash-strapped, others have money but no interest or are already investing, but not effectively.

These personas highlight that people encounter different turning points and different types of hesitation. Some struggle with income or debt. Others lack financial literacy or confidence. Some are held back by present bias, fear of loss, or simply don't know where to start. Therefore, treating all citizens with one-size-fits-all solutions is unlikely to bring meaningful change.

Policy responses should be tailored to specific persona types and life situations. For example:

- Automatic saving or default investment schemes may help those with strong present bias.
- Micro-investment platforms and flexible contribution tools could lower the entry barrier for low-income but motivated individuals.
- Simplified, step-by-step guidance can support those who are financially ready but overwhelmed by complexity.
- For disengaged individuals, especially those with idle savings, policy messaging should connect investing to personal life goals such as family security or retirement comfort.

Most importantly, these solutions must be designed with empathy and insight. Policymakers should not assume that lack of action means lack of logic; often it means lack of support, trust, or relevant options. By starting with people not just products or numbers, Thailand can design more inclusive policies that move individuals from awareness to action, and from saving to sustainable investing.

Understanding people is not just the first step. It is the foundation for solving the stockholding puzzle and building a financially resilient society in the process.

Note

1 This article summarizes parts of the research findings conducted by the Inclusive Development Policy team, Thailand Development Research Institute (TDRI), from the studies "Effective Measures to Promote Financial Planning of the Thai Population for a Longevity Society (Phase 1 & 2, 2021–2024)" submitted to the National Research Council of Thailand, and "Enhancing Savings through Capital Market Channels (Phase 1, 2024–2025)" submitted to the Capital Market Development Fund (CMDF).

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Chakorn Loetnithat is currently a Senior Researcher at the Thailand Development Research Institute (TDRI), where he specializes in public economics, behavioral research, and policy evaluation. He holds an MSc in Economics from the University of Warwick and a BA in Philosophy, Politics and Economics from Thammasat University.

Chakorn's research focuses on behavioral economics and financial literacy, particularly in promoting saving habits and investment behavior among Thai citizens. He has led and contributed to multiple national-level projects on financial planning in an aging society, policy designs for boosting small and medium-sized enterprises (SMEs), and the use of behavioral insights to improve public programs. Notable works include "Evaluating Financial Literacy and Saving Behavior of GSB Customers" and studies on the use of lotteries to enhance retirement planning, which were featured in both academic reports and national media outlets.

Besides research, Chakorn is actively involved in public communication. He has written numerous op-eds in major Thai newspapers such as Bangkok Post and Bangkok Business News and has appeared on CU Radio FM and various podcasts discussing the role of behavioral economics in tackling social challenges.

JOSEPH CHERIAN

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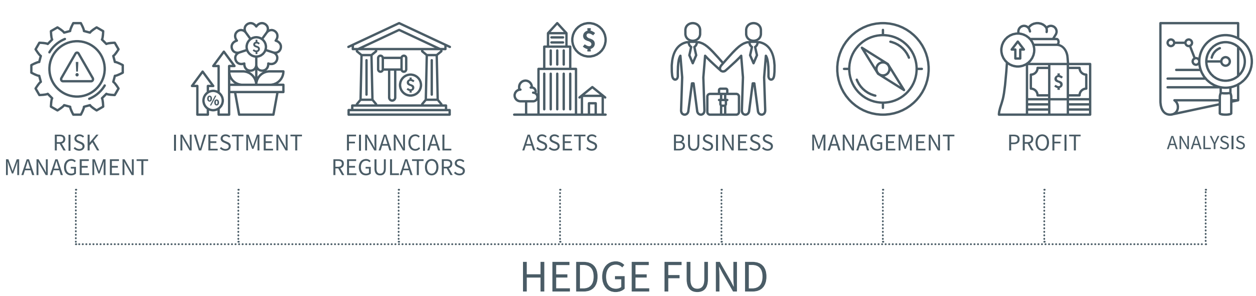
The Return of Beta: Rethinking Hedge Fund Performance

Introduction

This commentary examines whether hedge funds, long considered bastions of alpha generation and diversification – and high costs – have transformed into products that essentially deliver traditional beta exposures. In my 2023 working paper, Cherian, Kon, and Li (henceforth CKL [2023]) my co-authors and I conducted a comprehensive empirical investigation spanning twenty years (2000 – 2020), by using hedge fund strategy indices from both North America and Asia.[1] Through multi-factor regression models and hedge fund clone construction, we demonstrate that a significant portion of hedge fund returns – up to 81% – can be explained by systematic, market-based risk factors and not the much-touted hedge fund manager's unique, alpha-generating skills.

The research challenges the assumption that hedge funds deliver substantial and consistent alpha. Instead, it shows a systematic decline in alpha over time, particularly after the Global Financial Crisis (GFC), with clones replicating hedge fund returns – sometimes even outperforming them during stress periods such as the COVID-19 pandemic. The findings call into question the value proposition of hedge funds, particularly in light of their high fee structures. This CKL (2023) study is unique in that it analyzes hedge fund strategy indices from both North America and Asia.



Background and Motivation

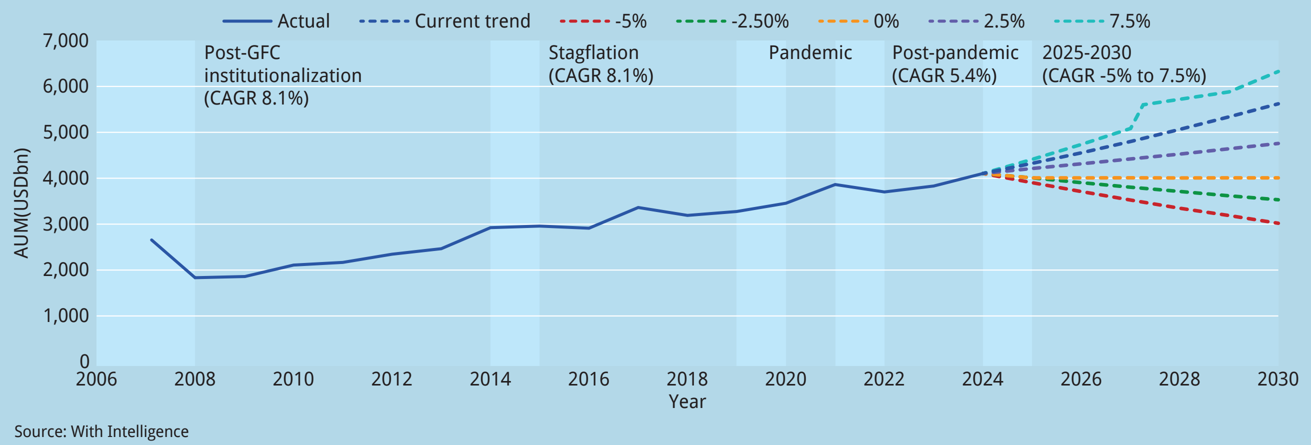
Hedge funds have traditionally offered investors diversification from traditional long-only asset classes and the promise of "alpha" from sophisticated investment strategies. They have also experienced tremendous growth in assets under management (AUM). Just in 2019, the global hedge fund industry managed approximately USD2.3 trillion in assets, with USD183 billion in Asian hedge funds. According to With Intelligence (Hedge Fund Outlook 2025), the hedge fund industry's AUM is projected to grow from approximately USD4.5 trillion at the end of 2024 to over USD5 trillion by 2028, and reach USD5.5 trillion by 2030. The projected growth of hedge fund industry assets is depicted in Figure 1 below.

Despite this popularity, as depicted by AUM growth, actual hedge fund performance in recent years has disappointed relative to market indices. An adjunct faculty member at the Hong Kong University of Science and Technology (HKUST) even went so far as to boldly write, "Few practices in the business world are as absurd, senseless, irrational, and cynical as the allocation of investments of large public pension funds and endowments. And few fail so often and so predictably to achieve their true objectives. Yet almost all outside the industry – and many inside it – are fooled into believing the opposite." He proceeded to reference news articles that documented clients' growing frustration over the disappointing returns of certain large hedge funds.[2]

The same "Hedge Fund Outlook 2025" report by With Intelligence indicates that an investor could have done slightly better with a low-cost Global 60/40 Portfolio (Equities/Bonds) over a 5-year period from July 2019 to June 2024 as compared to a more expensive diversified hedge fund portfolio (Figure 2).

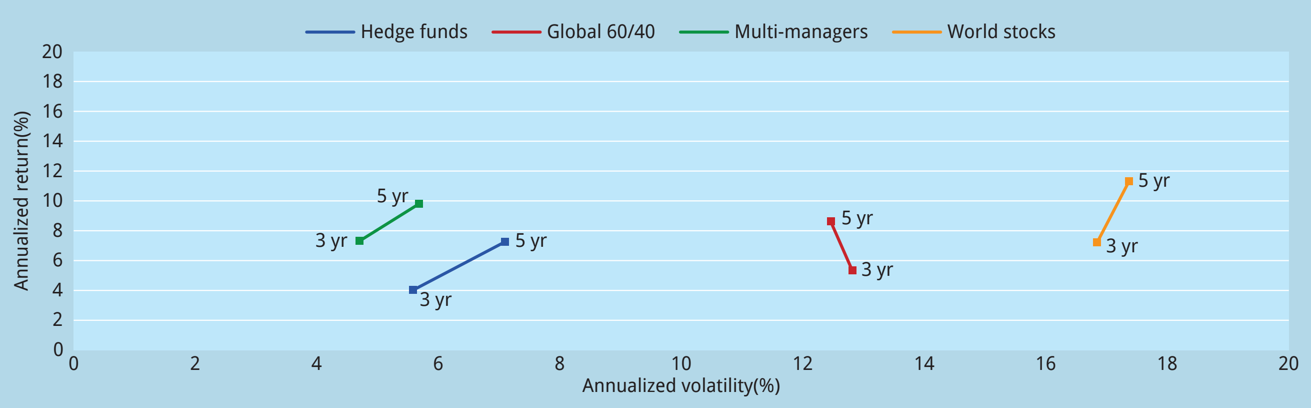
While Dr. Michael Edesess of HKUST

Figure 1: Projected Growth of Hedge Fund Industry Assets:
Range of Outcomes Based on Differing Compound Annual Growth Rates (CAGRs)



Source: With Intelligence

Figure 2: Annual 3-Year and 5-Year Risk-Adjusted Return Comparisons:
Range of 3-Year and 5-Year Return Outcomes Against Their Respective Annualized Volatility



Note: All data to June 2024.
Source: With Intelligence

may be correct on average in his observations, it is important to recognize that there are always two sides to the coin. High-quality hedge funds, such as Citadel, D.E. Shaw Group, and Renaissance Technologies, continue to deliver strong long-term performance on a risk-adjusted basis.

Compounding this negativism is the growing body of research suggesting that hedge fund returns may be replicated through exposure to known risk premia. Additionally, the development of liquid alternatives and hedge fund clones that use exchange-traded instruments challenges the exclusivity of hedge funds' value proposition.

This article situates itself within that debate; assessing whether hedge funds truly generate alpha, or if their performance can be adequately explained using linear and non-linear factor models, which is commonly referred to as "replication" in the hedge fund industry. The current analysis expands on earlier replication studies (e.g., Hasanhodzic and Lo [2007], Fung and Hsieh [2004]), incorporates regional analysis, and conducts a novel event study based on COVID-19.[3,4]

Research Questions and Objectives

The paper is guided by the following core research questions:

1) What are the risk exposures and performance drivers of hedge fund strategies across geographies (North America and Asia)?

2) How have these exposures and return profiles changed before and after the GFC?

3) Do hedge funds deliver manager-specific alpha, or is most of their return attributable to systematic beta exposures?

4) How do hedge fund clones, constructed using public market factors, perform in comparison to actual hedge funds, particularly during extreme market events like COVID-19?

The objective is to empirically test the replicability of hedge fund returns using public market factors and to evaluate the persistence of alpha under dynamic market conditions.

Data and Methodology

CKL (2023) utilize hedge fund strategy indices from Eurekahedge (now a part of With Intelligence) for both North America and Asia. The sample covers ten strategies: Long/Short Equity, Macro, Commodity Trading Advisor (CTA)/Managed Futures, Event Driven, Distressed Debt, Relative Value, Multi-Strategy, Arbitrage, Fixed Income, and the overall Hedge Fund Index.

In an earlier companion study, Cherian, Kon, and Weng (2015) examined the downside risk and loss profiles of hedge funds in North America and Asia. This analysis was conducted to identify significant cross-regional differences and to evaluate whether these disparities have converged or diverged over time. The key finding was that downside risks persist despite hedge funds being marketed as market-neutral strategies. Moreover, Asian hedge funds underperformed their North American counterparts in both rising and declining markets.

The returns in the CKL (2023) study are net-of-fees and denominated in local currencies, spanning January 2000 to March 2020. The study also addresses the known issue of returns smoothing due to illiquidity. Using Durbin-Watson and Ljung-Box tests, autocorrelation is detected in many strategies, particularly Fixed Income and Distressed Debt. CKL (2023) correct for this using Geltner's unsmoothing technique, producing more accurate estimates of volatility and risk.

The multi-factor model includes ten factors: traditional market indices (Equity, Bond, Credit), Fama-French Style factors (Size, Value, Momentum), and non-linear risk factors (DVIX for Volatility, out of the money [OTM] short puts for tail risk, and trend-following indicators).[5] For Asian funds, regional replacements are used for factors such as equity and currency indices.

Regression Analysis and Key Findings

CKL (2023) apply a ten-factor linear regression model across all strategy indices to decompose returns into explained variance (beta exposure) and residual returns (alpha). For most strategies, particularly equity-biased ones, R^2 values are high – up to 86% – indicating that a large portion of returns is explainable via systematic factors.

Long/Short Equity, Fixed Income, and Multi-Strategy funds are significantly exposed to Equity Market, Size, and Credit factors. Distressed Debt funds exhibit high negative beta to Credit, consistent with their exposure to High-Yield Debt. Arbitrage strategies show strong exposures to Volatility and Tail Risk.

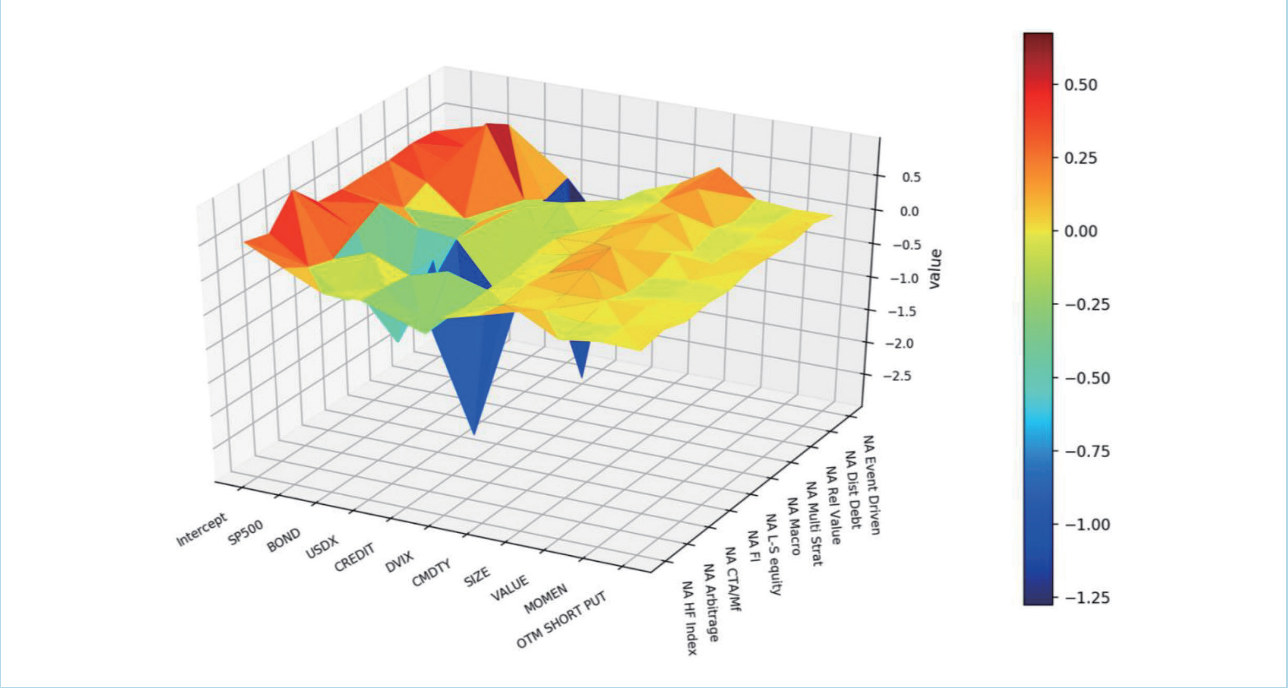
Importantly, strategies such as Macro and Managed Futures exhibit low R^2 values (0.03–0.30), supporting their claim to market neutrality. However, rolling window regressions reveal time-varying beta exposures that contradict this neutrality in the short run. For example, North America Macro shows a beta of 0.03 to the S&P500 over the full sample, but the rolling betas range from -0.30 to +0.50.

This discrepancy highlights the need for dynamic rolling correlation-type analysis when evaluating hedge fund strategies' time series of returns.

Figures 3a and 3b present heatmaps of beta exposures for North American and Asian hedge fund strategies, respectively, covering the period from January 2000 to March 2020. Given that the Bond and Credit factors are derived from yield data, their beta magnitudes are expected to be relatively high. Notably, the troughs in the heatmaps reveal particularly negative Credit exposures for North America Fixed Income, North America Distressed Debt, and Asia Fixed Income strategies, with betas nearing -3.0.

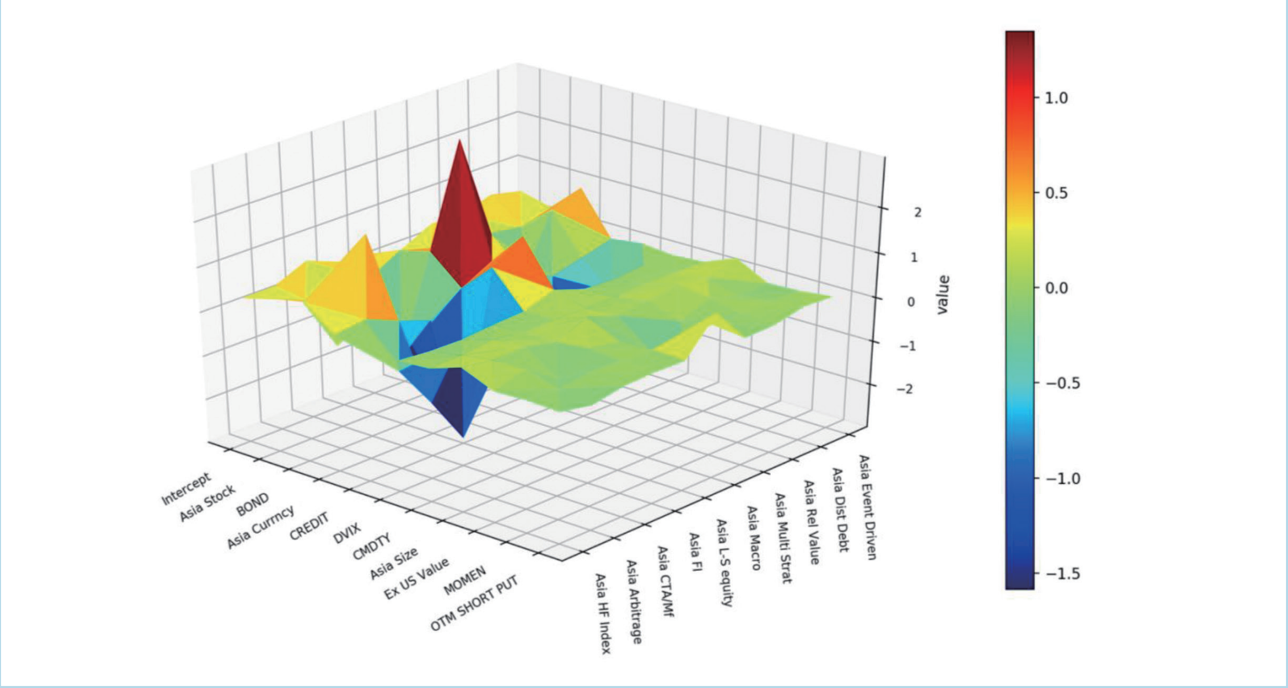
Conversely, the peak Bond exposure in the Asia Macro strategy indicates a markedly positive sensitivity to the Bond factor relative to other strategies. Importantly, due to the inverse relationship between bond prices and yields, a more negative beta for the Bond and Credit factors suggests heightened market exposure.

Figure 3a: Heatmap of Intercept (Alpha) and Beta Exposures of North America (NA) Hedge Fund Strategies (Sample period: January 2000 to March 2020)



Source: CKL (2023)

Figure 3b: Heatmap of Intercept (Alpha) and Beta Exposures of Asian Hedge Fund Strategies (Sample period: January 2000 to March 2020)



Source: CKL (2023)

Pre-GFC vs. Post-GFC Comparisons

The analysis splits the sample into pre-GFC (2000–2008) and post-GFC (2008–2020) periods. In North America, hedge fund alpha declined substantially across all strategies post-GFC. For instance, Macro strategy's alpha fell from 0.64% to -0.04% on a monthly basis. This decline is attributed to increased transparency, data availability, and the commoditization of macro insights through alternative data.

In Asia, alpha also declined but to a lesser degree. Strategies such as Multi-Strategy and Macro retained modest alpha, possibly due to less crowded markets and lower AUM relative to North America.

Beta exposures also shifted. Equity-focused strategies maintained consistent exposure to Stock and Size, while Fixed Income and Distressed Debt strategies increased sensitivity to bond and credit factors. Event Driven and Arbitrage strategies became more exposed to volatility and tail risks post-GFC.

Out-of-Sample Predictability and Hedge Fund Clones' Performance (Replication)

Two prediction models are tested: one using fixed beta weights (from 2000–2016) and the other using rolling 5-year regression coefficients. The hedge fund clones' out-of-sample performance (2017–2020) is then compared to realized returns, simply to determine if hedge fund clones are good at replicating hedge funds' actual returns.

Table 1 in the Appendix reports the out-of-sample expected return statistics generated by the two proposed clone models, alongside the realized returns of the corresponding hedge fund strategy indices. This is conducted over the period from January 2017 to March 2020. Overall, there is no compelling evidence that the clones' predicted expected returns differ significantly from the realized returns of their respective hedge fund benchmarks.

In fact, hedge fund clone portfolios, constructed with risk factor weights (no alpha), match or exceed actual hedge fund performance. During the period 2017–2020, rolling clones outperformed actual funds across most North American strategies, with much better Sharpe ratios. This trend holds even when considering the COVID-19 shock in Q1 2020.

In summary, the Table 1 results demonstrate that:

- High correlations (often above +0.90) exist between predicted and realized returns, particularly for fixed-weight clones.
- Rolling-weight clones better capture recent shifts in market dynamics and produce smaller prediction errors.
- Certain strategies (e.g., Macro, CTA) show improved correlation with rolling-weight clones, consistent with their time-varying betas.

Event Study: COVID-19 Pandemic

Using daily clone returns, CKL (2023) go on to conduct an event study around two key dates: the 23 January 2020 Wuhan COVID-19 pandemic lockdown and the 11 March 2020 World Health Organization (WHO)-based pandemic declaration. Clones are compared to market benchmarks (S&P500, MSCI Asia) and to their own historical means.

Table 2, which can be found in the Appendix, presents the 5-day and 10-day cumulative abnormal returns (CARs) for the two selected event dates, calculated as the aggregated CARs over 5 and 10-days surrounding each event. The results indicate that the daily clones underperformed relative to their 1-year historical performance, but outperformed broader equity benchmarks such as the S&P500 and MSCI Asia indices. Regardless of geography, the daily clones – which were able to allocate up to 70% of their positions to non-equity risk factors – were buffered from sharp equity market declines during the pandemic by exposures to alternative factors such as Credit, trend-following strategies, and DVIX. These allocations contributed to their relative outperformance during the observed periods.

The key findings from Table 2 are:

- Clones outperformed equity benchmarks during both event study shocks, thanks to diversified exposures.
- North America CTA and Asia Macro clones delivered positive CARs, consistent with their trend-following and volatility strategies.
- Asia clones reacted earlier and more strongly to the Wuhan COVID-19 pandemic lockdown, reflecting better integration with local risk sentiment.

Notably, Asia-focused hedge funds underperformed their respective replication strategies, i.e., clones, during the pandemic. This is attributed to higher redemption activity and more flexible liquidity terms, as many Asian funds allow monthly or even daily redemptions. Clones, unaffected by redemptions, demonstrated greater resilience.

Conclusions and Implications

The CKL (2023) study's results underscore a critical insight: hedge funds are increasingly behaving like high-cost vehicles for delivering traditional beta. The myth of consistent alpha, particularly in North America, is largely dispelled by the data between January 2000 to March 2020. Even "market-neutral" hedge funds engage in short-term market timing.

Hedge fund clone portfolios, constructed using public data, offer comparable or superior performance with greater transparency and lower fees than their corresponding hedge fund strategies. Their strong correlation with actual hedge fund returns, and resilience during crises, make them a compelling alternative for institutional investors.

For asset allocators, the findings suggest a reassessment of the role of hedge funds in diversified portfolios. For policymakers and regulators, the results highlight the value of greater transparency and standardized risk factor disclosures in alternative investments.

In conclusion, while hedge funds may still offer niche alpha in certain regions or strategies, their overall return profile increasingly resembles traditional beta—with less justification for high fees. The ongoing evolution of alternative beta strategies suggests that the hedge fund industry may need to redefine its value proposition in the years ahead.

Appendix

Table 1: Comparison of Out-of-Sample Expected Returns (Fixed Regression and Rolling Window Regression) versus Realized Returns (Sample period: January 2017 to March 2020)

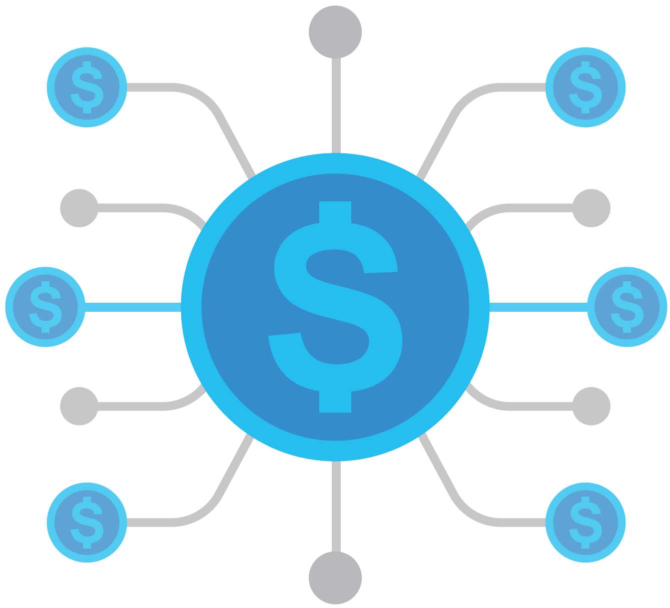
	Realized Return (AR Adjusted)		Expected Return - Fixed Regression					Expected Return - Rolling Window Regression					Comparison
	Average Monthly Realized Return	Average Monthly S.D	Average Monthly Expected Return	Average Monthly S.D	Average Difference with Realized Return	T-stat of Difference with Realized Return	Correlation – Fixed ER with Realized Return	Average Monthly Expected Return	Average Monthly S.D	Average Difference with Realized Return	T-stat of Difference with Realized Return	Correlation-Rolling ER with Realized Return	Correlation (Rolling Window) - Correlation (Fixed)
NA HF Index	-0.10%	2.22%	0.50%	1.70%	0.60%	(1.33)	**0.96**	0.06%	2.18%	0.16%	(0.32)	**0.96**	-0.002
NA Arbitrage	0.08%	2.00%	0.33%	1.23%	0.25%	(0.65)	0.40	-0.12%	1.99%	-0.19%	(-0.42)	0.54	**0.142 (+)**
NA CTA/Mf	0.06%	0.78%	0.73%	0.89%	0.67% ***	(3.51)	0.40	0.13%	0.75%	0.07%	(0.41)	0.37	-0.032
NA Fixed Income	-0.40%	4.26%	0.58%	1.69%	0.98%	(1.32)	**0.80**	0.34%	1.85%	0.73%	(0.97)	**0.82**	0.023
NA Long/ Short Equity	-0.07%	2.57%	0.42%	2.17%	0.49%	(0.89)	**0.98**	0.11%	2.59%	0.18%	(0.30)	**0.98**	-0.006
NA Macro	-0.26%	1.78%	0.69%	0.65%	0.95% ***	(3.08)	-0.41	-0.28%	2.34%	-0.02%	(-0.05)	**0.74**	**1.142 (+)**
NA Multi-Strategy	-0.24%	2.96%	0.51%	1.84%	0.74%	(1.31)	**0.92**	0.03%	2.61%	0.27%	(0.42)	**0.86**	-0.052
NA Relative Value	0.00%	2.37%	0.52%	1.75%	0.52%	(1.08)	**0.68**	-0.09%	3.02%	-0.09%	(-0.15)	0.52	**-0.161 (-)**
NA Distressed Debt	-0.26%	3.45%	0.34%	3.37%	0.60%	(0.77)	**0.72**	-0.35%	3.40%	-0.09%	(-0.11)	**0.65**	-0.067
NA Event Driven	-0.77%	5.10%	0.18%	3.93%	0.94%	(0.90)	**0.90**	0.18%	4.29%	0.95%	(0.88)	**0.87**	-0.033
Asia HF Index	-0.03%	2.55%	0.33%	2.03%	0.36%	(0.69)	**0.89**	0.23%	2.07%	0.26%	(0.49)	**0.81**	-0.080
Asia Arbitrage	-0.12%	3.71%	0.25%	1.18%	0.37%	(0.58)	**0.70**	0.20%	1.32%	0.32%	(0.50)	0.57	**-0.134 (-)**
Asia CTA/Mf	0.03%	1.37%	0.70%	1.32%	0.67% **	(2.18)	-0.09	0.15%	1.53%	0.12%	(0.36)	0.02	**0.112 (+)**
Asia Fixed Income	0.17%	1.44%	0.19%	1.78%	0.02%	(0.05)	**0.88**	0.36%	0.86%	0.19%	(0.68)	0.57	**-0.309 (-)**
Asia Long/ Short Equity	-0.08%	2.94%	0.31%	2.10%	0.39%	(0.67)	**0.89**	0.24%	2.39%	0.32%	(0.53)	**0.80**	-0.095
Asia Macro	0.11%	0.68%	0.67%	2.18%	0.57%	(1.53)	-0.08	0.07%	0.91%	-0.04%	(-0.22)	-0.17	-0.083
Asia Multi-Strategy	0.14%	1.31%	0.54%	1.35%	0.39%	(1.28)	0.70	0.30%	1.06%	0.15%	(0.56)	0.47	**-0.230 (-)**
Asia Relative Value	-0.21%	3.69%	0.31%	1.61%	0.52%	(0.80)	0.86	0.37%	1.85%	0.58%	(0.86)	**0.85**	-0.006
Asia Distressed Debt	0.48%	1.96%	0.50%	1.16%	0.02%	(0.06)	0.08	-0.12%	2.64%	-0.60%	(-1.12)	0.14	0.056
Asia Event Driven	0.04%	3.24%	0.45%	1.70%	0.41%	(0.70)	0.87	0.03%	3.04%	-0.01%	(-0.02)	**0.86**	-0.017

Notes: (1) ***, **, * indicates significance at 1%, 5% and 10% level, respectively, indicating significant difference from 0. Bolded represents correlation more than 0.60. (+) represents increase in rolling correlation > 0.1, (-) represents decrease in rolling correlation > 0.1.
(2) S.D stands for standard deviation.
Source: CKL (2023)

Table 2: CAR of Market-Adjusted Excess Returns and Mean-Adjusted Excess Returns around 23 January 2020 and 11 March 2020 (COVID-19) Event Dates

	Market Adjusted Return				Mean Adjusted Return			
	Event Date: 23/Jan/2020		Event Date: 11/Mar/2020		Event Date: 23/Jan/2020		Event Date: 11/Mar/2020	
	10-day CAR	20-day CAR	10-day CAR	20-day CAR	10-day CAR	20-day CAR	10-day CAR	20-day CAR
NA HF Index	-0.75%	-2.85%	9.71%	12.04%	-1.10%	-0.34%	-12.86%	-11.52%
NA Arbitrage	-1.84%	-8.85%	24.01%	24.82%	-2.22%	-6.42%	1.40%	1.18%
NA CTA/Managed Futures	-0.60%	-4.59%	25.85%	27.12%	-0.91%	-2.00%	3.32%	3.64%
NA Fixed Income	-0.07%	-0.55%	12.18%	12.58%	-0.34%	2.10%	-10.32%	-10.84%
NA Long/Short equity	-0.59%	-2.00%	8.12%	10.63%	-0.94%	0.50%	-14.45%	-12.93%
NA Macro	-0.24%	-1.93%	16.72%	18.00%	-0.62%	0.53%	-5.88%	-5.62%
NA Multi-Strategy	-1.38%	-3.43%	5.31%	8.36%	-1.78%	-1.03%	-17.31%	-15.31%
NA Relative Value	-1.33%	-5.38%	7.36%	9.86%	-1.66%	-2.84%	-15.20%	-13.67%
NA Distressed Debt	-2.08%	-2.77%	4.09%	4.03%	-2.34%	-0.09%	-18.40%	-19.36%
NA Event Driven	-0.22%	2.11%	-12.28%	-10.98%	-0.55%	4.65%	-34.84%	-34.51%
Asia HF Index	2.46%	1.47%	7.53%	6.33%	-2.28%	1.58%	-14.41%	-12.97%
Asia Arbitrage	3.34%	-0.75%	10.89%	8.63%	-1.30%	-0.44%	-10.94%	-10.46%
Asia CTA/Managed Futures	3.78%	-0.14%	16.01%	13.00%	-0.80%	0.30%	-5.75%	-5.97%
Asia Fixed Income	3.57%	-0.99%	20.55%	17.56%	-1.04%	-0.62%	-1.25%	-1.48%
Asia Long/Short equity	2.02%	1.51%	6.95%	6.05%	-2.78%	1.51%	-15.05%	-13.35%
Asia Macro	4.25%	-0.16%	21.90%	19.65%	-0.20%	0.51%	0.25%	0.91%
Asia Multi-Strategy	3.76%	2.67%	14.35%	11.99%	-0.86%	3.02%	-7.46%	-7.07%
Asia Relative Value	2.84%	-0.41%	11.69%	11.03%	-1.97%	-0.42%	-10.31%	-8.39%
Asia Distressed Debt	3.65%	0.72%	13.05%	10.72%	-1.04%	0.93%	-8.83%	-8.47%
Asia Event Driven	1.59%	-4.05%	6.84%	6.19%	-3.31%	-4.24%	-15.25%	-13.41%

Source: CKL (2023)



HEDGE FUND

Notes

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4 Fung, W. and Hsieh, D. (2004). "Hedge Fund Benchmarks: A Risk-Based Approach." *Financial Analysts Journal* 60, 65–80.

5 DVIX is the first difference of VIX, which is the implied volatility calculated from the most liquid, short-dated S&P500 index option. VIX usually serves as a widely-used market risk aversion indicator.

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Joseph Cherian is the Chief Executive Officer (CEO), President & Dean, and Distinguished Professor at the Asia School of Business (ASB). He was most recently a Visiting Professor of Finance at the Samuel Curtis Johnson Graduate School of Management at Cornell University, where he also served as Executive-in-Residence and as a two-term member – and now Emeritus Member – of the Johnson Dean's Advisory Council.

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Earlier in his career, Joe held academic appointments in New York and Boston.

He holds a B.Sc. in Electrical Engineering from the Massachusetts Institute of Technology (MIT), and M.Sc. and Ph.D. degrees in Finance from Cornell University.

Introducing Nomura Foundation

Nomura Foundation (the Foundation) is a public interest incorporated foundation formed in 2010 from the combined resources of three existing foundations established by Nomura Group, a financial services group comprising Nomura Holdings and its subsidiaries in Japan and overseas. The Foundation aims to support a dynamic and sustainable economy and society by promoting the social science disciplines, enhancing international understanding, and fostering young academic and artistic talent. It focuses on four program areas: Social Sciences, Foreign Student Scholarships, Arts and Culture, and the World Economy.

The World Economy program supports research, conferences, and publications related to the macro economy and capital markets.

In the macro economy area, the Foundation has organized conferences together with experts from the Brookings Institution (US), Chatham House (UK), the Development Research Center of the State Council (China), and Bruegel (Belgium) as well as Nomura Securities and Nomura Institute of Capital Markets Research to share research on such topics as monetary and financial institutions, fiscal stability, and demographic change and sustainability.

Panel Discussion at the 2015 Forum

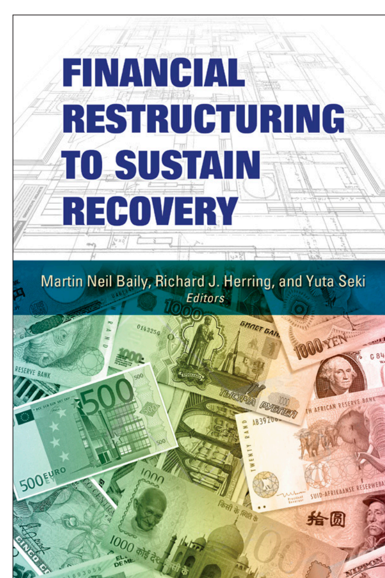
In the area of capital markets, the Foundation has organized conferences and roundtable discussions in conjunction with the Brookings Institution, the Wharton School, the Development Research Center of the State Council (China), China's Center for International Knowledge on Development and Nomura Institute of Capital Markets Research. It has also provided financial backing for several conference volumes published by the Brookings Institution, *Capital Markets in India* published by Sage, Inc., and the quarterly Japanese-language journal *Chinese Capital Markets Research*.

Research papers and presentations prepared for conferences and the content of print publications are available on the Foundation's website http://nomurafoundation.or.jp/en.

With the expanding importance of Asia in the 21st century global economy, the Foundation has been increasing its support of intellectual interactions among experts at think tanks, universities and government agencies in the region. As part of this effort and recognizing the importance of capital market development in promoting economic growth and prosperity in Asian countries, the Foundation started publishing *Nomura Journal of Asian Capital Markets* in 2016.

Cover of *Chinese Capital Markets Research*

Lord Mervyn King at the 2015 Forum



Cover of *Financial Restructuring to Sustain Recovery*

Introducing Nomura Institute of Capital Markets Research

Cover of *Nomura Capital Markets Quarterly*

Cover of *Nomura Sustainability Quarterly*

Nomura Institute of Capital Markets Research (NICMR) was established in April 2004 as a subsidiary of Nomura Holdings to build on a tradition begun in 1965 of studying financial and capital markets as well as financial systems, structure, and trends. NICMR develops original research and policy proposals by specialists based upon knowledge of actual business practice.

NICMR publishes some of its research output in Japanese in *Nomura Capital Markets Quarterly* as well as *Nomura Sustainability Quarterly*, and posts some items in Japanese, English, and Chinese on its website.

NICMR's core mission is to contribute to reform of Japan's financial system and securities market in order to foster establishment of a market-structured financial system. Structural changes, particularly population aging, are having a major impact on Japan's economy and society. Addressing the challenges created by these changes calls for reforming social security, tax, and public finance systems. One of Japan's most valuable resources is the approximately JPY2,200 trillion in financial assets held by households. Establishing a market mechanism-driven money-flow that makes efficient, effective use of these assets is critical to the country's future.

NICMR's research focus extends well beyond Japan to encompass current issues in capital markets around the world. In addition to research offices in New York, London and Beijing, NICMR established a research office in Singapore in 2015 to strengthen its Asian research platform.

The continued growth of Asian economies including China is generating huge funding needs for infrastructure and creating an urgent need for indirect financing systems and robust capital markets in the region. Promoting the development of Asian capital markets is a key for the future of Asian financial systems and economies. Moreover, it is important that Asian perspectives and regional differences are recognized in the post-global financial crisis environment of closer cooperation among financial regulators making rules and global standards.

NICMR's recommendations for developing financial and capital markets in Asia are based on analyses of past experience in developed economies. In particular, Japan offers useful lessons on the importance of direct finance for supporting new businesses and of investment services to cater to the needs of a growing middle class.

NICMR has also been working to strengthen its sustainability initiatives. To this end, it established the Nomura Research Center of Sustainability in December 2019. This research center focuses on objective and practical research into areas of sustainability closely related to the financial and capital markets in major regions including Asia.

As a member of the Nomura Group, a global financial group based in Asia, NICMR strives to contribute to the development of financial and capital markets in Japan and the rest of Asia through fundamental research and experience-based policy recommendations.

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