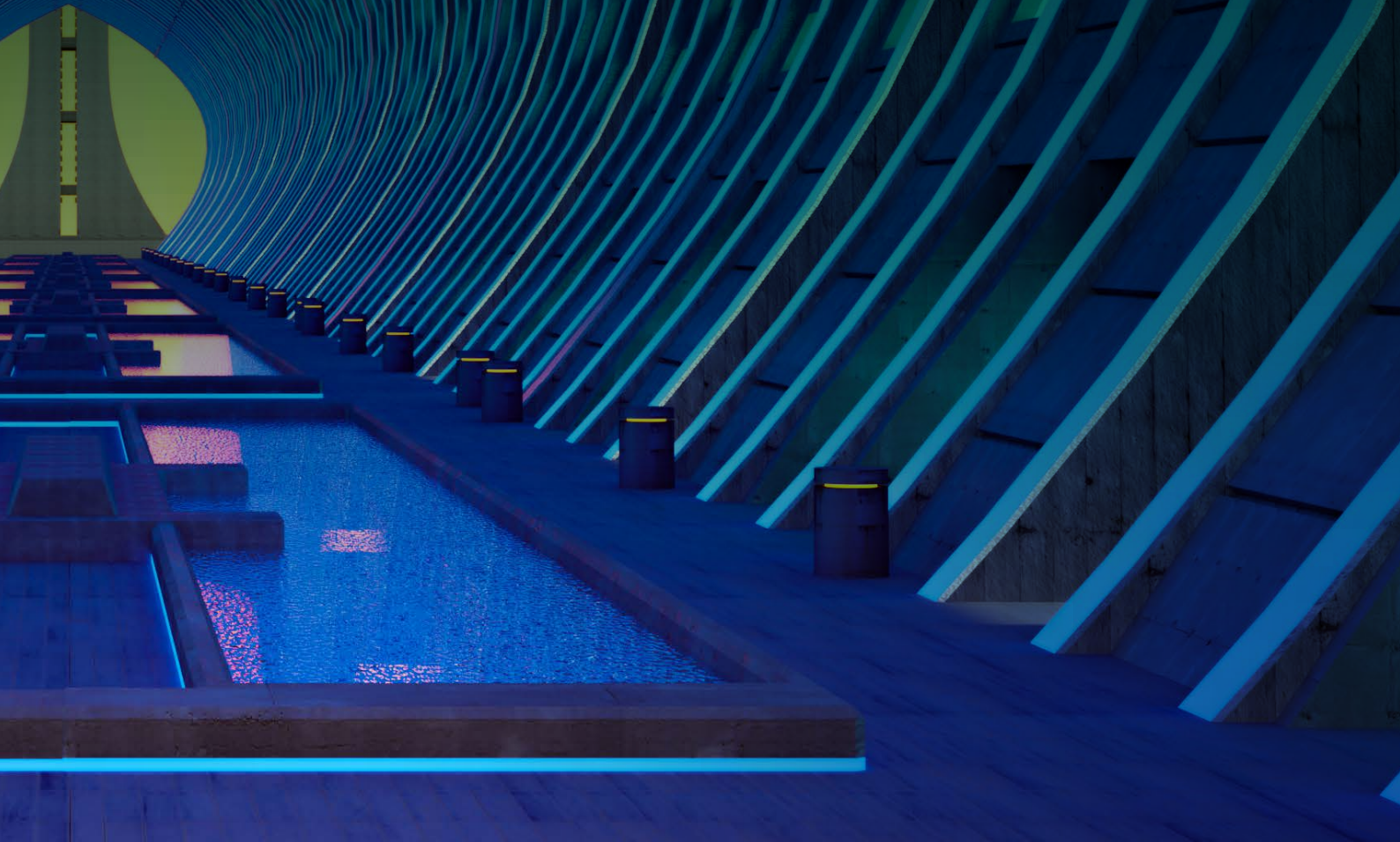




Improving Thailand's Capital Market Competitiveness and Efficiency

2022



About the authors

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Founded in 2019, the Thailand Capital Market Development Fund (CMDF) works to promote the sustainable development of Thailand's capital market across industries. CMDF strives to accomplish four key visions: First, to promote the development of organizations and infrastructure in Thailand's capital market, as well as to enhance international competitiveness of the market. Second, to stimulate human resource development in the capital market. Third, to educate the public, investors, and related organizations on capital market functions and investment. And lastly, to further research and education regarding capital markets.

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Association of Thai Securities Companies (ASCO)

ASCO was first established in 1973 to develop and promote the country's capital and securities market, protect and safeguard member companies, improve the standard of business operations, and cooperate with regulatory agencies in drafting rules and regulations to develop the infrastructure of the Thai capital market.

Association of Investment Management Companies (AIMC)

AIMC was registered and licensed in 1994 as an association relating to and representing the investment management industry by the Office of the Securities and Exchange Commission (SEC). AIMC is a non-profit organization supported by its members, which are securities companies licensed to run asset management business.

Thai Bankers' Association

Since its establishment, the Thai Bankers' Association (TBA) has played an active role in representing the banking community in discussions with the Bank of Thailand, the Ministry of Finance, the Ministry of Commerce, and other government agencies in formulating and implementing key economic and financial policies.

Thai Bond Markets Association (ThaiBMA)

The ThaiBMA's key role is ensuring a fair and efficient operation of the bond markets and to be an information center for the Thai bond markets. It also plays functional roles regarding market development, market convention, and standards and it is a bond pricing agency for the industry. In addition, ThaiBMA provides a forum through which industry professionals can respond to current issues and play a role in shaping the future of the Thai bond markets.

Thai Investors Association

The Thai Investors Association was established by the Stock Exchange of Thailand in 1975 and today offers fundraising, communication and knowledge deployment, and a hub for investors to connect.

The Stock Exchange of Thailand (SET)

The SET was established in 1975 and remains Thailand's only stock exchange. Its primary roles are to serve as the center for the trading of listed securities, provide systems needed to facilitate securities trading, conduct any business relating to securities trading, and to undertake any other business approved by the SEC.

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Executive summary

Capital markets play a vital role at the heart of the world's most advanced economies. Through their ability to channel funding to where it is needed they drive economic growth and support value creation at scale. In Thailand, the capital markets are established at the core of the financial system, helping thousands of people and organisations achieve their ambitions and plans for the future. Over the coming years, the role of markets will become even more critical, as the country pursues ever-higher levels of development, expands its infrastructure and continues to grow its influence in the region and around the globe.

Thai capital markets are among Asia's deepest and most liquid, with relatively strong bond and equity penetration, alongside growing offerings in alternative asset classes. Against this background, the coming period offers the chance for a new era of opportunity. That will mean creating deeper, more efficient markets, and pursuing ambitions in areas such as data analytics, and financial participation. Market participants and the wider stakeholder community now have a chance to deliver on that promise while creating more diverse and inclusive investment opportunities.

The Stock Exchange of Thailand (SET), the country's operator of capital market exchanges and one of the leading exchanges in the region, has been the main engine behind the development of an equity market in Thailand. SET has built a reputation as a reliable, secure, and innovative service provider, and is among the top 25 exchanges in cash equities globally. The exchange has seen strong long-term growth (cash equities trading volumes grew 14% annually between 2015 and 2021), deep liquidity, and an increasing play on environmental, social, and governance (ESG) themes. It has played host to more than 100 Initial Public Offerings (IPOs) since 2019, a notable achievement against the challenging background of the global pandemic. The exchange welcomes a wide range of investors, with retail and foreign participants accounting for significant activity levels. Through its Market for Alternative Investment (MAI), it has become an essential destination for SMEs to raise funds. Although SET's Thailand Bond Exchange (TBX) has been discontinued since 2021, other bond mar-

kets have created a listing and trading venue for fixed-income instruments in lieu.

Looking to the future, Thailand's capital markets have an opportunity to serve the country under four pillars. These are to: firstly, fund a sustainable future for Thailand, secondly, fuel economic growth and innovation, thirdly, expand access and knowledge around wealth creation, and finally, foster long-term capital deployment. Across these pillars, the markets can play a critical role in promoting a culture of innovation and supporting the country's economic development. They can help Thai citizens save for the future and lay a solid foundation for retirement: a vital contribution given the country's aging population. These goals can be enabled by a supportive regulatory backdrop and a focus on innovation and derisking.

Looking ahead, there are opportunities for Thai capital markets to expand their services, increase investor participation, and build new ecosystems in private equity, venture capital, and beyond. Through initiatives such as carbon exchanges and a national green taxonomy, they can continue to support Thailand's national commitment to sustainability. And by fostering a more supportive environment for startups, they can help SMEs grow to become economic powerhouses of the future. Although, Thailand's capital markets are competitive in some areas on costs, efficiency can improve in other areas such as equity trading (Thailand's 30 basis points is second highest in ASEAN, even before the potential introduction of Financial Transaction Tax) and mutual funds (driven by expense ratio for fixed income and mixed allocation funds). With capital markets in Thailand set to embrace transformative change, this paper gathers a range of ideas - set out as ten key building blocks, which aim to support the markets' growth:

1. Fostering sustainable financing to help Thailand move towards net-zero carbon emissions
2. Providing opportunities for pension funds to create the capital required to support an aging population
3. Nurturing SMEs/start-ups with capital and capability support

4. Expanding digital assets
5. Improving financial literacy
6. Simplifying retail investors' journeys
7. Attracting long-term foreign institutional capital
8. Deepening domestic institutional investors
9. Unlocking data analytics
10. Attracting and nurturing talent

Through the ten building blocks, Thai capital markets participants can facilitate drivers that will shape the country's economic future.

At the forefront of priorities is an intention to transition to a more sustainable economy. To achieve Thailand's net-zero ambitions, there is an opportunity for capital markets to push the frontiers of green finance. This will require financing tailored to both the decarbonisation of existing technologies and the development of new green solutions.

With more than 32% of the population set to be 60 years or older by 2040, pension provision presents a significant challenge. However, there is an opportunity for progress through the creation of a new national pension fund. Thailand's capital markets can play a pivotal role in supporting the development of national pension funds.

SMEs are the backbone of the Thai economy and the capital markets could do more to support their growth. Potential initiatives would include enhancing capital/financial support, for example, through investing in talent and advisory, and creating new platforms and deal-making venues to funnel capital to promising ideas.

Central banks world-wide are exploring digital currencies, while distributed ledger technologies have matured from early applications in cryptocurrencies to activities across securities issuance, post-trade, and asset servicing. SET plans to launch the Thai Digital Exchange in 2022, and is well placed to explore a range of use cases while ensuring adequate risk management.

To ensure that the positive impacts of the markets' development are shared across society, there is a need to boost financial literacy. Progress will be best achieved through collaboration between the public and private sectors, new programme funding, and a commitment to promoting investment awareness from an early age. Although retail inves-

tors accounted for 47% of cash equities trading volume in 2021, Thailand only has approximately two million investors trading via SET. It is necessary to simplify retail investor journeys, including addressing pain points and promoting digital solutions to increase the number of retail investors in the Thai capital markets.

In the institutional space, there is an opportunity to strengthen markets of fixed income asset classes in Thailand by building a robust bond ecosystem to diversify institution investments to other asset classes beyond fixed income, and to encourage different types of institutional investors beyond pension funds and insurance companies to invest in capital markets. Thailand is considering reintroducing the Financial Transaction Tax (FTT) on equities trading. There are lessons available from the experiences of other markets. For example, India introduced a similar tax through increased tax earnings, with minimal impact on trading volumes while Spain's experience was lower tax revenue combined with lower trading volumes.

To attract long-term foreign investment, Thai capital markets can seek to create a more open environment, putting the country on a par with leading regional peers and enabling the new economy to be served across market infrastructures.

Many exchanges around the world have built substantial businesses on data and analytics. Thailand could take a similar path, investing in standardised and aggregated data sources to enable investment at scale.

Finally, the key to building the capital market of the future will be to attract the best and brightest talent. This will mean attracting new types of in-demand talent and focusing on upskilling current and prospective employees.

Thailand does have a few key challenges it needs to tackle, including cost competitiveness compared to regional peers. However, in order to stay competitive and efficient, Thailand can look to these ten building blocks, to both build on the successes of the past and shape markets that will cater to the needs of the next generation. The goal should be for the private and public sectors to come together, make bold decisions and embrace the opportunity to build the markets of the future.



1

**Where do the
Thai capital
markets
stand?**

Thailand's capital markets have many foundations of strength to build on. Founded on 30 April 1975, SET is ASEAN's second largest and the world's 23rd by market capitalization at USD564 billion as of May 2022. Both stock and bond markets in Thailand are approximately, 85% and 80% of Thailand's gross domestic product (GDP) respectively. The SET has also been ASEAN's most liquid market with the highest trading value since 2012, and the largest IPO venue among the ten-member bloc since 2019.

Despite a brief setback due to the global pandemic, the value of the Thai funds market – including foreign investment funds (FIFs)– has nearly tripled in size over the past decade. This is in large part thanks to major strides that the Thai government has made in liberalising the market, resulting in stock trading activity by foreign investors growing steadily to between 36 and 41% in the past few years.

However, despite the Thai capital markets growing in strengths, there remain several areas to further develop, such as deepening products beyond cash equities and bonds, and improving the depth of its private capital markets.

To reach an understanding of where Thailand stands, benchmarking was conducted using five lenses. These demonstrate Thai capital markets' strategic strengths and opportunities to improve

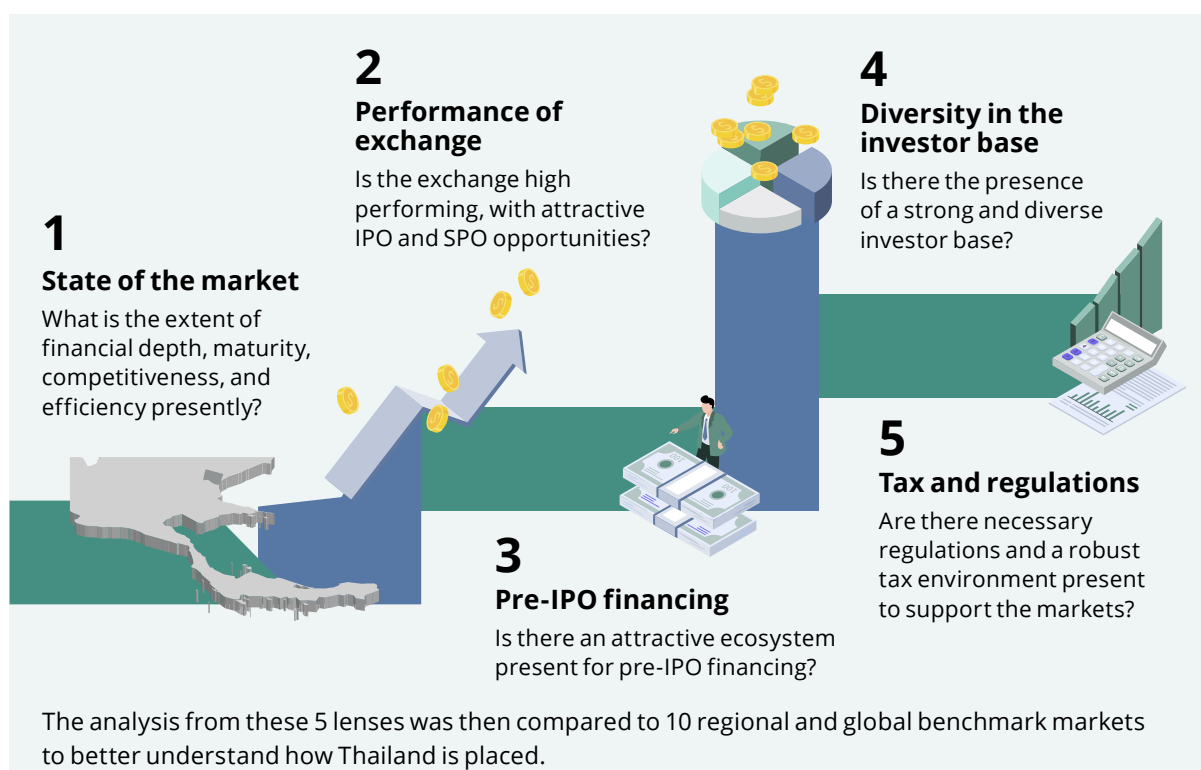
competitiveness and efficiency so that Thailand can become a leading provider of capital markets services globally.

Lens 1: State of the market: What is the extent of financial depth, maturity, competitiveness and efficiency presently?

Thailand has made substantial progress in developing its financial sector over the past few decades. Its financial system has become deeper when measured in terms of financial assets (loans, bonds, and equity market) to GDP. The banking system is well-capitalised, with an equity market that fares most favourably compared to other asset classes.

When compared to peer and global benchmarks, Thailand's capital markets are performing comparatively well in terms of financial depth– measured by financial assets to GDP – but are underperforming across diversity of funding and operating efficiency metrics.

According to the World Bank, Thailand's Central Bank assets were about 2.83% of GDP in 2020. This is on par with, or higher than, that of neighbouring countries such as Singapore at 2.45%, Malaysia at 0.81% and the Republic of Korea at 1.59%.



The following section explores how Thailand is faring across individual asset classes.

Equities

Thailand's equity market is relatively strong compared to its peers in the region, and in 2021 had a capital market penetration of 116% of its GDP. This was higher than most regional peers such as Malaysia (111%), Vietnam (88%), and Indonesia (49%) and even some developed exchanges such as Germany, which had a penetration of 60% (see Exhibit 1).

Between 2015 and 2021, the cash equities trading volumes in Thailand grew by 14% p.a. The Stock Exchange of Thailand (SET) also had a cash equities turnover velocity of 100% in 2021, which is defined as the annual trading volume over the total listed market capitalization of a respective stock exchange.

In 2021, Thailand's 100% turnover velocity was higher than the benchmark group's average of 72%, and second only to the United States' Nasdaq turnover velocity of 113% (see Exhibit 2), indicating that the Thailand's SET is a competitive player in the equities space.

Fixed income

Comparatively, in 2021, Thailand's fixed income market had a penetration rate of 93%, which is greater than some ASEAN peers such as Indonesia (55%) and Vietnam (25%), but still significantly lower than other markets such as Singapore (158%) and Malaysia (141%).

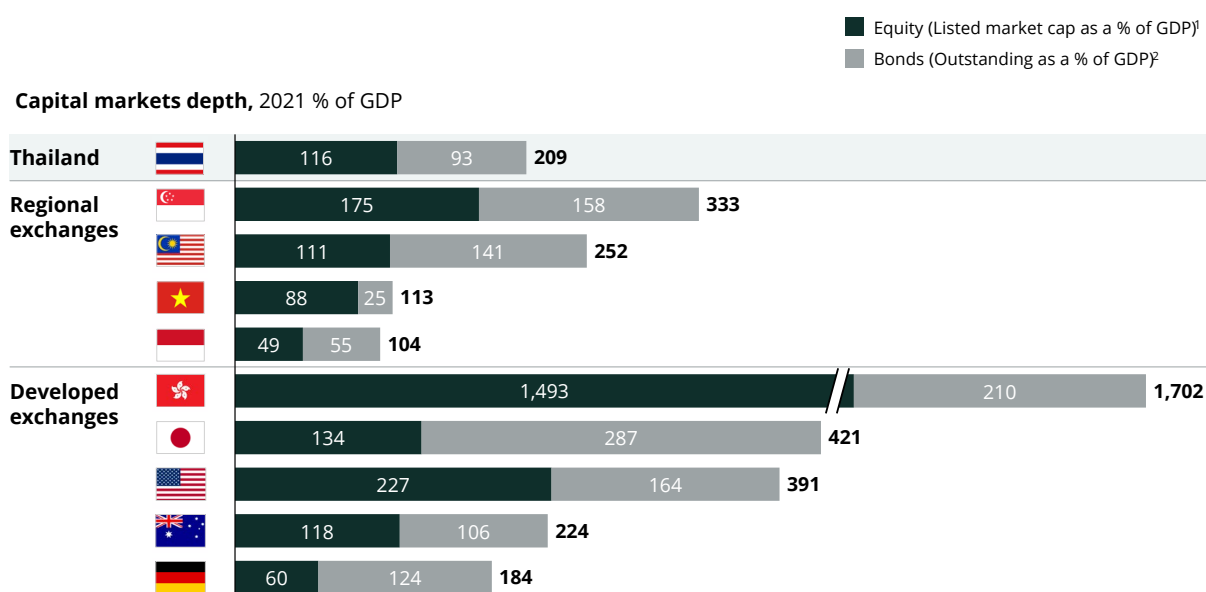
Though there is a gap between regional peers, this presents an opportunity for Thailand to further deepen its bond markets.

Currently, primary and secondary fixed income markets are available over the counter in Thailand. These constitute markets in which issuers first sell bonds to investors to raise capital, as well as markets in which existing bonds are subsequently traded among investors.

Between 2015 and 2020, the outstanding amount of local currency (LCY) bond market grew 11% p.a., which represented 89% of Thailand's 2020 GDP. The growth was comparable with regional peers such as Hong Kong (8% p.a.) and Malaysia (9% p.a.). The market share of corporate bonds increased from 18% of outstanding domestic bonds in 2010 to 25% in 2020 (see Exhibit 3).

Exhibit 1

Thailand has satisfactory capital markets depth comparable to regional peers

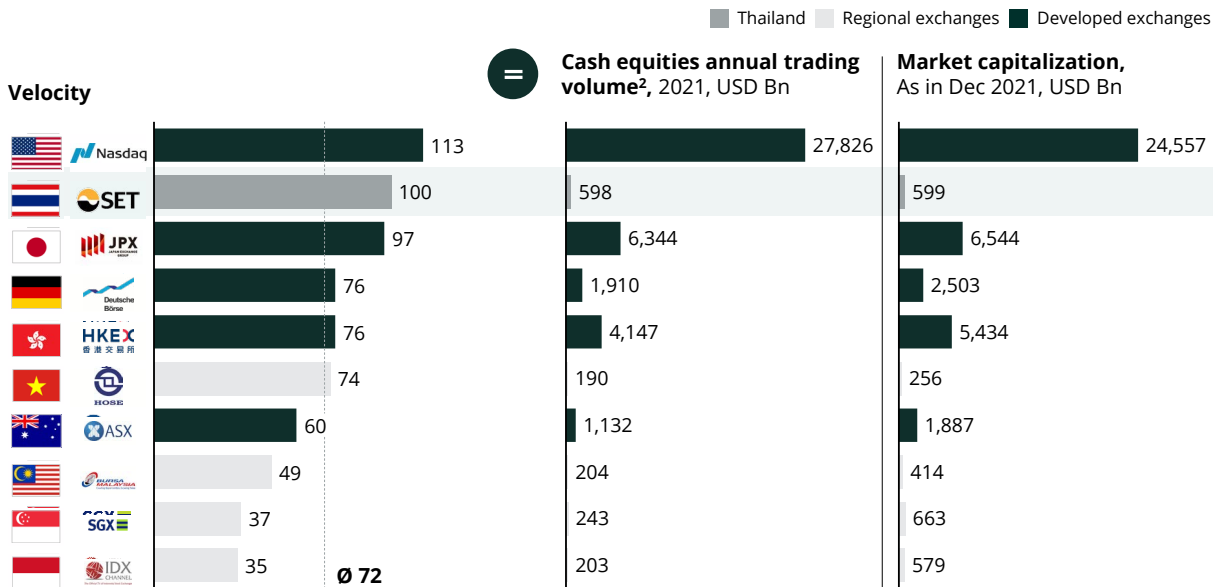


1. SET (Thailand), SGX (Singapore), Bursa Malaysia (Malaysia), Ho Chi Minh SE and Hanoi SE (Vietnam), IDX (Indonesia), HKEx (HK), JPX (Japan), NYSE and Nasdaq (USA), ASX (Australia), Deutsche Börse (Germany)

2. Including both corporate and government bonds

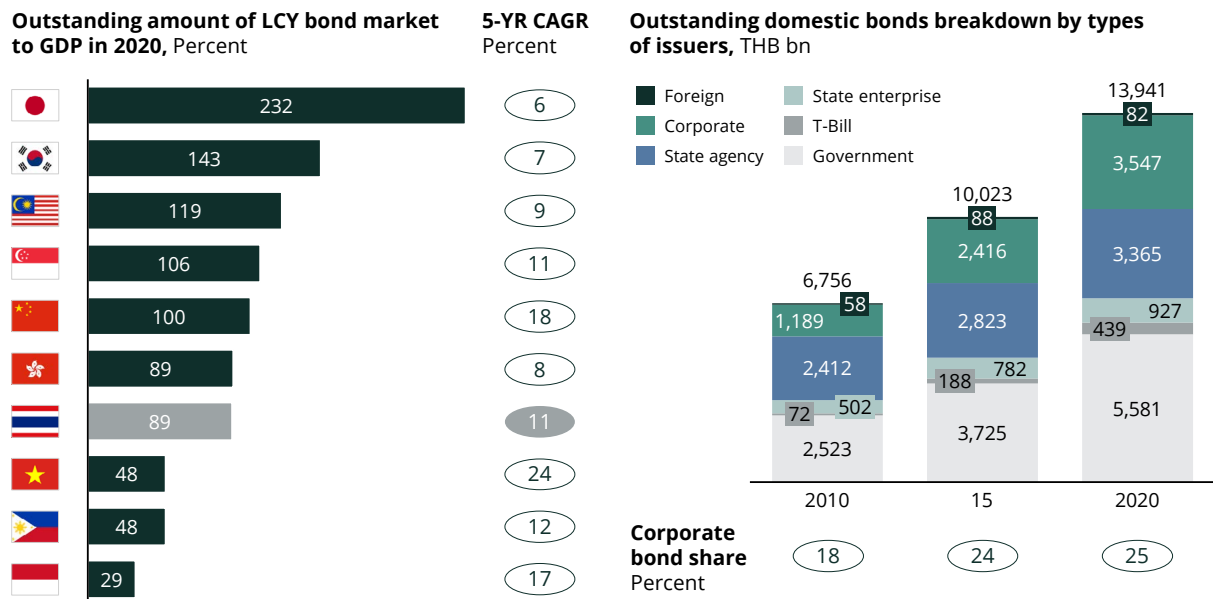
Source: WFE, Bloomberg

Exhibit 2 Cash equities – SET has one of the highest market liquidities



1. Turnover velocity is defined as annual trading volume over total listed market cap of respective stock exchange; 2. Electronic Order Book
Source: World Federation of Exchanges (WFE)

Exhibit 3 Cash fixed income – Thailand’s bond market is sizable with increasing mix of corporate bonds



Source: ADB, ThaiBMA

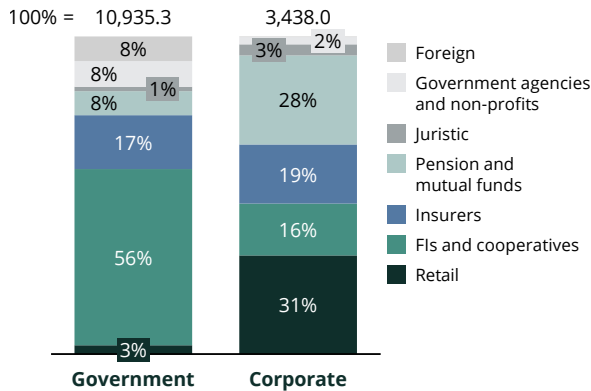
In Thailand, government bonds comprise a larger proportion of the bond market and are primarily held by institutions. Corporate bonds in comparison have a smaller share of the total bond market but maintain a higher share of retail holding of 31%.

The outright trading value of government bonds is much larger, at THB 19,205 billion, versus that

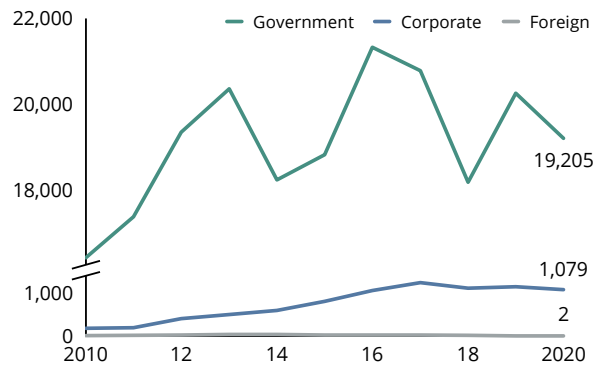
of corporate bonds at THB 1,079 billion in 2020. Trading activity also varies significantly depending on the holder. In Thailand, trades are primarily driven by institutions, compared to retail investors, who typically hold to maturity (HTM) (see Exhibit 4). Thailand had a relatively high velocity in government bonds of 142%, second in Asia only to

Exhibit 4 Cash fixed income – Trading activity is primarily driven by institutions while retail typically HTM

Comparison of bond holders mix for government and corporate bonds by outstanding amount in 2020, THB bn



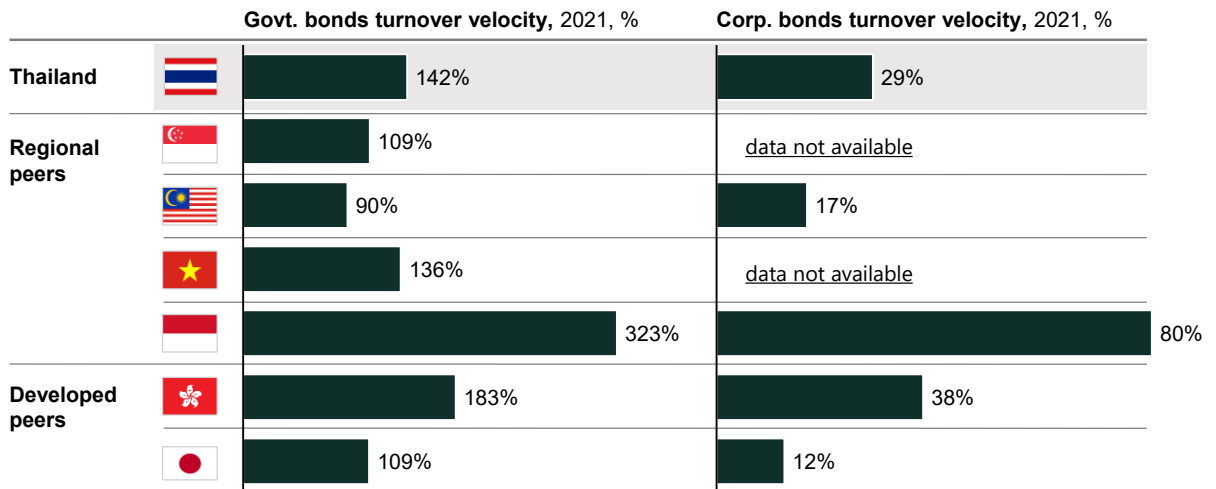
Outright trading volume THB bn



Source: BOT, ThaiBMA

Exhibit 5 Thai bond market velocity compared to regional and developed peers

OUTSIDE-IN



Estimated based on total value traded and amount outstanding at year-end, excludes repo transactions. Value for Vietnam is 2020

HK: Government bonds include Exchange Fund Bills and Notes, ID: Government and corporate bonds include all bonds listed on the Indonesia Stock Exchange., JP: Only value of bonds traded in the OTC market is included, MY: Government bonds include Malaysia Government Securities, Treasury Bills, Bank Negara Bills, Bank Negara Monetary Notes, Government Investment Instruments, Khazanah bonds, and Cagamas bonds. Corporate bonds include commercial papers, medium term notes, asset-backed securities and other corporate bonds, SG: Government bonds include Singapore Government Securities bills and bonds, TH: Only Thai BMA registered bonds are included.

Source: Asia bonds online

Indonesia. In corporate bonds, velocity was 29% in 2021 (see Exhibit 5).

Thailand has a high velocity in government bonds compared to ASEAN peers, following only after Indonesia, due to the demand from foreign investors and domestic institutional investors. In Indonesia, declining interest rates and renewed foreign investor interest have boosted liquidity, on top of various initiatives, for example electronic OTC trading platform SPPA or mandatory trade

reporting for private placements, which increase transparency and encourage trading activities.

Thailand's diverse investor base has been driven by participation of domestic investors, especially pension funds. Digitization and adoption of new-age technology could increase efficiency in settlement and custody processes for Thailand. Today Thailand is rated 3.30 out of 4 but is still behind peers. The country has taken multiple actions to improve, for example by showcasing three-

Exhibit 6 Thai local currency bond market liquidity compared with regional and developed market peers

Assessment of local currency bond market liquidity, rating on a scale of 1-4, 2021

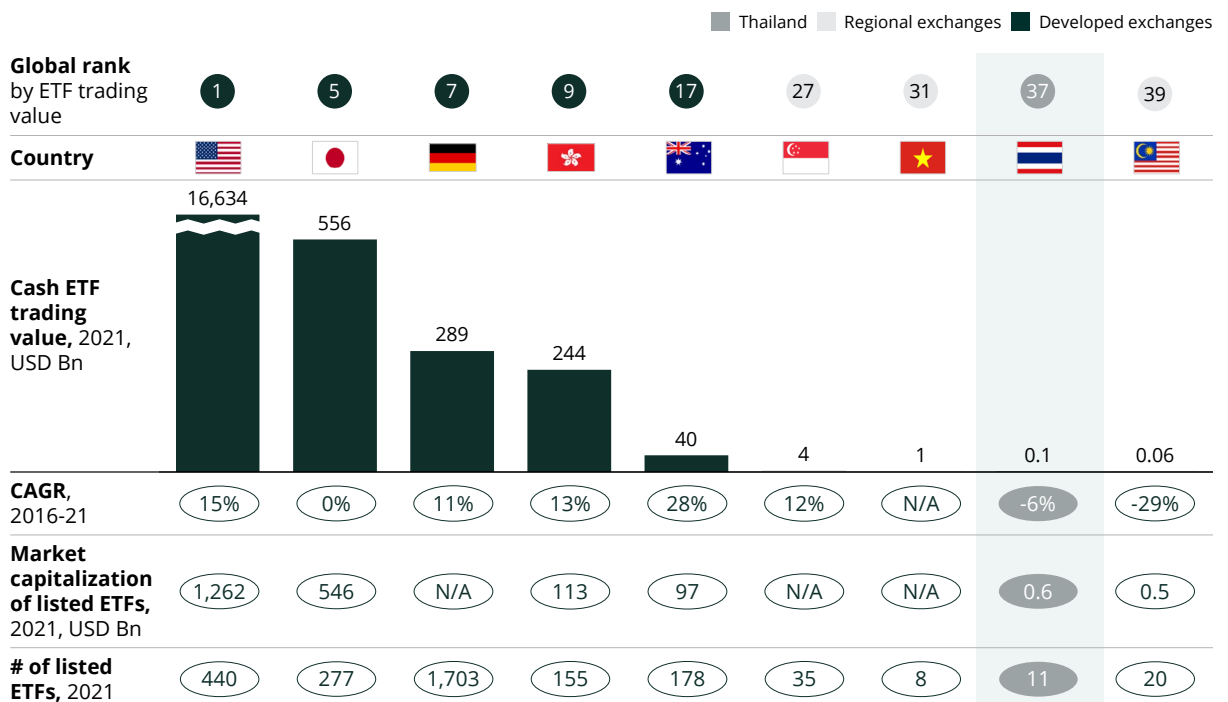
NOT EXHAUSTIVE

Key parameters	Worst Quartile ■ ■ ■ ■ Best Quartile					
FX regulations	3.00	3.50	3.00	2.60	3.40	4.00
Greater diversity of investor profile	3.30	3.00	3.00	2.20	3.40	3.00
Hedging mechanisms	3.00	3.50	2.80	2.20	2.40	3.00
Market access	3.30	3.50	2.60	2.60	3.40	4.00
Settlement & Custody	3.00	4.00	3.40	3.20	3.40	4.00
Tax treatment	3.70	4.00	3.60	2.80	3.00	4.00
Transaction funding	3.70	3.50	3.00	3.40	3.60	3.00
Transparency	3.30	4.00	3.80	3.20	3.40	4.00

Note: The survey is conducted with bond market participants such as traders, bond pricing agencies, and regulators. Market participants were asked about their perceptions on several structural factors that are known to affect bond market liquidity and provide a rating from 1-4. A rating of 4 indicates that the respective bond market is considered significantly advanced or developed

Source: Asia bonds online Local Currency Bond Market Liquidity Survey

Exhibit 7 Cash ETFs – SET ranked 37th globally



1. Expense ratio is the costs associated with administration, portfolio management, marketing, and etc divided by asset size

Note: Data not available for Indonesia Stock Exchange

Source: WFE, Bloomberg

month trade reporting data and bond investor registrations (BIR).

There remains scope for improvement in settlement and custody processes (e.g., straight-through clearing processes, timely bond trade settlements, and a global custodian or accredited custodians) and transparency (e.g., access to daily information on bond market activity such as bond prices, and credit rating information). In both cases, Thailand currently is behind regional peers (see Exhibit 6).

Cash Exchange-Traded-Funds (ETFs)

In 2021, Thailand's Cash ETFs had a trading value of USD 0.1 billion, and were ranked 37th globally, after shrinking by 6% p.a. between 2016 and 2021 (see Exhibit 7). Compared to the performance of regional peers such as Australia (USD 40 billion) and Hong Kong (USD 244 billion), Thailand's cash ETFs currently have a much lower trading value.

Another difference exists when considering the expense ratio range (ER), which measures how much of a fund's assets are used for administrative and other operating expenses. An expense ratio is determined by dividing a fund's operating

expenses by the average dollar value of its assets under management (AUM). In 2021, the ER of the top 5 cash ETFs in Thailand ranged from 0.20 to 1.11 %, which is significantly higher than the 0.04 to 0.20% range for the top 5 US ETFs.

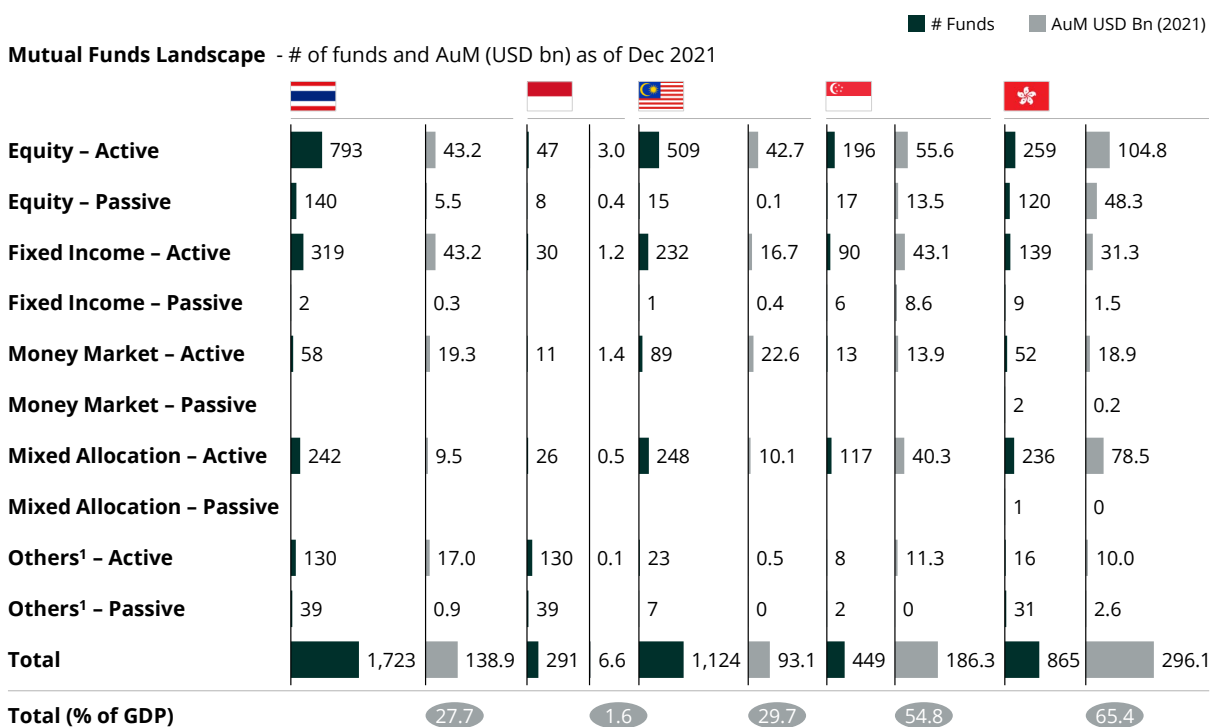
While there is some way to go for Thailand to grow the Cash ETF market, it is evident that there remains significant potential for the asset class.

Mutual Funds

Thailand has the highest number of funds (~1700) compared to ASEAN peers (~100-1000) but the total assets under management (~140 bn) is still smaller than Singapore (~180Bn) and Hong Kong (~260Bn) (see Exhibit 8). The average size of the equity and fixed income funds are smaller than Singapore, Hong Kong and Malaysia. Approximately 70% of mutual fund fees in Thailand are estimated to be earned by captive banks, which dominate the distribution channel mix (see Exhibit 9).

The cost of listing a mutual fund is relatively low at THB 25-50,000, compared to MYR 30,000 (~THB245,000) in Malaysia for registration-related expenses. According to the 2021 McKinsey Asia Asset Management Survey, the total operating

Exhibit 8 Thailand is closely behind Singapore in the mutual funds industry with majority of its allocation in equity and fixed income funds

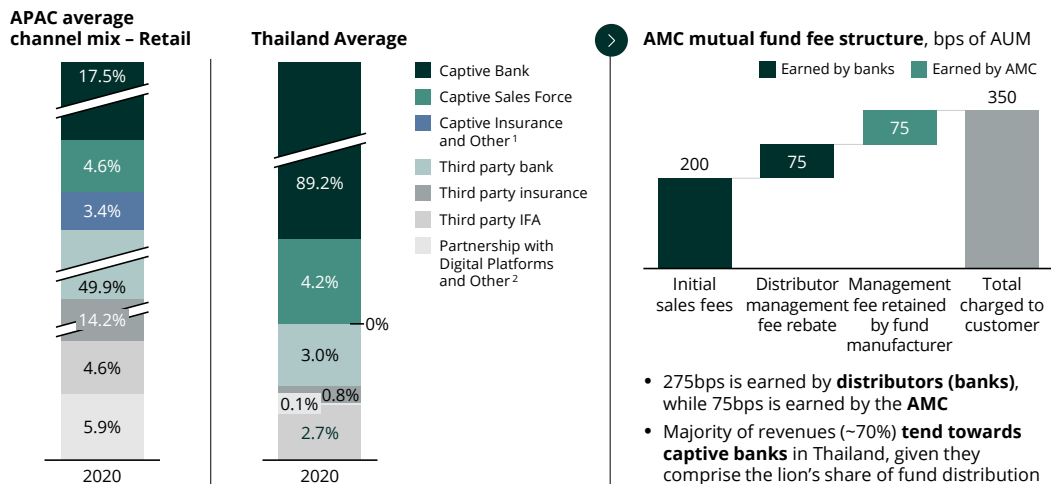


1. Others include Alternatives, Commodities, Insurance, Property related Mutual Funds

Source: Morningstar, Worldbank

Exhibit 9

~70% of mutual fund fee in Thailand is estimated to be earned by Captive Banks which dominate the distribution channel mix



1. Securities, direct digital and other

2. Robo-advisors, securities companies and Other

Note: Results based on the sample set of Asia Asset management Survey

Source: 2021 McKinsey Asia asset management survey

- 275bps is earned by **distributors (banks)**, while 75bps is earned by the **AMC**
- Majority of revenues (~70%) **tend towards captive banks** in Thailand, given they comprise the lion's share of fund distribution

costs for asset management companies in Thailand is 18.5 bps of AuM, lower than Indonesia but higher than in established financial hubs such as Singapore and Japan (see Exhibit 10). Asset management companies in Thailand spend about 23% of expenses on sales and marketing, one of the lowest levels in the region. However, they spend about 35% of total operating costs on management, administration, and operations, compared to 25 to 30% in other ASEAN markets. Thailand has the highest expense ratio for fixed income and mixed allocation funds amongst peers (see Exhibit 11).

Derivatives

Between 2017 and 2020, derivative product volumes grew at 15% p.a., which was largely driven by equities (SET50 and single equities), which make up 88% of the total volume seen on the Thailand Futures Exchange (TFEX). While this growth is commendable, there is potential to further encourage global participation in the way some other markets have done. For example, the top derivative products on Bursa Malaysia and the Singapore Stock Exchange (SGX) were crude palm oil derivatives and equity index derivatives of Japan, China, and India, respectively – all of which are more likely to attract global participation when compared to the SET50 and single equities in Thailand (see Exhibit 12).

Cost Benchmarking

Thailand's capital markets are competitive on costs in terms of equity fundraising and REIT expense ratios. However, there is an opportunity to improve other cost metrics (e.g. in bond trading), which will boost competitiveness and efficiency compared to peers (see Exhibit 13):

Equities

The cost of equity listing on SET is ~230- 280 basis points (bps) of the issuance size compared to regional peers (avg of 300-350 bps) and global peers (avg of 400-450 bps) (see Exhibit 14). Underwriting fees is the largest fee portion across all markets, accounting for almost 60% of the total cost. It is observed that the lower underwriting fees in Emerging markets is driven by fierce competition from local banks, specifically on smaller deals where foreign banks are not actively involved.

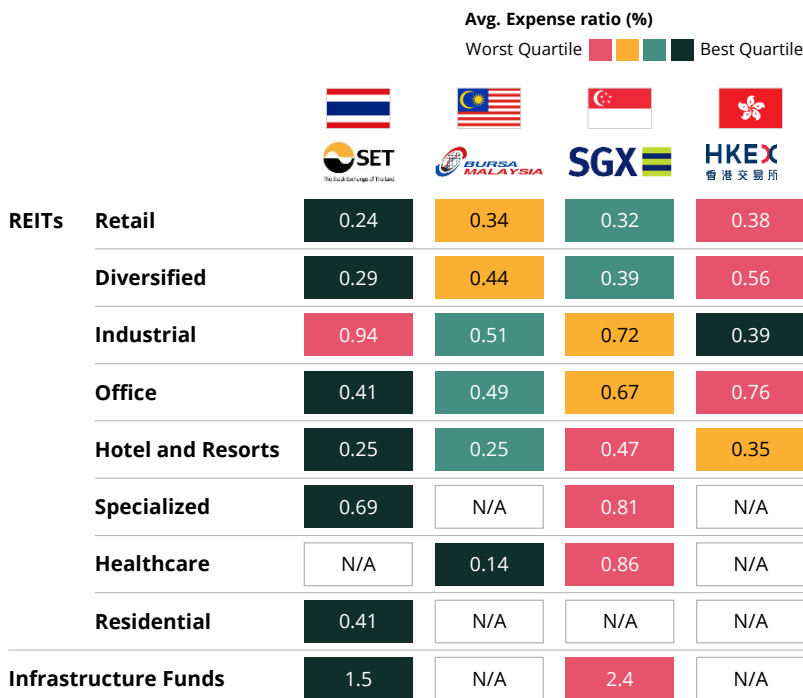
The cost of equity listing on MAI at 330-380 bps of the issuance size is comparable to peers such as SGX Catalist and Bursa Malaysia ACE (see Exhibit 15)

It should be noted that the total cost of cash equity transactions or cost of equity trading at the SET in Thailand is currently approximately 30 bps before Financial Transaction Tax (FTT)(see Exhibit 16).

Other than Indonesia, which has a cost of 48 bps, Thailand has the highest transaction cost across regional and global peers such as Singapore (16 bps), Malaysia, (28 bps), and Germany (15 bps).

Exhibit 10

Operating cost breakdown of asset management companies in Thailand compared to regional peers



Thailand has **low expense ratio**¹ across majority of the REIT asset classes except for **industrial REITs**; the expense ratios are generally **~10bps lower** than regional peers

Thailand also has **low expense ratio**² for **infrastructure funds** (Singapore – 2.4%)

Higher expense ratio **does not have a significant bearing on asset class returns**, with other factors such as **tax transparency** and **trading activity** which will also affect a REIT's performance

On the REITs costs, **sales and marketing forms a very limited portion of total expenses**, ranging 5-10% with bulk of the costs spent during listing on roadshows

- Expense ratio for REITs defined as (REIT manager's fee + trustee fee) / AuM of Investment Properties; results are indicative of the 4-year average expense ratio for the top 3 companies (by market capitalization) within each country and REIT sub-segment (e.g., retail, diversified, industrial etc.)
- The percentage of fund assets used to pay for operating expenses and management fees, including administrative fees, and all other asset-based costs incurred by the fund, except brokerage costs. Sales charges are not included in the expense ratio

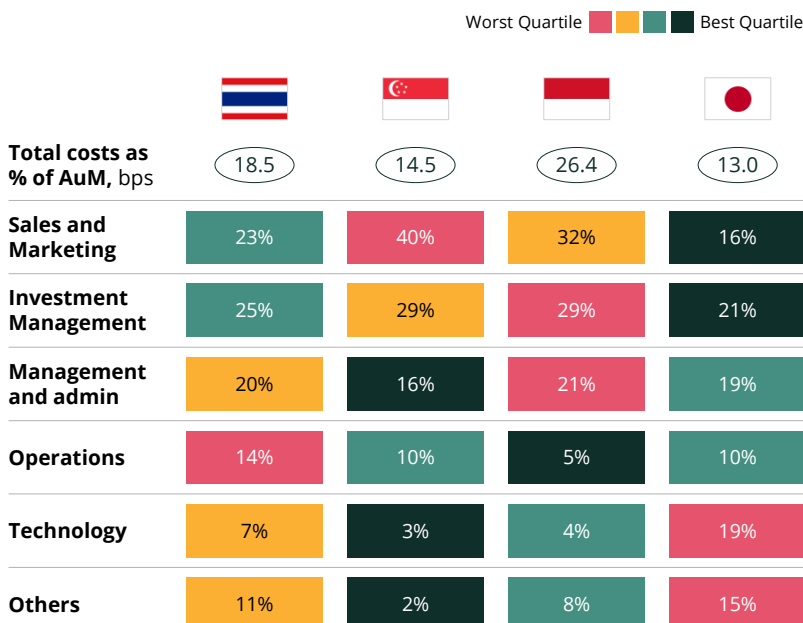
Source: Annual Reports, Capital IQ

Exhibit 11

Mutual fund's cost of fundraising and expense ratio in Thailand compared to peers

ESTIMATES

Asset Management companies' operating cost by function, 2021, percent



Total operating costs for AM companies in Thailand are **lower than Indonesia**, but **higher** than established financial hubs (such as Singapore or Japan)

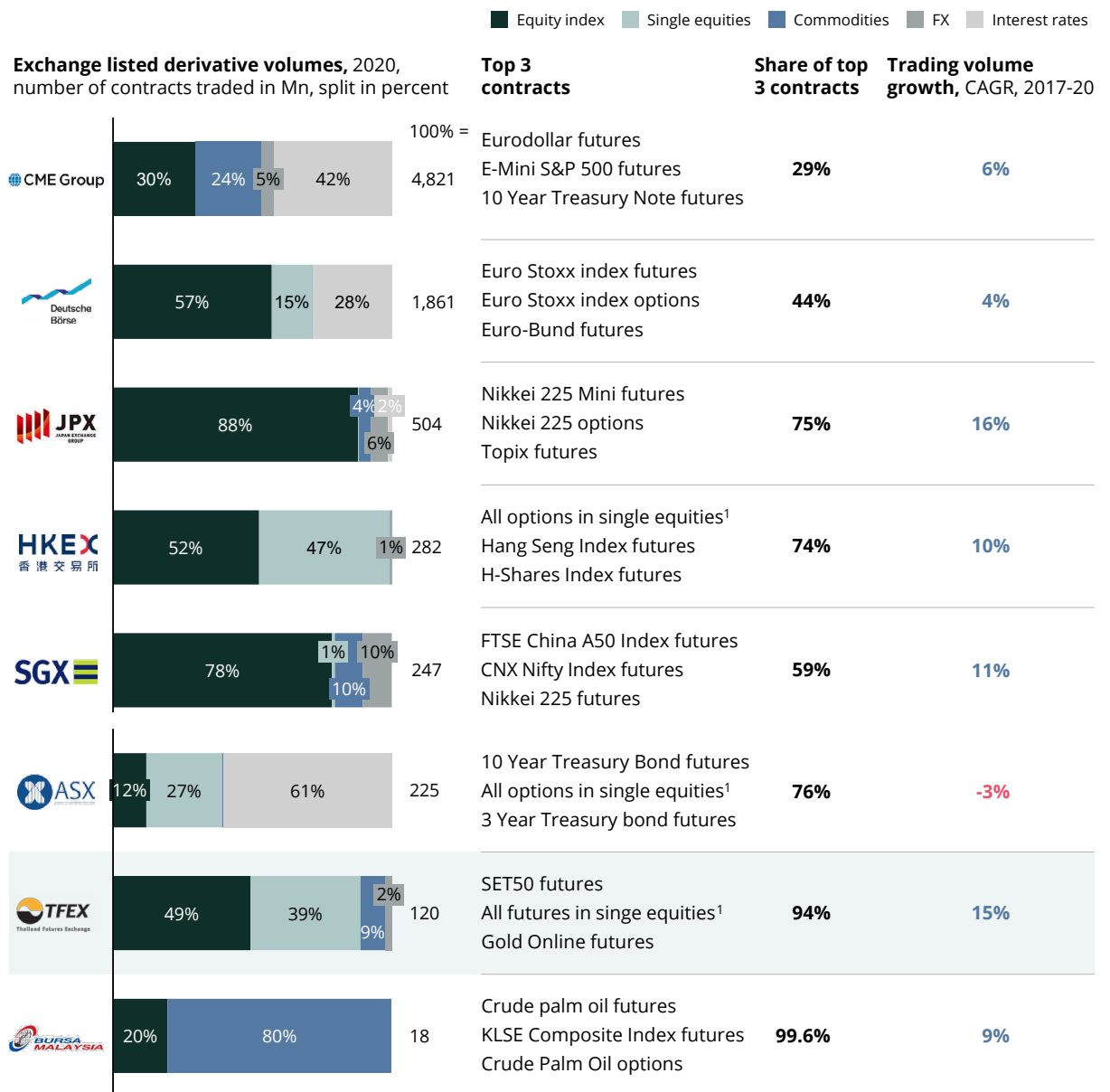
Sales and Marketing costs in Thailand are **optimized** compared to Singapore and Indonesia

However, AM companies in Thailand spend **~35% of total operating costs in management and admin, and operations** (vs 25-30% among peers)

Source: 2021 McKinsey Asia asset management survey

Exhibit 12

Derivatives – ~90% volumes of TFEF from equity derivatives with 15% growth p.a.



Thailand Futures Exchange has a liquid market for:

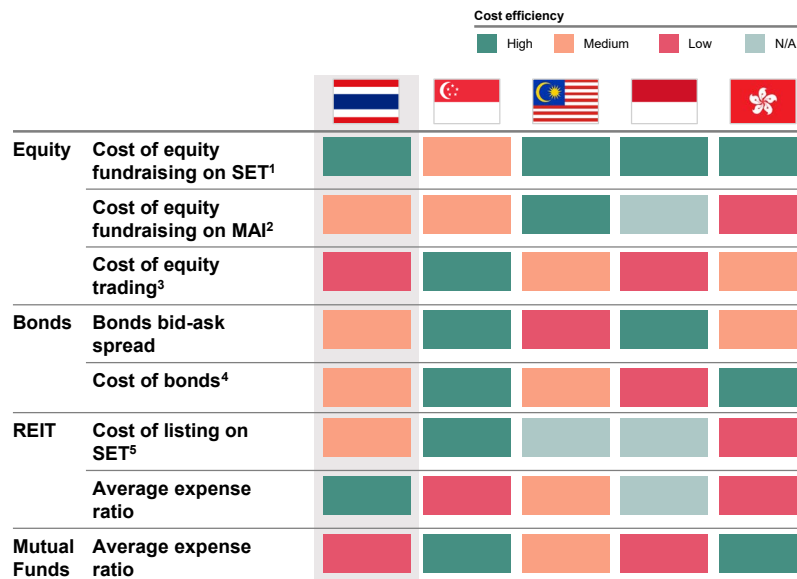
- **Equity derivatives:** SET 50 index-based derivatives and single equity-based derivatives (for >100 listed stocks) together combine >90% of derivative volumes
- **Gold futures:** Gold online futures, 10 Baht Gold futures each with >1 Mn contracts traded
- **FX futures:** USD-Thai Baht futures

1. Assumption: All single equity derivatives combined; split not available including both corporate and government bonds

Source: WFE, Bloomberg

Exhibit 13

Thailand cost efficiency across capital market products compared to peers



Thailand capital markets are competitive on costs efficiency compared to emerging ASEAN peers such as Malaysia, Indonesia but have room to improve when compared with developed markets such as Singapore

Thailand is most efficient in equity fundraising on SET (230-280 bps of issue size) and **REITS management expenses** (across majority asset classes except for industrial REITs)

Scope to **improve market efficiency in equity trading** (30 bps which is highest amongst ASEAN except Indonesia) and **mutual funds** (driven by expense ratio for fixed income and mixed allocation funds)

1. Estimated based on issue size of USD 100 Mn and market cap of USD 500 Mn
2. Estimated based on market cap of USD 200 Mn and issue size of USD 20 Mn
3. Includes regulatory levy, transaction tax, local tax, stamp duty and other taxes as applicable, excludes brokerage charges
4. Lowest investment-grade corporate bonds average YTM with maturity during 2027-2028 (~5 years financing)
5. Estimated based on REIT size of USD 100 Mn

Source: Dealogic, Bloomberg, Capital IQ, ADB, Morningstar, exchange fee schedules, expert interviews, press search

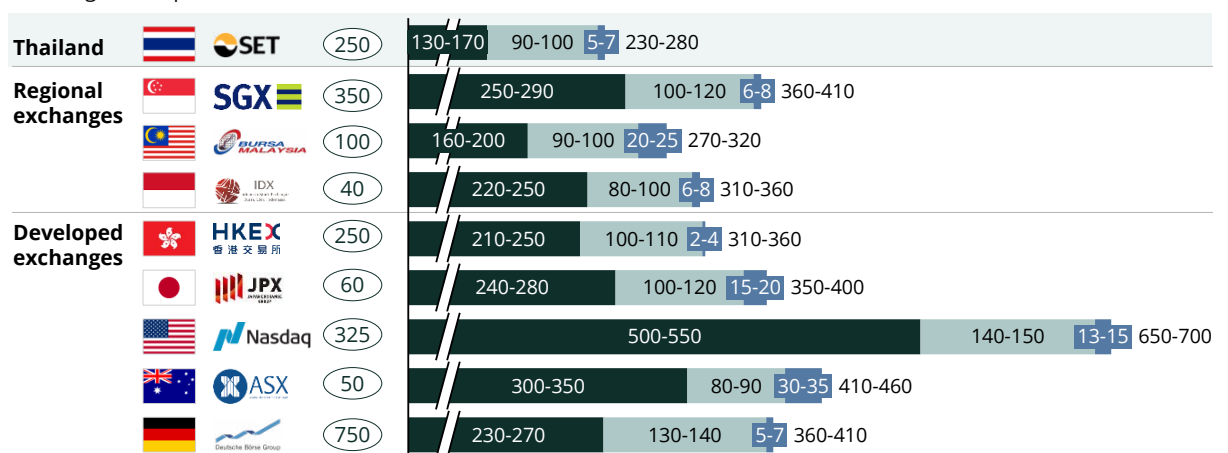
Exhibit 14

Cost of listing an equity on SET compared to other main exchanges in regional and global peers

NOT EXHAUSTIVE

■ Underwriting fees ■ Legal, accounting and roadshows ■ Listing and regulatory fees
 (XX) Average issue size, 2019-21, USD Mn

Total cost of equity fundraising on the main exchange as % of issuance value, as in Aug 2022, bps



Thailand offers competitive cost of listing an equity on SET at ~230-280 bps of the issuance size compared to regional peers (at avg of 300-350) and global peers (at avg of 400-450)

Underwriting fees is the largest fee portion across all markets, accounting for almost 60% of the total cost

Lower underwriting fees in Emerging markets¹ driven by **fierce competition from local banks**, specifically on smaller deals where foreign banks are not actively involved

1. Weaker currency impact lower underwriting fees in Thailand and Malaysia (35.59 THB/USD and 4.46 MYR/USD respectively as of Aug 9, 2022)

Note: Costs estimated based on market capitalization of US\$ 500 Mn and issue value of US\$100 Mn for IPO listing

Source: Dealogic, exchange fee schedules, expert interviews, press search

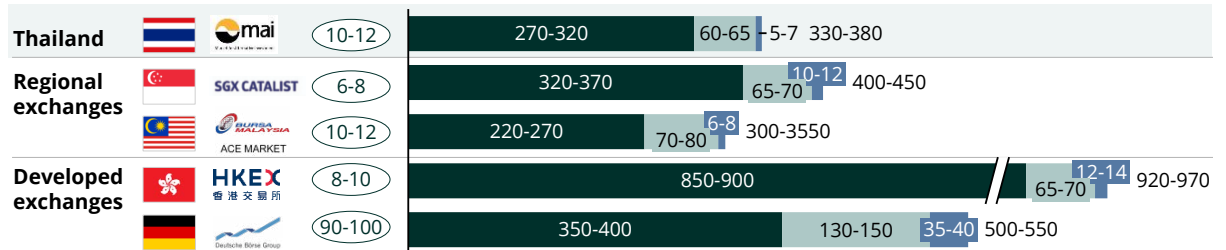
Exhibit 15

Cost of listing an equity on MAI compared to other main exchanges in regional and global peers

NOT EXHAUSTIVE

■ Underwriting fees ■ Legal, accounting and roadshows ■ Listing and regulatory fees
 (XX) Average issue size, 2019-21, USD mn

Total cost of equity fundraising on the alternative exchange as % of issuance value, as in Aug 2022, bps



Raising fund from **alternative equity-trading board in Thailand would incur comparable cost of issuance to regional peers** and cost ~90-100 bps higher in total when compared to SET

Across the markets, underwriting fees to raise funds from alternative exchange are higher due to **addition of discretionary bonus for underwriters** if the trading price on the issuance date is higher than the listing price.

Legal and accounting fees are lower due to **limited complexity and local accounting standards**. However, SMEs usually **spend higher for investor relations and PR** given limited track record or profitability

Note: Costs estimated based on market capitalization of US\$ 200 Mn and issue value of US\$20 Mn
 Source: Dealogic, exchange fee schedules, expert interviews, press search

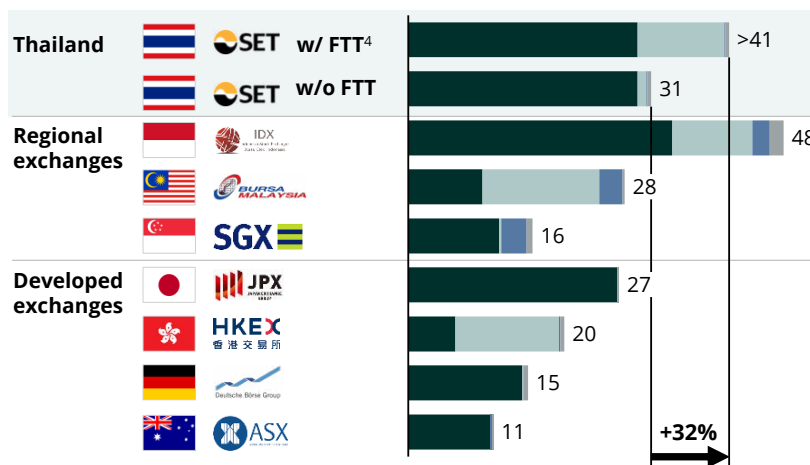
Exhibit 16

SET's cost of cash equity transactions (trading) compared with peers

ROUGH INDICATION BASED ON 1 DAY TRADING DATA (FEB 23, 2022)
 OUTSIDE-IN

■ Spread¹ ■ Regulatory fee and other taxes² ■ Post-trade fee ■ Exchange fees

Total cost of cash equity transactions for exchange participants³, as in Feb 2022, bps



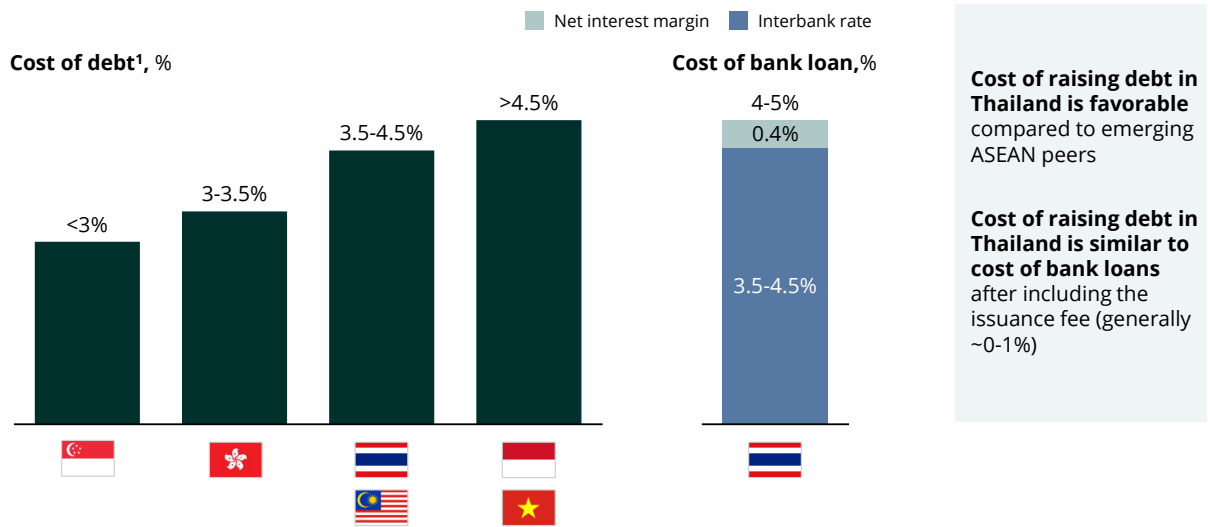
- **The bid-ask spread is a major contributor** to the total cost of cash equity transaction for market participants
- **The total cost of transaction for cash equity market at SET (pre-FTT) are currently ~30 bps**
- Regarding the current discussion on the possibility to end FTT exemption of 0.1% on equity sales for investors with more than THB 1-2 Mn monthly sales volume, **total cost of equity transactions for that group of investors can be expected to reach > 40 bps**
- On top of FTT cost above, the impact of FTT can **potentially increase the current bid-ask spread of ~29 bps** due to tentative decrease in trading activity

Note: Nasdaq (USA) charges flat fee per trade. Ho Chi Minh SE charges flat fee in post-trade;

1. 50% of bid-ask spread all constituents of main index – estimated using bottom-up analysis of all stocks under the main index and aggregated based on market cap weights (ASX (ASX 50), JPX (TOPIX Core 30), Deutsche Boerse (DAX), SGX (FTSE Straits Times), HKEx (Hang Seng), SET (SET 50), Bursa Malaysia (FBMKLCI), IDX (LQ45))
2. Includes regulatory levy, transaction tax, local tax, stamp duty and other taxes as applicable
3. Analysis based on market excludes brokerage charges – negotiable in most countries; analysis conducted based on one day in Feb 2022
4. As per current debate, FTT to be charged only on the 'sell' leg of eligible cash equities transactions from investors with monthly turnover of > 1-2 Mn THB

Source: Bloomberg, exchange fee schedules, press search

Exhibit 17
Thailand's corporate bond returns vs cost of bank loans



1. Lowest investment-grade corporate bonds average YTM with maturity during 2027-2028 (~5 years financing)
 Source: Bloomberg, expert interviews, press search

Bonds

Thailand has an average bid-ask spread on government bonds of 3.2 bps, compared with an ASEAN average of 3.9 bps, but behind Indonesia (2.6 bps), and Singapore (2.8 bps).

The cost of raising debt through bonds (3.5 to 4.5 %) in Thailand is favorable compared to emerging ASEAN peers and similar to the cost of bank loans (see Exhibit 17)

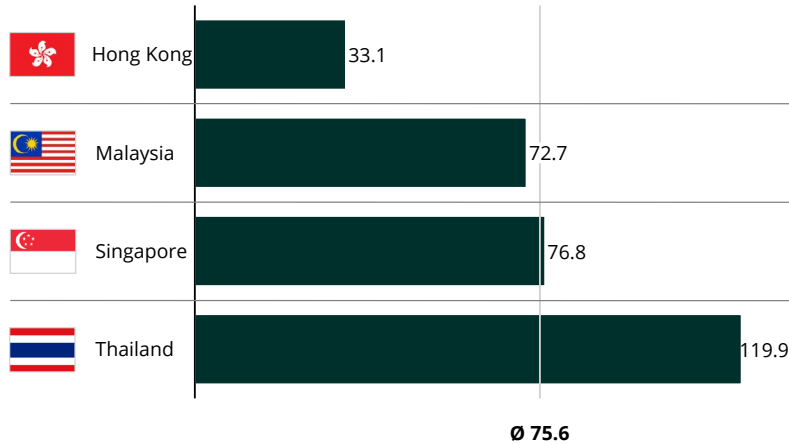
REITs

Thailand offers a competitive cost of REIT listing at about 710-760 bps (including property transfer fees and stamp duty/tax) of the issue size, compared to Asian peers such as Singapore (650-700 bps) and Hong Kong (1,000+ bps) (see Exhibit 19).

Thailand has a low expense ratio across the majority of the REIT asset classes (except for industrial REITs); generally ~10bps lower than regional peers (see Exhibit 20), while the bid-ask spread of its secondary market is 59 percent above average and the highest among ASIAN peers at 119.9 bps (see Exhibit 18).

Exhibit 18 Thailand's REIT sector bid-ask spreads compared with peers

Listed REITs bid-ask spreads, in bps, 11 April 2022



Source: Bloomberg

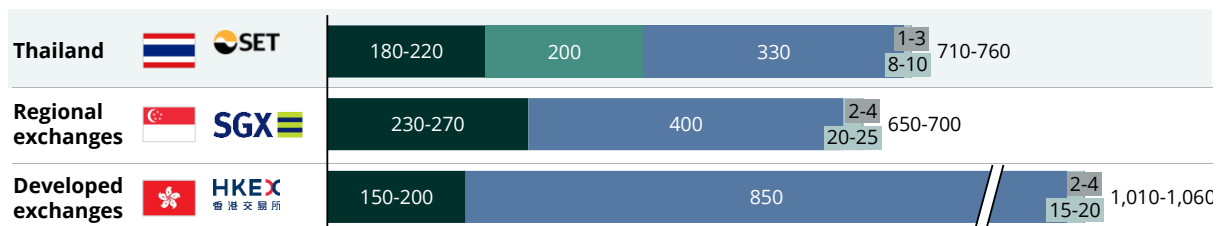
Thailand has a **bid-ask spread of 119.9 bps vs 75.6 bps** (selected ASEAN peer average)

Exhibit 19 Cost of fundraising for REITs in Thailand compared to regional peers

NOT EXHAUSTIVE

■ Advisor/Underwriter fees ■ Property transfer fees ■ Stamp duty/Tax ■ Legal fees ■ Listing fees

Total cost of REIT issuance on the exchange as % of issue size, as in Aug 2022, bps



Thailand offers competitive cost of REIT listing at ~710-760 bps of the issue size

Despite its low stamp duty, Thailand -- unlike Singapore and Hong Kong -- charges property transfer fees, resulting in slightly higher REIT issuance cost in total than Singapore

Singapore and Hong Kong offer incentives on REIT issuance e.g., offering financial support to cover up to 70% of expenses¹ on exchange listing such as underwriting, advisory, legal, audit fees etc.

1. Up to HKD 8 Mn for HKEX, upto SGD \$2 Mn for SGX

Note: Costs estimated based on estimated REIT size of USD 100 Mn

Source: Dealogic, Expert interviews, press search

Exhibit 20

Cost of fundraising for REITs in Thailand compared to regional peers

Avg. Expense ratio (%)
Worst Quartile ■ ■ ■ ■ Best Quartile

REITs	Thailand (SET)	Malaysia (Bursa Malaysia)	Singapore (SGX)	Hong Kong (HKEX)
Retail	0.24	0.34	0.32	0.38
Diversified	0.29	0.44	0.39	0.56
Industrial	0.94	0.51	0.72	0.39
Office	0.41	0.49	0.67	0.76
Hotel and Resorts	0.25	0.25	0.47	0.35
Specialized	0.69	N/A	0.81	N/A
Healthcare	N/A	0.14	0.86	N/A
Residential	0.41	N/A	N/A	N/A
Infrastructure Funds	1.5	N/A	2.4	N/A

Thailand has low expense ratio¹ across majority of the REIT asset classes except for **industrial REITs**; the expense ratios are generally ~10bps **lower** than regional peers

Thailand also has low expense ratio² for infrastructure funds (Singapore – 2.4%)

Higher expense ratio **does not have a significant bearing on asset class returns**, with other factors such as **tax transparency** and **trading activity** which will also affect a REIT's performance

On the REITs costs, **sales and marketing forms a very limited portion of total expenses**, ranging 5-10% with bulk of the costs spent during listing on roadshows

1. Expense ratio for REITs defined as (REIT manager's fee + trustee fee) / AuM of Investment Properties; results are indicative of the 4-year average expense ratio for the top 3 companies (by market capitalization) within each country and REIT sub-segment (e.g., retail, diversified, industrial etc.)
2. The percentage of fund assets used to pay for operating expenses and management fees, including administrative fees, and all other asset-based costs incurred by the fund, except brokerage costs. Sales charges are not included in the expense ratio

Source: Annual Reports, Capital IQ

Lens 2: Performance of exchange:

Is the exchange high performing, with attractive IPO and SPO opportunities?

The performance of a stock exchange can be evaluated by a variety of measures, which include but are not limited to its attractiveness as a venue for fund raising, development of new high-value-added services, overall revenue, and profitability growth.

SET was founded in 1975, and as of May 2022, it is ASEAN's second-largest exchange and the world's 23rd by market capitalization at US\$64 billion.

It has logged a steady 9% p.a. revenue growth between 2015 and 2019, with a decline seen between 2019 and 2020. The reduction of the exchange's revenue in 2020 was primarily the result of investment losses of ~THB 360mn, as the global pandemic pressured the prices of equity mutual funds and REITs to reduce significantly. Comparatively, the exchange saw ~THB 950mn in investment gains in 2019, prior to the pandemic.

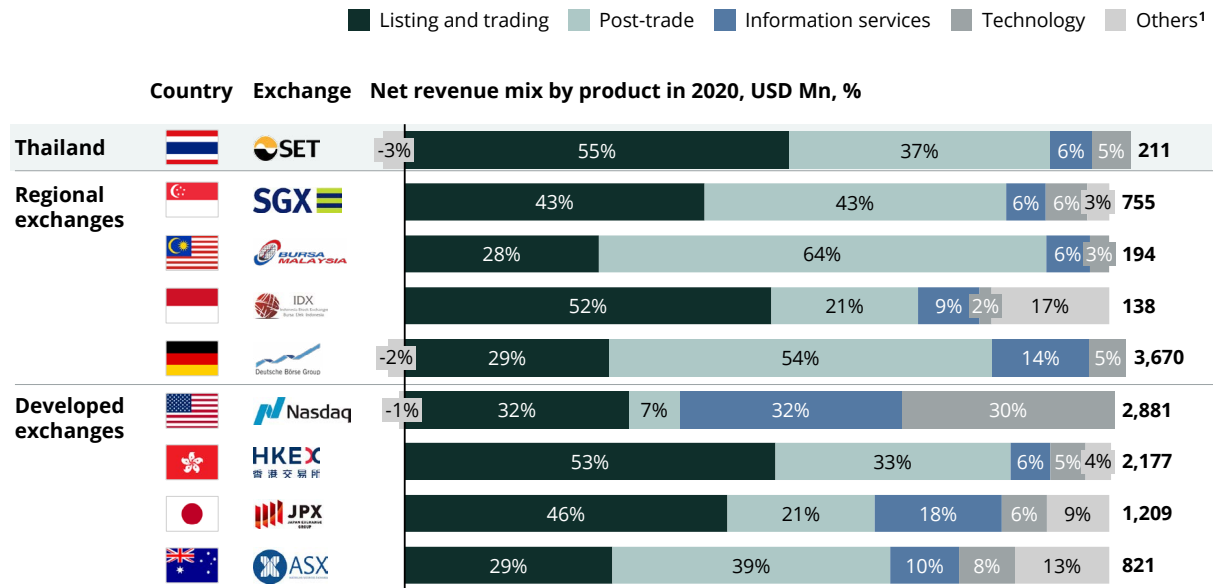
Similar to most other regional and developed exchanges, the SET derives a majority (92%) of its revenue from listing, trading, and post-trade segments, which is in line with markets such as Singapore (86%) and Hong Kong (86%) (See Exhibit 21).

However, where there remain opportunities are in the diversification of revenue streams. More developed exchanges such as Nasdaq have a higher revenue contribution (62%) derived from information services and technology, which allows them to develop healthy revenue numbers from the different streams of business. Nasdaq and the New York Stock Exchange (NYSE) offer technology services and trading software to large institutional clients like mutual funds and asset management companies. Such businesses require faster data and faster trade execution through dedicated products and services, which are offered by the Nasdaq and NYSE's trading software and technology product suite.

Apart from a stock exchange, a bond exchange also exists in some countries. The SET discontinued the Thailand Bond Exchange (TBX) in 2021 and the

Exhibit 21

SET's revenue structure consists >90% from listing, trading and post-trade



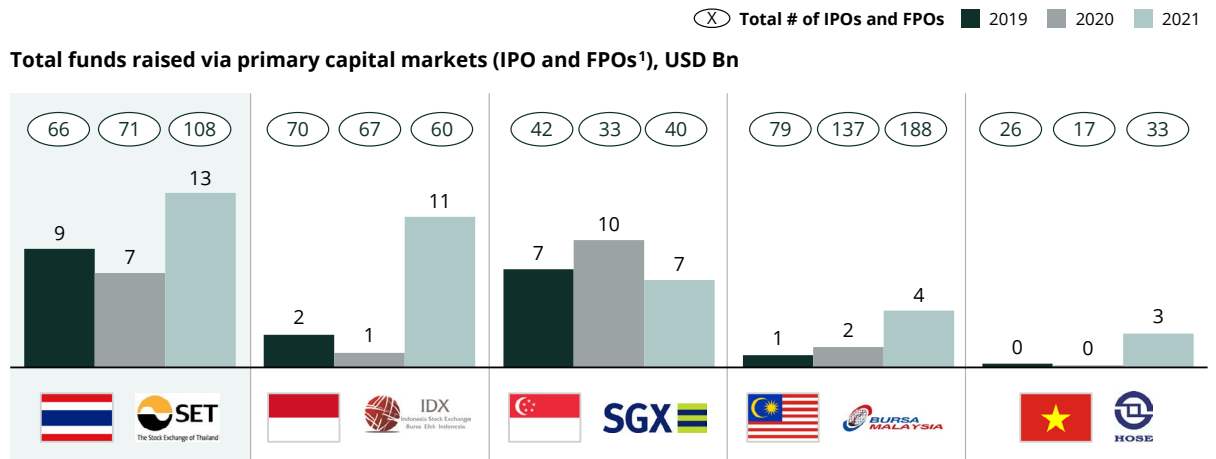
1. Other revenues include interest income and all other revenues from (non) core operations, inter-group adjustments etc.

Note: Data not available for Ho Chi Minh Stock Exchange

Source: Annual reports, press search

Exhibit 22

SET leads regional peers in IPOs: ~ USD 13 Bn funds raised via primary equity markets in 2021



1. Follow on Public Offer

Source: Capital IQ

bond marketplace in Thailand has become for OTC trading only. However, most other peer markets have a centralised listing and trading venue for fixed-income instruments. Secondary bond markets among peer countries typically fall under three archetypes:

1. OTC trading (e.g., Thailand currently)
2. Exchange-backed OTC electronic platform (e.g., SGX OTS Bond Pro)

3. Exchange centralised platform, for example Bursa Malaysia

Most regional peers offer end-to-end services on bond markets, from listing on centralised or bilateral trading platforms, to centralised clearing and settlement. Despite limited trading activities, most markets have a large amount of bonds listed to increase visibility for investors.

Lens 3: Attractive pre-IPO financing ecosystem: Is there an attractive ecosystem present for pre-IPO financing?

A key indicator that there is an attractive and budding pre-IPO financing ecosystem in Thailand is the success rate of IPOs occurring in the country. Since 2019, there have been nearly 100 domestic IPOs (96) listed on the SET, which indicate that there is a very strong hub for local IPOs, and that IPOs are getting enough financing in the pre-IPO stage to push them towards successful public listings. This number was demonstrably higher than that of regional peers such as Singapore (13) and Malaysia (67) from 2019 to 2021.

In terms of funding, total funds raised via the SET in 2021 was USD 13 billion, which is significantly higher than that of the USD 11 billion raised by Indonesia's IDX, USD 7 billion by SGX and USD 4 billion by Malaysia's KLSE (see Exhibit 22).

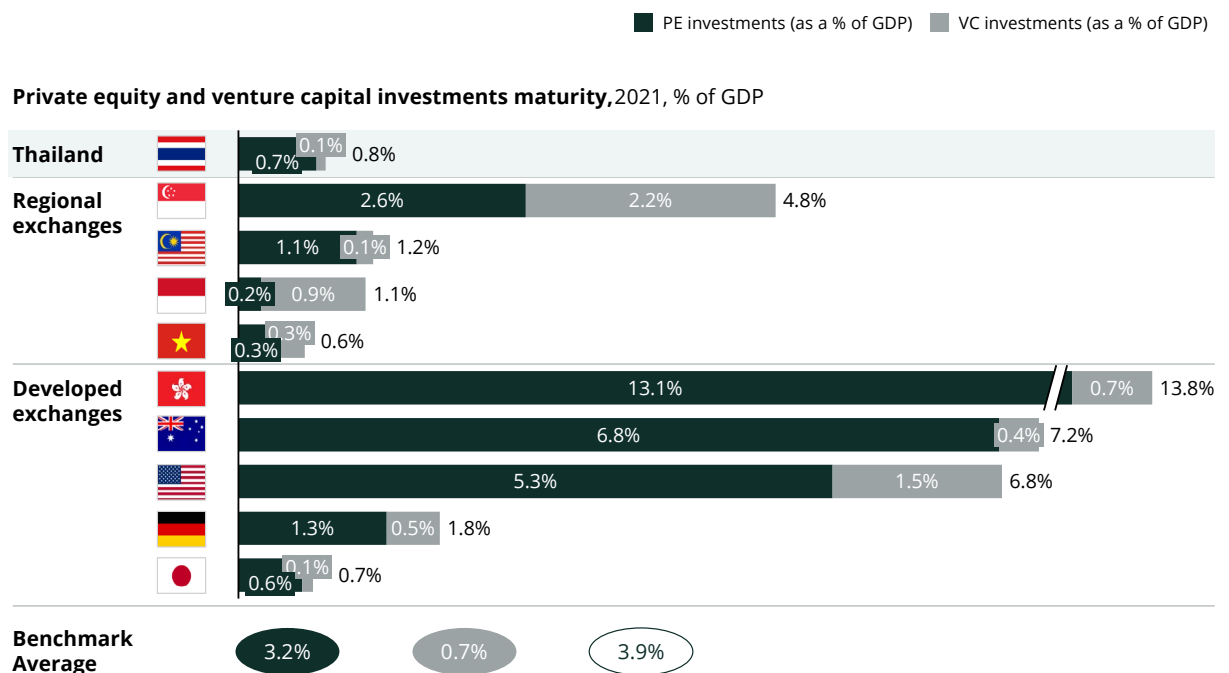
Much of this stronger regional IPO performance in the SET has a foundation in the increasing retail participation seen over recent years, which has increased from 34% in 2019 to 47% in 2021. Work-from-home policies during the pandemic and increased unemployment have also resulted in

retail customers looking for new revenue streams. Additionally, the recent IPO of PTT oil and retail business– a highly visible household brand that resonates with retail customers, which raised USD1.57 bn in its IPO on SET– also contributed to this overall uptick.

Aside from the mainboard, small and medium enterprises (SMEs) are also offered the Market for Alternative Investment (MAI) as a listing venue. MAI, which is fully operated by the SET, saw a total of 176 listings with a combined market capitalization of THB 340 billion in 2020. SET also offers a LiVE platform to support start-ups and SMEs (LiVEx), which was launched in March 2022 to help smaller companies raise funds in the capital markets.

In creating an attractive pre-IPO financing ecosystem, one area that requires further development in Thailand is the private equity (PE) and venture capital (VC) scene. As of December 2021, investments from this sector only comprised 0.8% of GDP, which is significantly lower than the average global benchmark of 3.9%- indicating that there is an urgent need to build a broader financing ecosystem to include seed and early-stage start-ups (see Exhibit 23).

Exhibit 23 Thailand has an opportunity to deepen its PE/VC funding



Source: Pitchbook


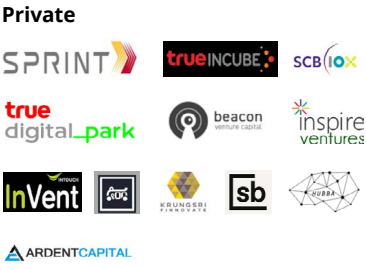

Part of the challenge on this front is that the Thai economy is still dependent on 'old-economy' industries. Thus there are relatively fewer new economy start-ups in the pipeline compared to regional peers. And while the Thai government has been proactive in incentivising assistance for start-ups, government agencies and public and private incubators, who are key stakeholders in the start-up value chain continue to be very fragmented. This ends up creating friction and bottlenecks for start-up owners, which disincentivises the healthy development of a start-up pipeline (see Exhibit 24).

There is a large opportunity to be captured if Thailand is able to create more avenues for collaboration between key stakeholders and create stronger connections between entrepreneurs and institutions. Without this local embeddedness—where start-ups are able to rely on local resources and actors rather than external— it will be

challenging to develop a strong start-up ecosystem, despite the presence of key technical and financial factors.

Additionally, it should be noted that alongside PE and VC investments in the pre-IPO financing ecosystem, private debt has also become an important source of funding globally, growing by 10% p.a. between 2020 and 2021. It should be noted therefore that private debt is another source of funding that has the potential to close funding gaps for SMEs, particularly in emerging markets such as Thailand, which faced a USD4.1 trillion annual funding gap in 2019. And despite private debt in Thailand still being relatively nascent, it should be noted that it has significant potential to grow to the levels seen in regions such as North America and Europe, where the percentage of private debt to GDP ratio is estimated to be as large as ~3.5% and 2%, respectively.

Exhibit 24 Key stakeholders in the startup value chain in Thailand focus on early-stage startups; opportunity to enhance support in scale-up stages

Development Stage	Research & Development	Proof of Concept	Transition to Scale	Scaling
Stakeholder's value-add	Help startups to develop solutions with potential to address problems and provide seed capital	Conduct real scenario assessment to gain proof of success	Assist startups in larger funding amounts and foster new partnerships	Further help startups through expanding their market access and capital
Stakeholder types	Angels, Accelerators, Incubators		Early stage VC	Later stage VC
Example of stakeholders	Government 	Private 		<p><i>Scaling support for startups is still limited in Thailand as large-scale VCs are also limited</i></p>

Source: Press search, Crunchbase

Lens 4: Diversity in the investor

base: Is there a presence of a strong and diverse investor base?

Cash equities have had a strong participation by both retail and foreign investors in 2021, standing at 47% and 37% of total trading volumes, respectively (see Exhibit 25). The trading volumes were driven primarily by foreign investors, whose trades have increased by more than three times since 2015. On the domestic retail investor front, the increase seen in recent years is likely due to the pandemic and small-lot-first IPOs aiming to provide opportunities to broader retail investors, which mirrors the global trend where a flood of new retail investors was seen entering the stock market in 2020.

One area that offers an avenue for development to improve the overall diversity of the investor base in Thailand is the participation of pension funds. However, there are currently three key gaps with the pension funds system in Thailand that will need to be addressed: low payout amounts, low citizen and employer participation rates and a low retail participation rate.

First, looking at payouts, Thailand's first pillar of the pension fund system aims to cover basic costs

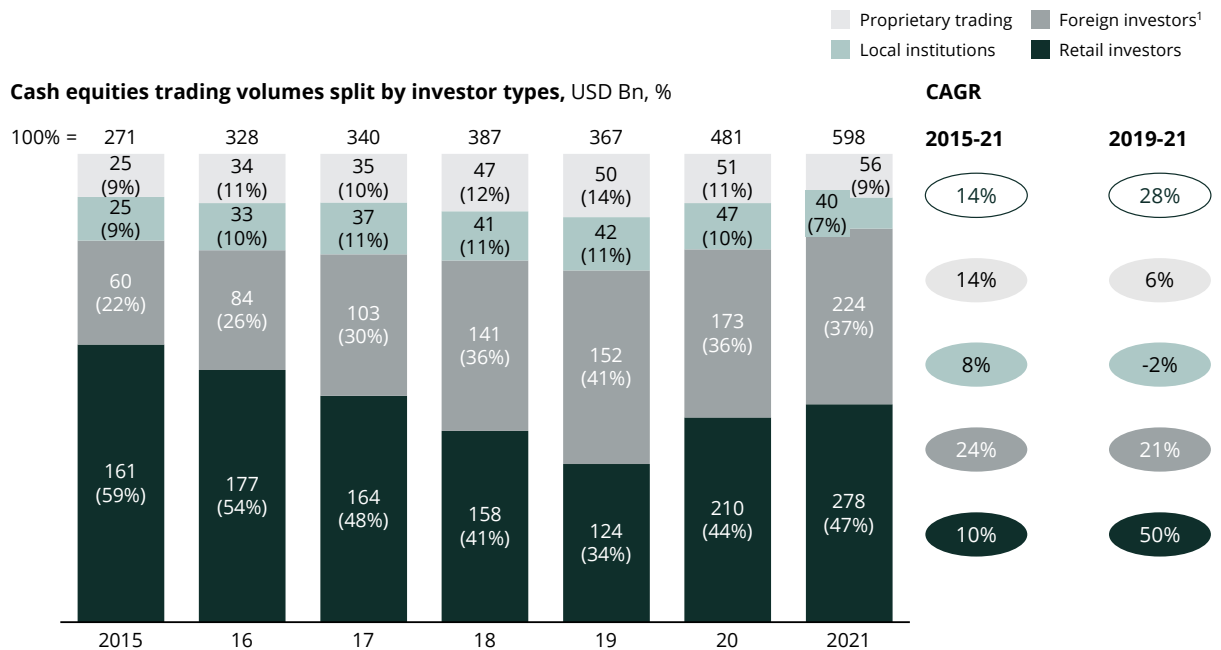
of living, with THB 600 to 1,000 paid out monthly. However, contextualising this amount is necessary. The international poverty line for Thailand, when adjusted for purchasing power parity (PPP), is THB 2,046 monthly.

Second, on the participation front, employer-matching for contributions into the Thai Provident Fund remains voluntary and take-up rates are low. As a result, employee participation is also low at 21% (see Exhibit 26). Expanding participation rates will increase the overall pool of the Thai Provident Fund, and coupled with sound investment policies and strategies, can enable the fund to produce enhanced returns for Thai citizens.

Lastly, pension funds made up only 27% of Thailand's total GDP in 2020, which is significantly lower compared to other countries, such as Hong Kong (54%) and Singapore (98%) (see Exhibit 27). However, by deepening retail participation in pension funds, there can be a significant monetary benefit for Thailand. As an estimation, increasing retail participation in pension funds to levels comparable to that of Singapore, could reap Thailand approximately THB 10 trillion in asset growth.

Exhibit 25

Share of retail investors in cash equities has increased to 47% in 2021 (from 34% in '10)



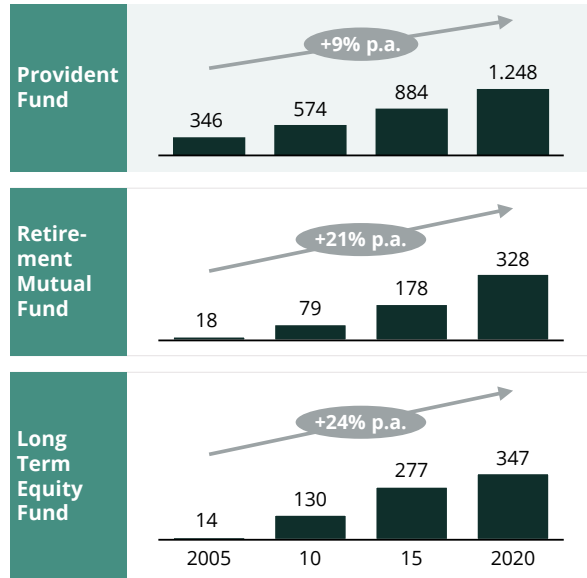
1. Foreign investors are defined as retail and institutional investors established under foreign law and which do not operate in Thailand

Source: SET, WFE

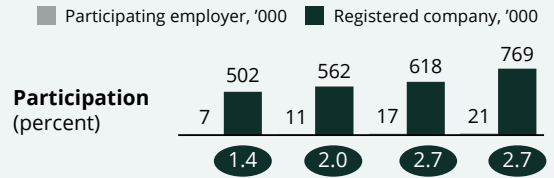
Exhibit 26

Voluntary schemes are growing, further opportunities to improve participation

Asset under management, THB bn



Employer participation in provident fund



Employee participation in provident fund

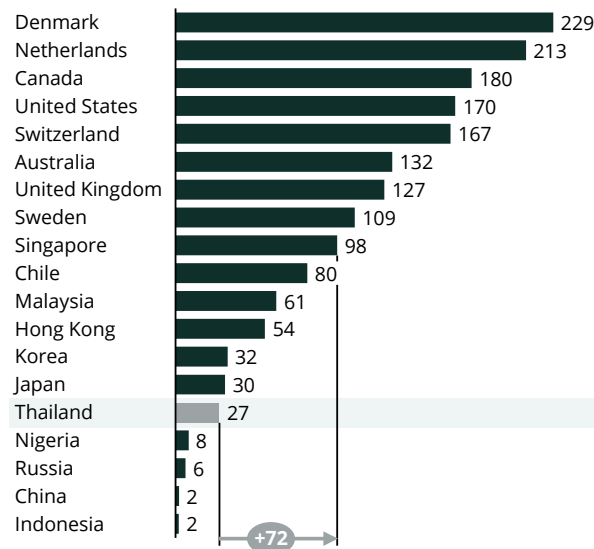


Source: AIMC

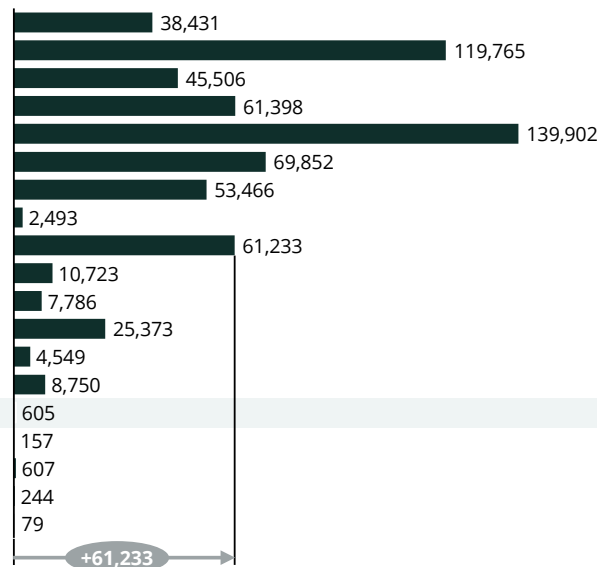
Exhibit 27

Thailand's pension asset vs. other countries

Total assets in retirement savings plans (2020), % of GDP



USD per capita (2020, mn)



For Thailand, includes Social Security Fund, Government Pension Fund, Provident Fund, RMF

Source: OECD, AIMC, Mercer

Lens 5: Tax and regulations : Are there necessary frameworks, regulations and robust tax environment present to support the capital markets?

On the tax and regulatory front, there are some key areas to focus on, which include sustainability, digital assets, and the considerations on re-introduction of the financial transaction tax.

Sustainability frameworks

Thailand has committed at COP26 to reduce the country's greenhouse gas emissions by 20% by 2030, and to net zero by 2065. While these are bold






aspirations, they can be achieved through a variety of national initiatives, including increased electric vehicle (EV) manufacturing and the implementation of Thailand's sustainable development goals (SDG) roadmap.

Given the scale and timeline of these goals, sole funding from the Thai government will likely not be sufficient and will likely need to be supplemented by private investment. In line with this, it will be necessary for the country to broaden its funding avenues and have supportive green capital market solutions, such as green or sustainability lending, green or sustainability funds, and a carbon market.

Exhibit 28

Selected examples of countries which introduced financial transaction tax

ILLUSTRATIVE NOT EXHAUSTIVE

Country	Description	Key reactions in capital markets
	Feb 2021: Hong Kong's government increased its stamp duty by 0.03% per leg (now at 0.13% for each leg) on cash equity transactions	<ul style="list-style-type: none"> Shares of the exchange (HKEx) declined 8.8% on the first day post public announcement of rising transaction costs Decline of ~36% in ADV³ of cash equities on HKEx in Feb vs average for March-December 2021
	Jan 2021: Spain introduced a financial transaction tax of 0.2% on purchase of qualifying shares ¹ to generate additional revenues of EUR 850 Mn for the government	<ul style="list-style-type: none"> Independent Authority for Fiscal Responsibility (IAFR) has lowered revenue collection estimates to EUR 420 mn citing impacts on capital markets (e.g., lower trading volumes, higher transaction costs, volumes moving outside regulated markets) A decline of 7% in ADV³ during 2021 as compared to 2020 on the BME Spanish Exchange
	Mar 2013: Italy introduced a financial transaction tax on issuance (incl. transfer ²) and transactions (both legs) of both cash and derivative products. Variable tax rates - 0.2% (OTC), 0.1% (regulated markets) to 0.02% (high frequency trading)	<ul style="list-style-type: none"> Credit Suisse published a study that Italy experienced a 34.2% relative decline in ADV³ in initial 2 months since the introduction of the tax (since the tax came into force ADV³ in Italian stocks fell 29.7% vs. 4.5% increase in EU stocks)
	Aug 2012: France introduced a financial transaction tax on buy-leg of the transaction. Variable tax rates - high for regulated markets - 0.2% (now 0.3% for cash equities (raised in Jan 2017) and significantly lower for HFTs at 0.01% on buy-leg of the transaction	<ul style="list-style-type: none"> Government collected Eur 0.2 Bn as revenues (in initial 5 months), adjusted downwards by >50% from initially estimated tax revenues of Eur 1.6 Bn Credit Suisse published a study that France experienced a 6.4% relative decline in ADV³ 20 months since the introduction of the tax (since the tax came into force ADV³ in French stocks fell 9.2% vs. 2.8% in EU stocks)
	Oct 2004: India introduced securities transaction tax (STT) on cash equities at 0.15% - charging both buy and sell sides at 0.075% each --, and on derivatives at 0.01% on sell side leg	<ul style="list-style-type: none"> Average trading volume at BSE (Bombay Stock Exchange) increased to INR 21.26 billion - highest since May of the same year. The quantity of shares traded also reached highest for the year in the month of the tax introduction at both BSE and NSE (National Stock Exchange of India) 3 potential reasons for these reactions: end of confusion on STT, positive market expectation on upcoming quarterly results, and the decrease of domestic inflation rate

1. Spanish companies with market capitalization of > EUR 1 Bn

2. Scope includes primary issuance, conversion of bonds, transfers by way of inheritance or donation, transactions of temporary acquisitions of securities (e.g., repos, securities lending)

3. Average daily traded value

Note: Only short-term market reaction captured

Source: Press search, WFE

Undoubtedly, these solutions will also require supporting frameworks, including a national green taxonomy, to ensure clarity on sustainability measurement and financing.

Digital asset regulations

Thailand published its Digital Asset Decree in 2018 and has been one of the region's earliest adopters, providing licenses for crypto trading firms and drafting plans to launch the Thai Digital Exchange, offering initial coin offerings (ICOs) and tokenization, by the end of 2022.

The development on this front has already led to the growth of a promising ecosystem in Thailand, which includes digital assets exchanges such as Bitkub, Zipmex, and Satang.

Looking to the future, there is a consideration for the Thailand to continue developing its regulatory framework for digital assets, to ensure that the nascent asset class remains safe for investors, while maintaining its competitive edge. There also remains great potential for this sector, with new use cases of digital assets such as digital wallets, rewards, and real estate tokens that can be introduced as these asset classes develop over time. There is also an opportunity to explore collaboration between public and private players (e.g., exchanges, banks, or new entities) to create infrastructure based on digital ledger technology.

As these asset classes evolve, regulators could consider constantly updating and adapting the digital assets regulatory frameworks, which could both promote innovation whilst ensuring adequate investor protection.

Financial transaction tax

The financial transaction tax (FTT) is defined as a levy on a specific type of financial transaction for a particular purpose. Thailand has been considering reinstating FTT on equities trading. When considering FTTs, there is a need to consider multiple lenses, as the mode of the tax could have complex impacts on the market and the economy.

This variance can be seen when considering the impact that the FTT has had across different countries that have imposed the tax in the past (see Exhibit 28). In Hong Kong for instance, where the government increased its stamp duty by 0.03% per leg (now at 0.13% for each leg) on cash equity transactions in February 2021, shares declined 8.8% on the first day post public announcement.

Similarly, Spain introduced a financial transaction tax of 0.2% on the purchase of qualifying shares in January 2021, with the aim of generating additional revenues of EUR 850 million for the government. However, the Independent Authority for Fiscal Responsibility (IAFR) ended up lowering revenue collection estimates to EUR 420 million, citing impacts on capital markets such as lower trading volumes, higher transaction costs and volumes moving outside regulated markets.

The reverse impact was seen in India after a securities transaction tax (STT) on cash equities at 0.15% - charging both buy and sell sides at 0.075% each - was established in October 2004. After the implementation of the tax, average trading volume at the Bombay Stock Exchange (BSE) increased to INR 21.26 billion, which was the highest since May of the same year. The quantity of shares traded also reached the highest for the year in the month after the tax was introduced at both BSE and the National Stock Exchange of India. This was ascertained to be due to three key reasons - less confusion about the STT, positive market expectations on upcoming quarterly results and the decrease of domestic inflation rates.

Summarizing Thailand's key strengths and opportunities...

Early wins in the right areas make the difference between a successful program and a theoretical vision. For Thailand to achieve its aspiration to be a competitive player amidst regional and global capital markets, and to make its capital markets work for everyone, it needs to lay the foundations for performance across multiple expansion paths.

Summary of Thai Capital Markets' starting position across 5 lens

	What works	What could be better
<p>Len 1: State of the Market What is the extent of financial depth, maturity, competitiveness, and efficiency present?</p>	<ul style="list-style-type: none"> • Satisfactory capital markets depth in equity and bond with broad coverage of products • Competitive and efficient cash equity – top 25 global stock exchanges by market capitalization with high liquidity • Growing derivatives market with 90% equity derivatives (15% CAGR 2017-20) 	<ul style="list-style-type: none"> • Potential to deepen products beyond cash equities (e.g., ETFs, fixed income) • Unclear niche to differentiate from peers • Potential to add more 'new economy' assets • Improving the cost structure to be more competitive
<p>Len 2: Performance of exchange Is the exchange high performing, with attractive IPO and SPO opportunities?</p>	<ul style="list-style-type: none"> • Leading regional stock exchange – ASEAN's second largest exchange and world's 23rd by market capitalization as of May 2022 • Steady revenue growth of the stock exchange at 9% p.a. during 2015-2019 	<ul style="list-style-type: none"> • Potential to develop secondary bond market despite the closure of Thai Bond Exchange (TBX) in early 2021 due to inactive bond trading after 20 years of operation
<p>Len 3: Attractive pre-IPO financing ecosystem Is there an attractive ecosystem present for pre-IPO financing?</p>	<ul style="list-style-type: none"> • Strong IPO hub amongst regional peers (~100 IPOs since 2019) • Focused initiative to support growth of startup/SME - LiVE platform and upcoming LiVE exchanges 	<ul style="list-style-type: none"> • Relatively smaller PE/VC investment and domestic PE/VC funds (Thailand 0.8% of GDP; Singapore 4.8%) • Fragmented efforts from government and private sector to support startups during pre-seed and scale up phase
<p>Len 4: Diversity in the investor base Is there the presence of a strong and diverse investor base?</p>	<ul style="list-style-type: none"> • High financial awareness • Increasing participation of domestic retail investors • Growing cash equities trading volumes 	<ul style="list-style-type: none"> • Significant share of short-term foreign investors in cash equity market (e.g., HFT) • Potential to improve investment-related knowledge • Relatively low pension/retirement saving assets (Thailand 27% of GDP; Singapore 98%; Denmark/Netherlands >200%)
<p>Len 5: Tax & regulations Are there necessary regulations and a robust tax environment present to support the markets?</p>	<ul style="list-style-type: none"> • Early-stages of development of ESG investments/issuance frameworks (e.g., standardized taxonomy) • Early-stages of development of regulations on digital assets • Considerations on re-introducing 0.1% FTT on equities sales 	



A foundation of strength

Thailand's capital markets show several areas of strengths

- **Market penetration, liquidity, and diversity of the investor base.** These areas continue to be very strong for cash equities, which will help support Thailand as an attractive IPO hub.
- **Offering alternative avenues of fundraising for SMEs.** Avenues such as MAI should continue to be fostered as they enable later-stage start-ups to scale successfully.
- **Growth and penetration of bond markets.** Sustaining the growth of bond markets and increasing the mix of corporate bond issuances will allow for diversification of corporate fundraising channels.

Potential opportunities to leverage

Looking ahead, there are potential areas to sustain and enhance its performance

- **More active participation in pension funds.** Deepening employer and employee participation to increase the capital pool, and increasing the retail participation of pension fund investments in capital markets will help better fund Thailand's aging population.
- **Lengthen investment horizon of foreign investors.** Foreign investment currently comprises only 37 % of the cash equity trading values, and more can be done to attract long-term oriented investments.
- **Sustain and increase retail participation in capital markets.** Riding the positive uptick of cash equities trading volumes as a result of the pandemic, more should be done by the government to encourage retail investors to keep investing.
- **Encourage PE and VC participation.** The expansion of funding opportunities for early-stage start ups and SMEs will be instrumental to build a healthy ecosystem.
- **Foster a sustainability ecosystem:** Active steps need to be taken to develop necessary frameworks such as a carbon exchange and a national green taxonomy, to support Thailand's national sustainability commitments and improve the cost structure of the Thai capital market.

2

What could be the potential for Thailand's capital markets?



Four key trends defining the future of Thailand's capital markets

In 2018, Thailand released its 20-year national strategy, detailing how the country intends to graduate from an upper-middle-income to a high-income country by 2037. This was supplemented in 2020 by the economic-growth-focused Thailand 4.0 vision, which addresses the need for the country to promote industrial transformation, and move towards a value-based, innovation-driven economy.

Underscoring these are four key forces: Thailand's increased need for environmental sustainability, a rapidly aging population, the adoption of new technologies, and the promotion and support of SMEs to power the future growth. These have already begun to keenly shape and impact Thailand's economy and society (see Exhibit 29).

1. Creating a more environmentally sustainable nation

As with many rapidly developing countries, economic growth in Thailand has come alongside accelerated use of national resources and resultant rising environmental challenges. However,

given that the natural environment remains the backbone of many key industries in Thailand, and impacts the livelihoods of many, it remains crucial that the environment is preserved for long-term economic sustainability.

Thailand is responsible for around 1% of global emissions, in line with its share of GDP. Three sectors -energy and power, transportation, and agriculture-account for more than 80% of the country's emissions. Thailand is among the ten countries that would be most impacted by flooding.

A key step taken by the Thailand on this front has been the commitment made at COP26 to reduce greenhouse gas emissions by 20% by 2030, and to achieve net-zero 2065 (see Exhibit 30). Some strategic announcements and initiatives were undertaken to materialize this aspiration:

- Development of a National Green Taxonomy: Following the release of the ASEAN Taxonomy for Sustainable Finance in 2021, regulators in Thailand from the Bank of Thailand and the Securities and Exchange Commission have been tasked to work on a localized version to enhance the sustainable finance scene in Thailand.

Exhibit 29

Looking ahead, a perfect storm of forces is shaping Thailand's national agenda

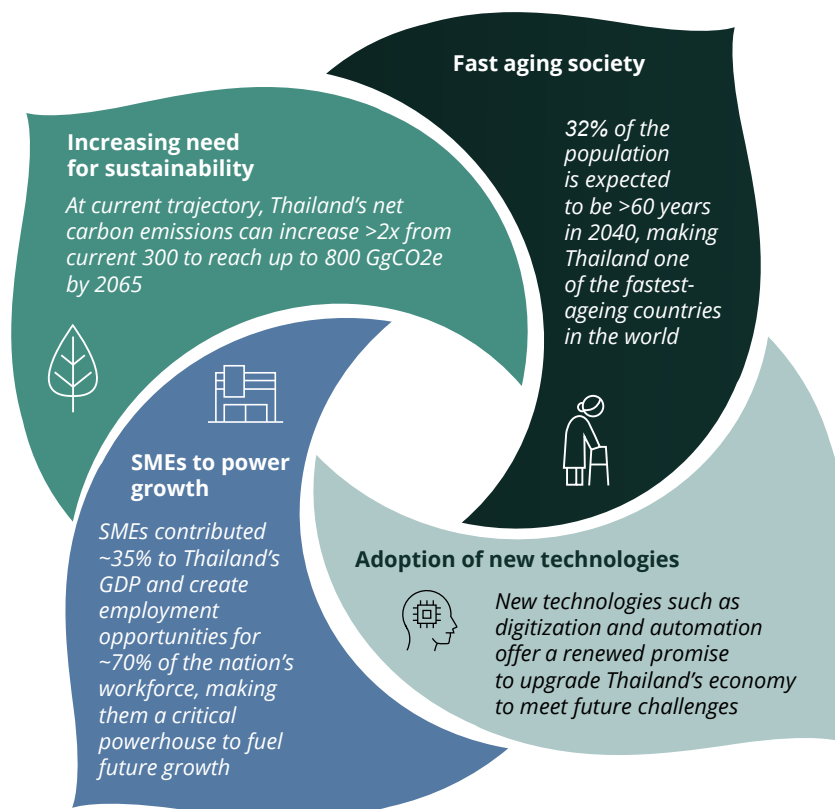
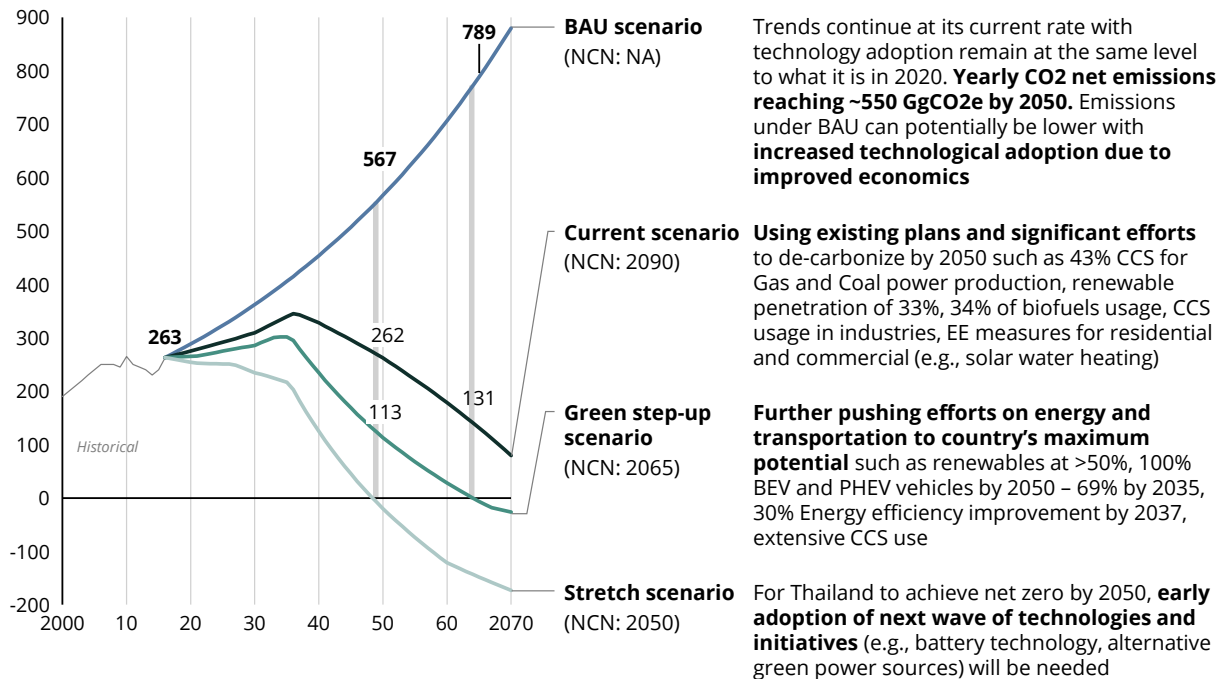


Exhibit 30 Thailand has huge challenge to reach NCZ by 2065

HIGHLY PRELIMINARY

Expected NET emissions, Mtpa CO₂e in various scenarios

Thailand's NET emissions scenario projections



- Operation of a voluntary emissions-offset program: The Thailand Greenhouse Gas Management Organization (TGO) currently operates a carbon credits trading marketplace, which encourages Thai corporates within select industries to be conscious about their carbon emissions.
- Scaling-up of Electric Vehicles (EV): There has been an active push to integrate EV's into Thailand's transportation system, with the goal to only sell zero-emission vehicles in Thailand from 2035 onward.

In 2021, Asia ex-Japan captured ~4% of sustainable fund net inflows, while Europe attracted about 79% and the US attracted 12%. Thailand stands to attract ~USD 1Bn net inflows of sustainable funds to the country, behind that of Indonesia and Singapore (see Exhibit 31).

2. Preparing for a rapidly aging population

Thailand is currently one of the fastest aging populations in the world, with the proportion of the population aged 60 and over projected to increase from 13% in 2010 to 32% by 2040, according to the United Nations Department of Economic and

Social Affairs and the World Bank. This translates to ~1 million new retirees annually starting in 2023, which warrants setting up robust retirement and healthcare programs to support this segment of the population. The expansion of the retired population will put Thailand on a par with developed markets such as Japan and Singapore, and as much as 10 percentage points higher than some other Asian markets (see Exhibit 32). At the same time, Thailand's working population is expected to shrink to around 55%, which will put pressure on economic growth going forward.

As it currently stands, pension spending, healthcare, and long-term care systems for the elderly will pose long-term financial burdens given Thailand's pension funds already take up 27% of the GDP as of 2020. It was announced in 2021 that the cabinet had approved a new national retirement plan, which will be mandatory for all employees who are not participating in other retirement plans. Under the new retirement program, both employers and employees will contribute, with minimum inputs ranging from 3% to 10% of salaries depending on employment tenure. The plan, which is underworks, is the latest initiative to prepare for an aging society.

Exhibit 31
Thailand has potential to attract sustainable fund net inflow to the country

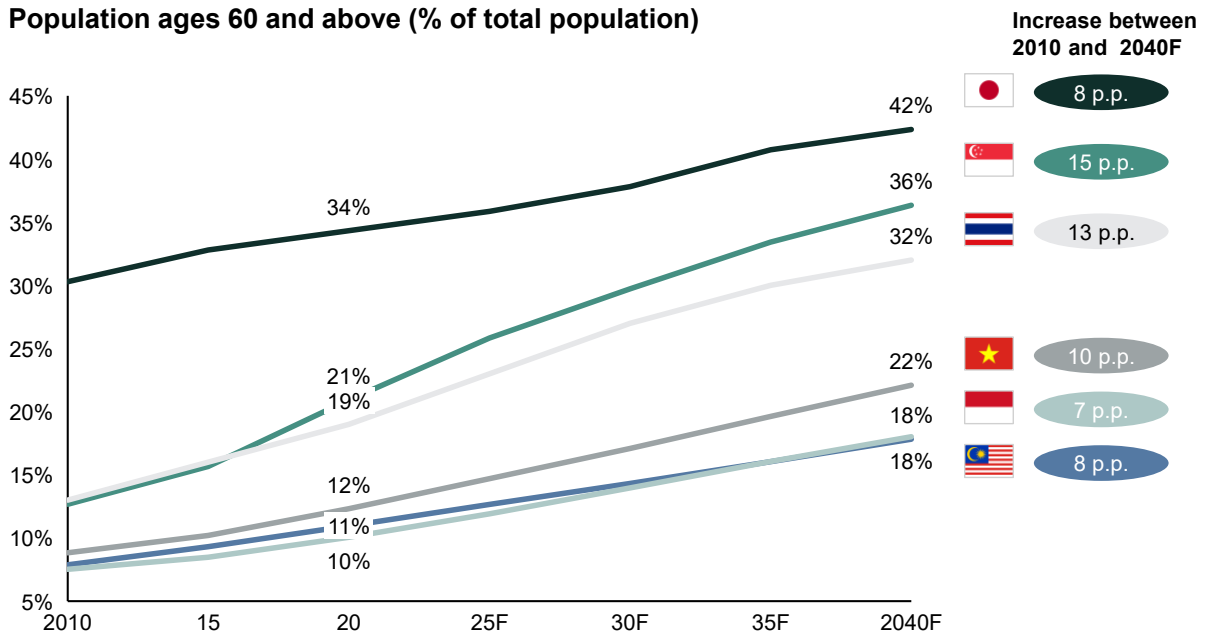
Sustainable fund¹ net inflows (Asia ex-Japan), 2021, US\$ Billions



1. Funds that have a sustainability objective and/or use binding ESG criteria for investment selection
 Source: Morningstar "Global Sustainable Fund Flows, 2020" Report

Exhibit 32
Thailand's aging population compared to peers

Population ages 60 and above (% of total population)

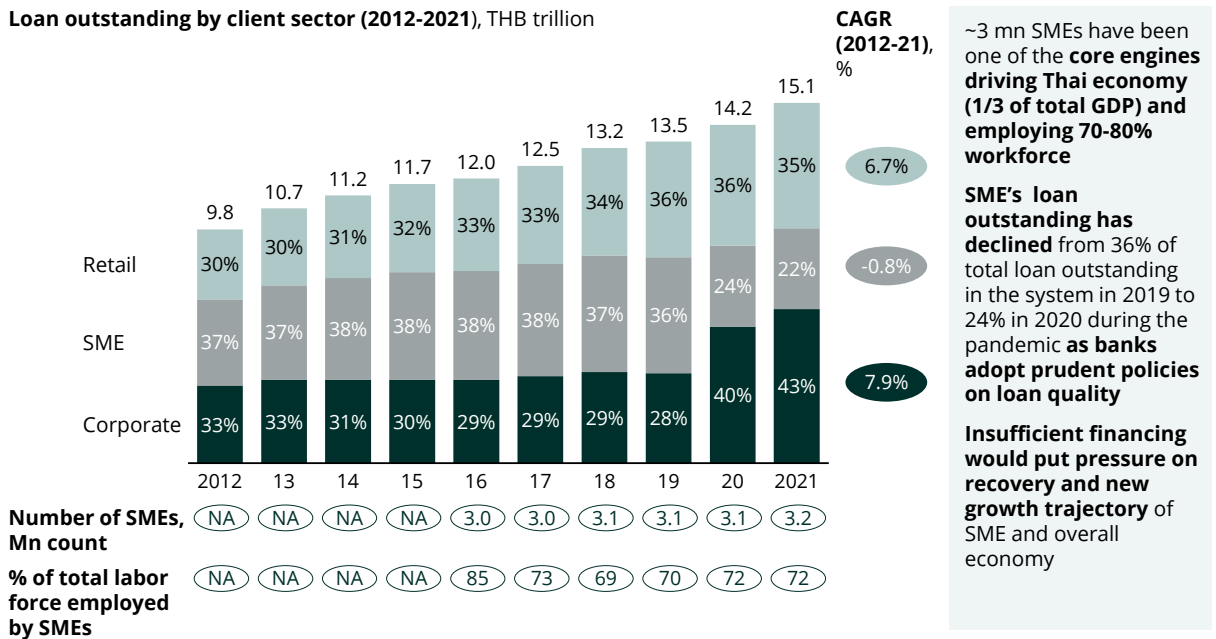


Source: World Bank

Exhibit 33

Share of loan outstanding of SME segment has gone down from ~40% to ~20%

Loan outstanding by client sector (2012-2021), THB trillion



Source: Bank of Thailand

3. Promotion and support for SMEs

Another critical area that Thailand needs to tackle is the promotion and growth of its SMEs, as a means to power sustainable long-term growth. SMEs are a strong means to drive economic growth, given their ability to develop wealth and prosperity in the country's rural areas. Furthermore, SMEs can often create large profit margins for the country, given they are nimble and quick to adopt digital technologies, compared to the larger-scale enterprises.

Around 3 million SMEs form the core drivers of the economy and account for around a third of GDP, employing approximately 70% of the workforce. SME loans outstanding have declined from 36% of the total bank loans in 2019 to 24% in 2020, reflecting bank policies during the pandemic (see Exhibit 33). It is worth noting that insufficient financing going forward would put pressure on the recovery and growth trajectory of both SMEs and the broader economy. To this end, two key steps are being taken:

- Development of a strong start-up ecosystem: The start-up ecosystem is being increasingly supported by public sector agencies such as the Board of Investment (BOI) and the Digital Economy Promotion Agency (DEPA) through initiatives such as accelerators and funding programs.

- Enabling late-stage start-ups and SMEs to scale: As set out in Thailand's 4.0 strategy, the country aims to increase the GDP contribution of SMEs to 50% by 2021. This will be catalyzed by financial support and initiatives to develop knowledge and management skills, enhance digital transformation, create big data, and develop open innovation for SMEs.

4. Adoption of new technologies

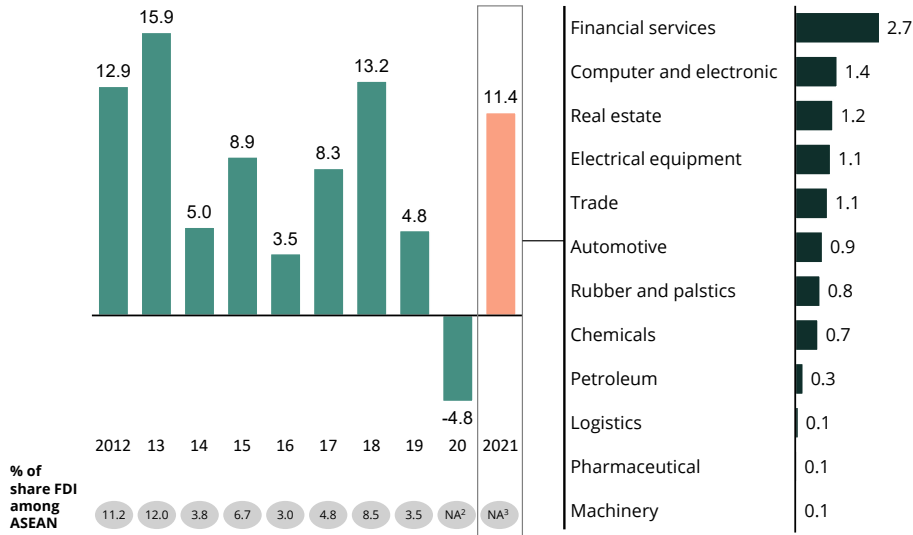
According to a report released by the World Bank in December 2021, since the start of the pandemic, 30% of all digital service consumers in Thailand were new and consumption among internet users was 90%— which was second highest in the region after Singapore. The majority of Thailand's FDI inflows in 2021 went to the financial services and tech sectors, including smart electronics (see Exhibit 34).

Given this acceleration in the adoption of digital technologies in Thailand, more needs to be done to advance the digital agenda, develop digital services, and spur the digitalisation of businesses. On this front, the government is:

- Scaling S-curves: Digital infrastructure investments are expected to increase to more than USD 6.6 billion in 2022. Two of the five S-curve industries (digital economy, automation and robotics) identified by BOI and Eastern

Exhibit 34 Net inflows of FDI has rebounded to ~\$11bn in 2021

Net inflows of FDI, USD billion



The main destinations of FDI inflows in 2021 were **the financial services and tech sectors including smart electronics** (BCG economy and Thailand 4.0/S-Curve)

% of share FDI among ASEAN

11.2 12.0 3.8 6.7 3.0 4.8 8.5 3.5 NA² NA³

1. Funds that have a sustainability objective and/or use binding ESG criteria for investment selection

Source: Morningstar "Global Sustainable Fund Flows, 2020" Report

Economic Corridor (EEC) are also related to building digital capabilities.

- Increasing collaborations on digital initiatives: More bilateral relationships have been fostered to enhance tech know-how and capabilities in Thailand, including the United Kingdom and Thailand Tech Export Academy.

Shaping Thailand's capital markets for the future

Unsurprisingly, each of these four key trends will also have a direct impact on how Thailand is able to shape its capital markets to become a global leader of efficiency and inclusiveness to drive Thailand's prosperity.

It would be important to consider the role that capital markets play for the four important stakeholders, which are core pillars of Thailand's capital markets, namely, broader society, businesses, individual investors, and institutional investors. The framework proposed in this report has therefore been visually represented by a house, where the roof (vision) is supported by the four pillars (key stakeholders) and a strong foundation (core enablers and building blocks) (see Exhibit 35).

Pillar 1 (Society)

Goal: Funding a sustainable future for Thailand by providing the capital required for Thailand to move towards carbon neutrality, and supporting an aging population

Pillar 2 (Businesses)

Goal: Fueling economic growth and innovation by enabling SME growth, supporting a vibrant start-up ecosystem and introducing innovative asset classes

Pillar 3 (Individual investors)

Goal: Expanding access and knowledge for wealth creation by deepening financial and investment knowledge and providing seamless opportunities for inclusive participation

Pillar 4 (Institutional investors)

Goal: Fostering long-term capital deployment by providing the right conditions to scale-up domestic institutional investment and attract a healthy mix of long-term foreign capital.

Core enablers

Goal: To ensure competitive and efficient capital markets

Based on these four pillars and core enablers, ten building blocks and resultant initiatives were identified to help shape the future of Thailand's

capital markets. The following building blocks will be central to the discussion in the following chapter.

Building block 1: Foster sustainability financing to help Thailand meet its net-zero carbon goals

This might entail clarifying the taxonomy on sustainable financing in Thailand in sync with evolving regional and global definitions, the set-up of dedicated green funds in partnership with corporate ventures, and the establishment of a thriving carbon exchange to realize value from domestic and regional carbon assets.

Building block 2: Empower the potential of pension funds to support an aging population

Capital markets have a critical role to play in supporting pension funds to create the corpus to support an aging population. Thailand can increase the participation of employed, transitional, and informal workers through various means. First, employed workers can synchronize and increase contributions through the National Pension Fund. Transitional and informal workers can in turn be aligned to the coverage offered to employed workers to enable smooth portability across schemes. Second, Thailand can consider increasing the caps on contributions to balance tax-incentives.

Third, social security and provident funds can be potentially reviewed to identify opportunities to increase investment in capital markets, whilst balancing risk.

Building block 3: Nurture SMEs and start-ups with capital and capability support

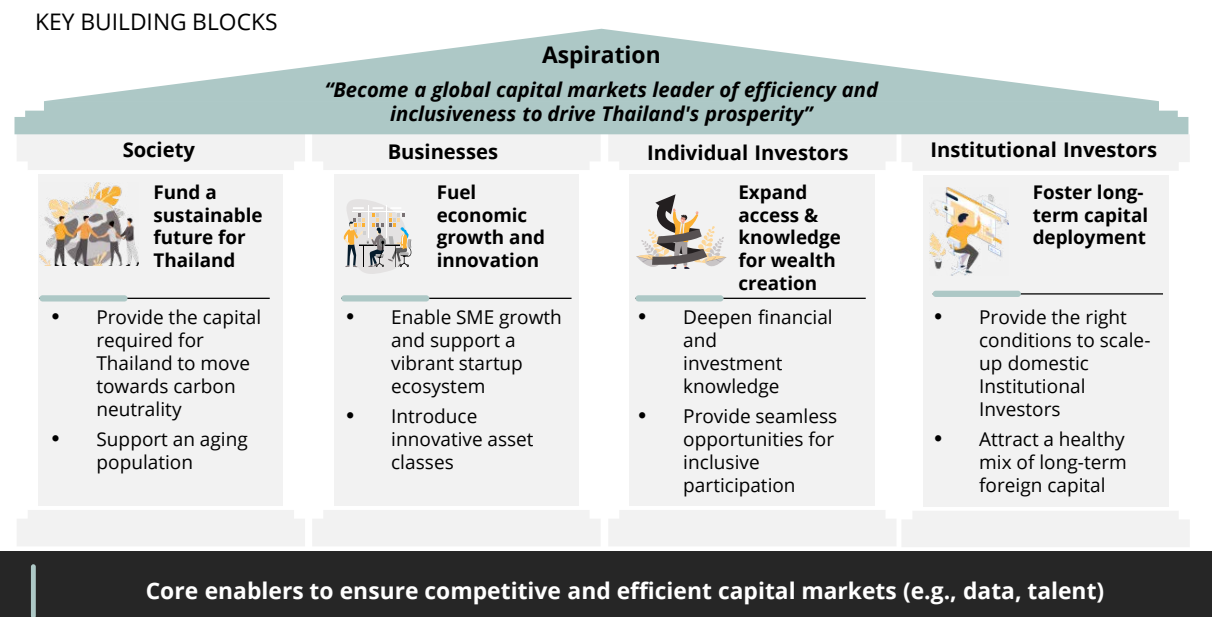
Capital and financial support (e.g. through co-investments and credit risk guarantees) can be enhanced to nurture start-ups and facilitate capability building and innovation. This can be further supported through engagement with the right talent and experts. Active platforms such as SET’s LiVE platform can create a thriving marketplace for pre-IPO fund raising.

Building block 4: Expand digital assets and regulated exchanges to drive innovation whilst balancing risks

Capital market participants could explore collaboration between public and private players (e.g., exchanges, banks, and new entities) to launch market infrastructure based on distributed ledger technology, echoing Singapore’s Marketnode and Cobalt.

Alongside, regulators may consider ways to strengthen existing regulatory frameworks and guidelines to help enhance investor protection and

**Exhibit 35
Thailand's capital markets have a crucial role to play to enable all stakeholders to secure the country's future**



to support new innovations in digital asset markets. Use cases for digital assets such as digital wallets, rewards, gifts, cryptocurrencies, NFTs, and real estate tokens, can be considered, while balancing risk and market readiness.

Building block 5: Improve financial literacy for Thai citizens with financial education programs

The Financial Education Program could be developed as a broader mandate and synchronized with the efforts that multiple public and private entities, including the Education Ministry, SET, educational institutions, and corporates, are making to deliver financial education for Thai citizens.

Building block 6: Simplify retail investor journeys

Thailand could consider expanding the scope of Thailand's Securities Depository (TSD) so that it can become Thailand's centralized depository account. This will enable it to cover listed, non-listed, scripless, and non-scripless asset classes for e-KYC and consolidated statements. It can also consider enabling digital-first securities players by streamlining requirements for digital KYC and trading, while adequately balancing risks.

Building block 7: Enhance long-term domestic institutional investors

Building long-tenured corporate bond markets and deepening syndicated loan markets will help reduce reliance on the balance sheet of commercial banks. In addition, there may be room for new hedging instruments, distressed debt markets, and corporate bond repo markets, all supported by the necessary regulations and governing frameworks. Alongside, efforts can be made to digitize infrastructure for consolidated bond data, boost demand through investor capability building, and encourage new classes of investors into the markets.

Building block 8: Attract long-term foreign institutional investors by increasing Thailand's visibility and accessibility internationally

Thailand has a potential to broaden and deepen its domestic institutional investors. Thailand can think about offering a full range of capital markets products of 'new economy' sectors, in sync with national priorities. These include high technology focused R&D, the food science sector, and its new

S-curve industries.

Building block 9: Create a centralized database to unlock data analytics

Consider creating a single source of capital-market-related data, which aggregates data from several sources, including the SET, Central Bank, Thai Bond Market Association (BMA) and industry associations, will increase efficiency and unlock further insights using analytical capabilities.

In addition, where data is unstructured or unavailable (e.g., OTC trade data), stakeholders could move to enhance reporting and thereby improve transparency.

Building block 10: Attract and nurture talent

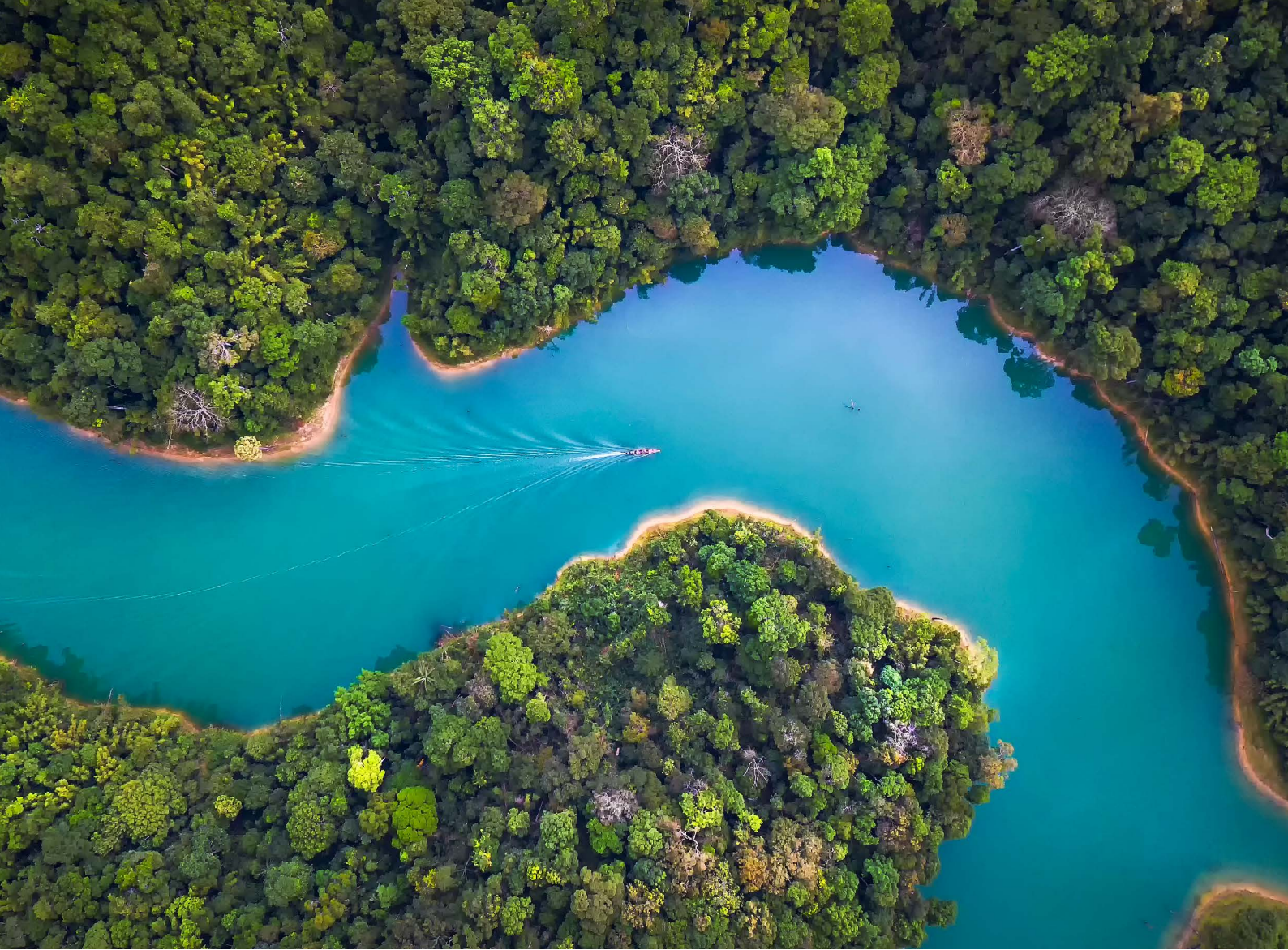
Upskilling talent will require an orchestrated effort among public and private entities such as schools, the Office of Vocational Education and Commission (OVEC), universities and corporates. However, implementing certified training, recruiting, and preparation programs for Thailand's key industries will greatly help in nurturing talent, and can be further supplemented by a focused effort to attract international financial talent to Thailand.

Equally, it will be important to upskill/reskill talent at all stages of the employee journey. Market participants could leverage technology to attract and recruit new talent, based on a "demand, source, and select" approach. Once employees are in work, an engaging experience may help foster loyalty and boost productivity.

A futuristic cityscape at night, illuminated with vibrant blue and white lights. The foreground is dominated by a dense field of glowing blue lines that curve and flow across the frame, creating a sense of motion and digital connectivity. In the background, a city skyline is visible, with various skyscrapers and buildings lit up, some featuring distinctive architectural details like a yellow circular logo on a tower. The overall atmosphere is one of high-tech innovation and urban development.

3

What could be the priority focus areas for the next five years?



Building on strengths that are already in place, Thailand has an opportunity to become a global leader in efficiency and inclusiveness to drive the country's prosperity. Work to drive that agenda forward can be based on four key pillars: funding a sustainable future for Thailand, fueling economic growth and innovation, expanding access and knowledge for wealth creation, and fostering long-term capital deployment. Here we gather ten building blocks under the four pillars.

Pillar 1: Funding a sustainable future for Thailand

Building block 1: Fostering sustainable financing to help Thailand move towards net-zero carbon emissions.

Thailand needs a step-change from its current trajectory to achieve net-carbon zero (NCZ) by 2065. Both government and private sector investment will be required to accelerate and finance the transition. Some initiatives are already under way. Among these, banks have stepped up financing for green projects, the Stock Exchange of Thailand (SET) has launched the SET Thailand Sustainability Investment Index (SETTHSI), and

the Thailand Greenhouse Gas Management Organisation has established a voluntary emissions offset programme in collaboration with the Carbon Markets Club.

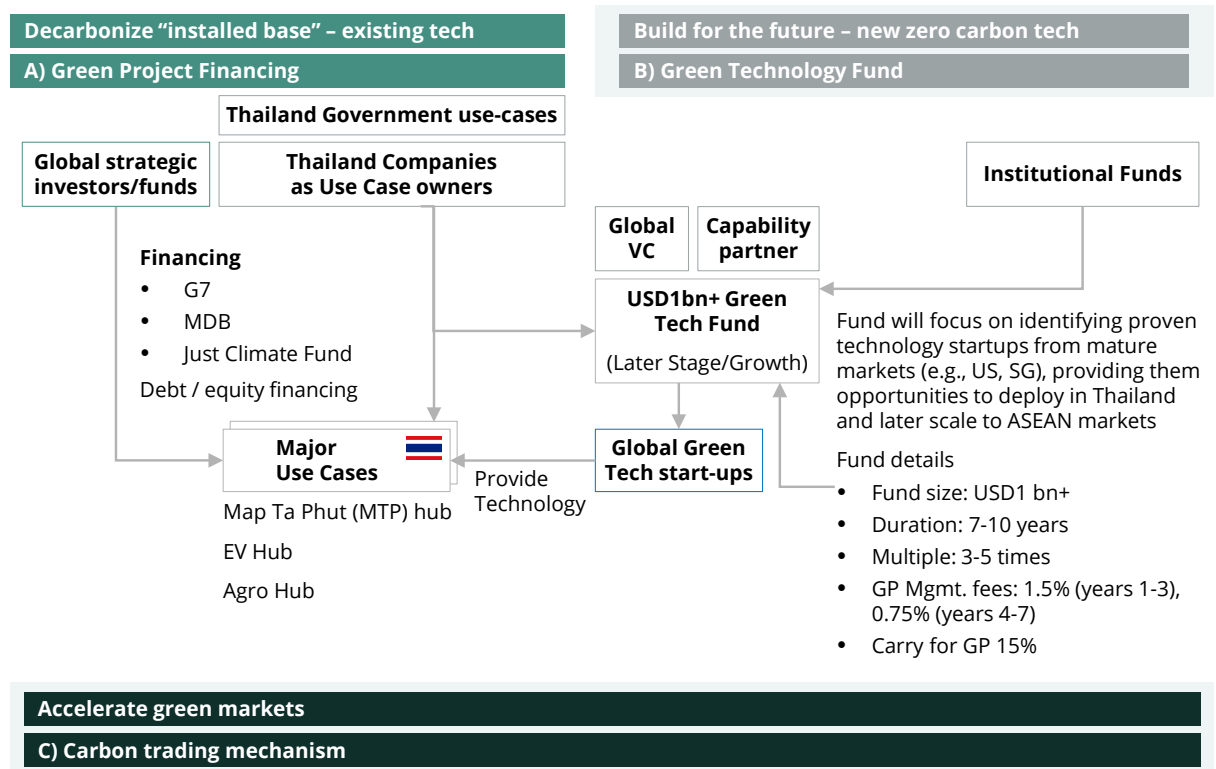
Still, Thailand remains in early stages of building a capital market to enable fully-fledged green finance. As it continues its journey, it faces several challenges. One is that current carbon price realizations are low. In May 2022, they are about USD 1, compared to more than USD 5 per ton internationally, due to gaps in standardisation against third country credits. The lower price means there is less motivation for emitters to put in place abatement measures. Furthermore, there are limited institutional funds earmarked for green investing.

To accelerate the green transition, there are three key engines (see Exhibit 36). The first is to ramp up green project financing to decarbonise the installed base of technology. In addition, there is potential to establish green technology funds to apply to zero carbon innovation. Finally, Thailand needs a carbon trading mechanism. This would enable companies to fulfil their emissions obligations through market

Exhibit 36

There are 3 engines needed to fund the required green investment

Deep dive next



mechanisms (e.g., carbon credit exchanges or markets such as Climate Impact X by DBS Bank, Singapore Exchange, Standard Chartered, and Temasek).

To facilitate common standards and assessment approaches, many countries and regions have established green taxonomies. The EU Taxonomy, for example, creates concrete dimensions against which to screen activities or classify financial instruments such as green bonds (see Exhibit 37). Taxonomies provide companies, investors, and policymakers with appropriate definitions for which economic activities that can be considered environmentally sustainable. They can also facilitate regional trading in carbon credits, enabling fuller realisation of their value.

Recently, Blackrock and Temasek have set up dedicated green tech funds (see Exhibit 38). Regionally, carbon markets are also being established in geographies including Singapore, Malaysia, and Indonesia. These are all designed so that they could be expanded to become regional entities (see Exhibit 39). Thailand could look to launch a similar initiatives, however, to be

successful, it must also find a way to differentiate itself from its regional peers.

The Bank of Thailand has constituted a working group to develop ESG reporting standards and consider incentives to support demand for sustainable finance. Thailand can, further these efforts by clarifying taxonomy on sustainable financing (in sync with evolving regional and global definitions), supporting the establishment of dedicated sustainability/green financing funds (in partnership with Corporate Ventures), and setting up voluntary carbon exchanges, which could help the country realize value from domestic (and potentially, regional) carbon assets.

Building block 2: Providing opportunities for pension funds to create the capital required to support an aging population

More than 32% of population will be 60 or older by 2040. Thailand's pension systems need a significant step-up to support this shifting demographic. Currently, the Thai pension fund system consists of three pillars, each of which has different purposes and functions.

Exhibit 37

EU Taxonomy Regulation provided unified criteria to qualify as "green", including bonds

Technical screening provisions under EU Taxonomy Regulation



Concrete dimensions	Description
Substantial environmental contribution 	Investment to substantially contribute to at least one of the six objectives: <div style="display: flex; flex-wrap: wrap; justify-content: space-around;"> <div style="text-align: center;"> Climate change mitigation</div> <div style="text-align: center;"> Climate change adaptation</div> <div style="text-align: center;"> Sustainable use of water and marine resources</div> <div style="text-align: center;"> Circular economy</div> <div style="text-align: center;"> Pollution prevention</div> <div style="text-align: center;"> Healthy ecosystem</div> </div>
Do No Significant Harm 	While contributing to one environmental objective, the activity must not significantly harm any of the other five environmental objectives
Minimal safeguards 	Aimed to ensure that all economic activities deemed environmentally sustainable to be carried out complying with minimum safeguards , such as fundamental labour rights

EU Green Bond Standard

- EU Commission's Action Plan calls for the **creation of standards and labels for green financial products**
- Under this voluntary **Green Bond Standard**, regulator would comprise **three critical elements**:

- Alignment with Taxonomy** technical screening
- Mandatory reporting** on allocation of proceeds and impact
- Mandatory verification** by external reviewer (Green Bond Framework and final allocation report)

Exhibit 38

Green tech-fund: BlackRock and Temasek have come together to set up a joint decarbonization fund in Singapore




BlackRock | TEMASEK
Decarbonization Partners

Purpose and opportunity	Investment targets	How they work
<p>Shared belief that climate transition presents a significant investment opportunity.</p> <p>In 2021 committed USD 600m to invest in early-stage growth companies targeting proven technologies that will reduce and potentially eliminate carbon emissions</p> <p>That translates into reducing carbon emissions by approx. 1.7 bn tons p.a. to achieve net zero by 2050 thru</p> <p>Using less (energy efficiency)</p> <p>Increased clean energy supply (RE, hydrogen)</p> <p>Removing carbon out of the system (re-forestration, carbon capture, storage)</p>	<p>Drive decarbonization, resource efficiencies, and material and process innovation by making investments in early-stage growth companies which target next-generational renewable and mobility technologies, including</p> <p>Emerging fuel sources</p> <p>Grid solutions</p> <p>Battery storage</p> <p>Electric and autonomous vehicle technologies</p> <p>Building and manufacturing sectors</p> <p>As well as companies in building and manufacturing sectors.</p>	<p>Raise third-party capital from investors committed to achieving a net zero world while seeking long-term sustainable financial returns.</p> <p>Series of late-stage venture capital (VC) and early-growth private equity (PE) investment funds. Goal for 1st fund USD 1bn (incl. from both partners).</p> <p>Convene scientists, technologists, and thought leaders in sustainability space.</p> <p>Ensure announced net zero commitments across</p> <p>Measurement and transparency</p> <p>Investment management</p> <p>Investment stewardship</p>

Source: Company websites, media search

Exhibit 39

Regional markets in Southeast Asia have launched or announced their plans for a voluntary carbon markets

Country	Status	Description
	Active	<ul style="list-style-type: none"> May 2021: SGX, DBS, Standard Chartered and Temasek announce to setup a voluntary global exchange and marketplace for carbon credits (Climate Impact X) 2021: The Green Finance Industry Taskforce (GFIT), convened by MAS has issued a proposed green taxonomy and handbook on implementing environment risk management for financial institutions in Singapore
	Active	<ul style="list-style-type: none"> 2017: Government Regulation on Environmental Economic Instruments passed which mandates implementation of a compliance trading system by 2024 March 2021: Launch of a voluntary emissions trading trial, participation from 80 coal-fired power plants making up 75% of emissions from power sector Voluntary program is a pilot to familiarize stakeholders with the development of a national ETS, compliance procedures and offset mechanisms
	Announced	<ul style="list-style-type: none"> Sep 2021: Government agreed to develop a Voluntary Carbon Market as a reference for international carbon credit transactions through cooperation between KASA (Ministry of Environment and Water), Ministry of Finance, and Bursa Malaysia November 2021: Bursa Malaysia launched an international RfP for setting up a voluntary carbon market exchange

Implications for Thailand

- **Increased competition to onboard foreign institutional participants** on Thailand's carbon markets
- + **Possible opportunity to supply high quality carbon credits to regional markets** (e.g., Singapore which lacks geographical area to create carbon credits)

Source: Expert inputs, press search

Exhibit 40

Thailand's pension system relies on Pillar 1

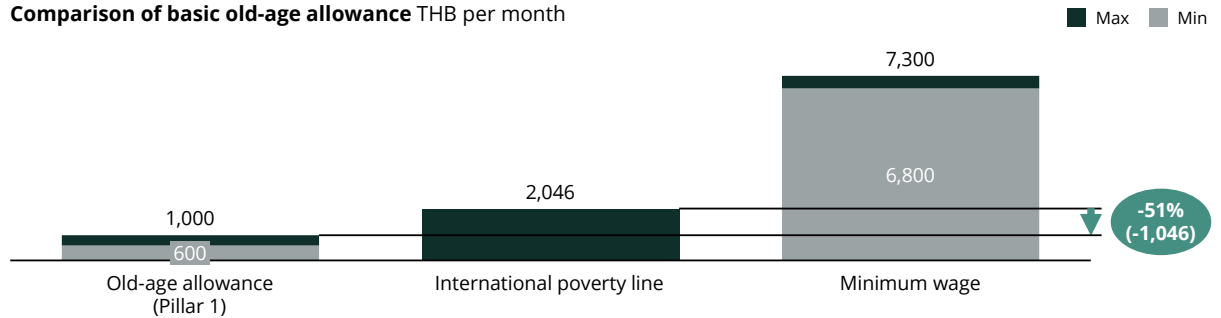
Comparison of pension fund systems

Pillar 1			Pillar 2		Pillar 3	
Mandatory			Voluntary			
Universal Old-age allowance	Government Old civil service pension and government pension fund	Sec 33 Social security fund	Sec 39 & 40 Social security fund	National Saving Fund	Provident fund	RMF & pension insurance
<ul style="list-style-type: none"> Provide retirement income to all non-government employee retirees Unfunded and paid from government fiscal budget Starting at ~THB 600-1,000 / mth 	<ul style="list-style-type: none"> For government employees, old civil service pension is an unfunded scheme After 1997, government pension fund was introduced as a supplemental DC scheme 	<ul style="list-style-type: none"> Mandatory DB scheme for private sector employees with matching contribution from employers and government Fund managed by Social Security Office under the Ministry of Labour 	<ul style="list-style-type: none"> Sec 39 - Voluntary scheme for workers who exited Sec 33, but want to continue Sec 40 - Voluntary scheme for workers in informal sector 	<ul style="list-style-type: none"> DC fund targeting low income with some contribution from government to encourage savings 	<ul style="list-style-type: none"> Voluntary scheme through private fund with matching contribution from employer 	<ul style="list-style-type: none"> Tax-incentivized private funds and insurance products (personal income tax deductible)

Source: SSO

Exhibit 41 Basic old-age allowance (Pillar 1)

Comparison of basic old-age allowance THB per month



Source: SSO, International Labour Organization, United Nations, International Monetary Fund

Exhibit 42 Differences in social security schemes limit portability

	Monthly contribution cap amongst pension fund schemes (THB) ¹	Retirement Income monthly payout rate (THB) ¹	Issue
Formal Workers (Section 33)		6,375	<ul style="list-style-type: none"> Contribution cap at THB 15k income level x 5%
Transitional Workers (Section 39)		2,040	<ul style="list-style-type: none"> Contribution cap at THB 4.8k income level x 9% No government contribution
Informal Workers (Section 40)		1,163	<ul style="list-style-type: none"> Contribution cap at THB 1k income level Govt contribution at THB 150

1 Scenario Assumptions:

- 30 year contribution
- THB 15k average monthly income over the last 5 years

Calculations:

- Section 33: 42.5% conversion rate X THB 15,000/month salary (15 years: 20% + 1.5% for each additional year)
- Section 39: 42.5% conversion rate X THB 4,800/month salary (15 years: 20% + 1.5% for each additional year)
- Section 40: 1.16% simple interest (average of last 10 years) with a monthly cap at THB 1,000/month contribution

Source: United Nations

Pillar 1 is designed to cover basic costs of living on retirement. Pillars 2 and 3 are focused on maintaining standards of living (see Exhibit 40). One challenge is that differences between social security schemes limit portability of participants. Meanwhile, while voluntary schemes are growing, participation rates remain low.

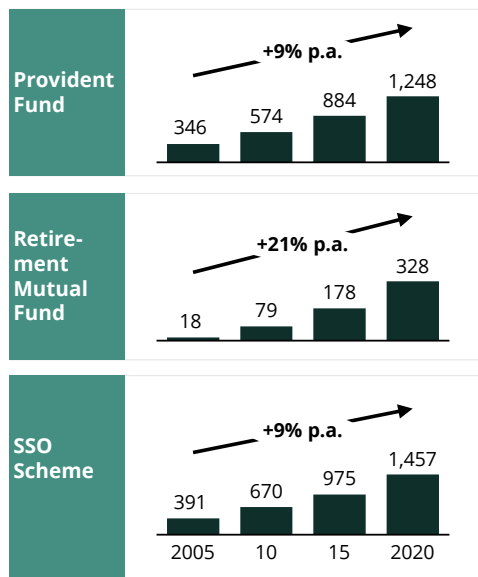
Among current initiatives, Thailand is setting up a new National Pension Fund (NPF), which aims to increase mandatory contributions by employers and employees.

The pension system relies on Pillar 1 (see Exhibit 41). While some countries require employers to provide matching contributions to provident funds,

Exhibit 43

Voluntary schemes are growing, but significant gap in participation exists

Asset under management THB bn



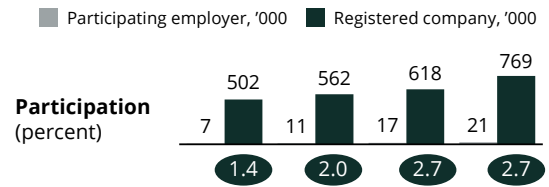
6.92

3.2

14.2

% of total GDP

Employer participation in provident fund



Employee participation in provident fund



Source: AIMC, SSO

this is voluntary in Thailand. The maximum payout from social security, the largest fund with over 11 million members, is approximately THB 7,500 per month for a person who has worked for 35 years and with an average salary in the past five working years of more than THB 15,000.

In 2001, Thailand established a tax-financed Universal Healthcare Coverage Scheme (UCS). This was designed to cover the about 76% of the population not covered by other social health protection schemes, such as Social Security Scheme for private sector employees, as well as the Civil Servant Medical Benefit Scheme for government employees and government retirees, and their spouses, dependents, and parents.

Differences in social security schemes limit portability. There is a low participation rate for informal employees and those not registered under social security office (SSO) pension schemes. Indeed, there are different schemes and contribution caps for formal (company employees) and informal employees (self-employed), and the benefits are significantly different between schemes. Meanwhile, as people switch from formal to informal roles, they cannot port the formal scheme with them (see Exhibit 42).

Voluntary schemes are growing, but there is a significant gap in participation rates. 2.7% of

employers and 20.7% of employees participated in the provident fund in 2020 (see Exhibit 43).

Several countries (e.g., Iceland, the Netherlands) have created large pension funds by expanding the scope of mandatory schemes and offering incentives to encourage retirement savings. Iceland has a mandatory occupational pension funds for all employees, requiring a minimum 12% contribution (4% employee, 8% employer). The Netherlands has a quasi-mandatory occupational pension scheme. Many industries mandate industry pension funds and 90% of employees have pension schemes through employers (see Exhibit 44).






Countries including Chile (80% of GDP in 2020) and Malaysia (61% of GDP in 2020) have gradually expanded the scope for investment, while Thailand is at 27% of GDP as of 2020 (see Exhibit 45).

Thailand is considering a mandatory supplemental scheme (see Exhibit 46). The NPF would have a comparatively higher contribution rate of 7-10%, compared with 5% for the SSO scheme, which could make it easier for lower-income segments to contribute.

The introduction of an NPF could help increase the level of retirement income to support an aging population. There is also potential for long-term participation in capital markets to generate returns for formal workers.

Exhibit 44






Developed countries have expanded scope of mandatory schemes & provide additional incentives to encourage retirement savings

<p>Scope of mandatory schemes</p> 	<p> Iceland has mandatory occupational pension funds for all workers, requiring minimum of 12% contribution (4% employee, 8% employer)</p> <p> UK has gradually increased contribution percentages for both employers and employees in 2018/19</p> <p> Netherlands has quasi-mandatory occupational pension. Many industries mandate industry pension funds. 90% of all employees have pension schemes through employers</p>
<p>Government's incentives</p> 	<p> In US, for self-employed individuals contributing to Solo 401(k) get double contribution allowance and tax benefits from USD 17k to USD 52k and tax free loan up to 50% of total savings (less than USD 50k) with maximum repayment of 5 years</p>
<p>Investment policies</p> 	<p> Australia does not prescribe specific portfolio limits (100% direct equity investment allowed). However, trustees are required to ensure that investment options offered to each beneficiary allow adequate diversification</p> <p> Greece allows 70% direct equity investment on their occupational (mandatory) funds with adequate diversification</p>
<p>Resource Allocation</p> 	<p> In Canada, all older persons receive a benefit from the universal non-contributory Old-Age Security pension (tier 0) and those with lower incomes also receive the means-tested Guaranteed Income Supplement (tier 0).</p> <p> In Sweden, those with no or low pension income are eligible for the Guaranteed Pension (tier 0), which tapers away for those with higher pension income. Various other forms of support (such as housing) are also provided to older persons with lower incomes.</p>

Source: Press search, OECD

Exhibit 45

Developing countries such as Chile and Malaysia gradually expanded scope for investments

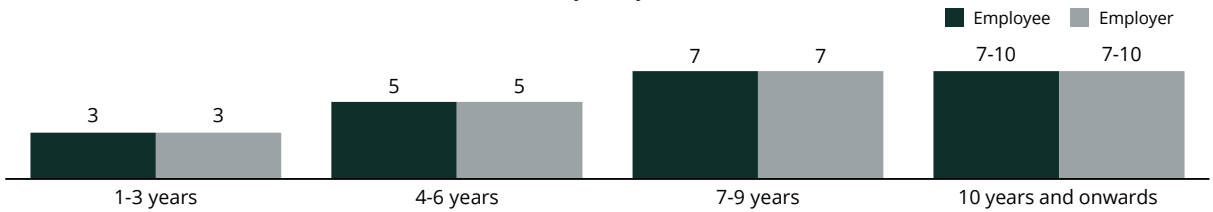
	 Chile	 Malaysia
<p>Issues faced</p> 	<ul style="list-style-type: none"> • Low replacement rate due to higher life expectancy, declining interest rates, and a low contribution density • 1981: AFPs were permitted to invest only in low-risk domestic instruments (e.g., govt bonds, FI bonds) • Until 2002: could offer only one fund to a member 	<ul style="list-style-type: none"> • 1952: Insufficient retirement income from mandatory contribution of 10% (equally split between employer and employees)
<p>Measures taken</p> 	<ul style="list-style-type: none"> • 1981: First country to replace a traditional PAYG DB system with fully funded DC pension managed by private fund managers (AFPs) • 1985: AFPs could invest 30% of assets in equities • 2002: Implemented multi-fund law requiring each AFP to offer four different types of funds with varying risks and up to 80% equity investment • 2008: Introduced solidarity pillar to assist low-income segment • 2008: Investment in foreign securities up to 45% • 2019, 50% increase in the minimum pension, and mandatory contribution for self-employed 	<ul style="list-style-type: none"> • 1952: Set up Employee Provident Fund Ordinance • 1975-2018: Gradually increased mandatory contributions rates every few years to be at 23-24% • 1991: Reduced minimum limit for investment in Government securities from 70% to 50%, and expanded the scope and type of investments (e.g., real estate, infrastructure) • 2021: ~43% investment in equities
<p>Impact</p> 	<ul style="list-style-type: none"> • 2007: AFP AUM reached USD111 bn, 64% of GDP • 2020: AUM USD205 bn, 80% of GDP • Reform for further improvement underway 	<ul style="list-style-type: none"> • 2017: AUM USD165 bn (5th largest pension fund in Asia, and 15th in the world) • 2020: AUM USD250 bn, 61% of GDP

Source: Press search, OECD

Exhibit 46

Thailand is considering implementation of mandatory supplemental scheme + expansion of existing schemes

National Pension Fund's Contribution Rate % of monthly salary



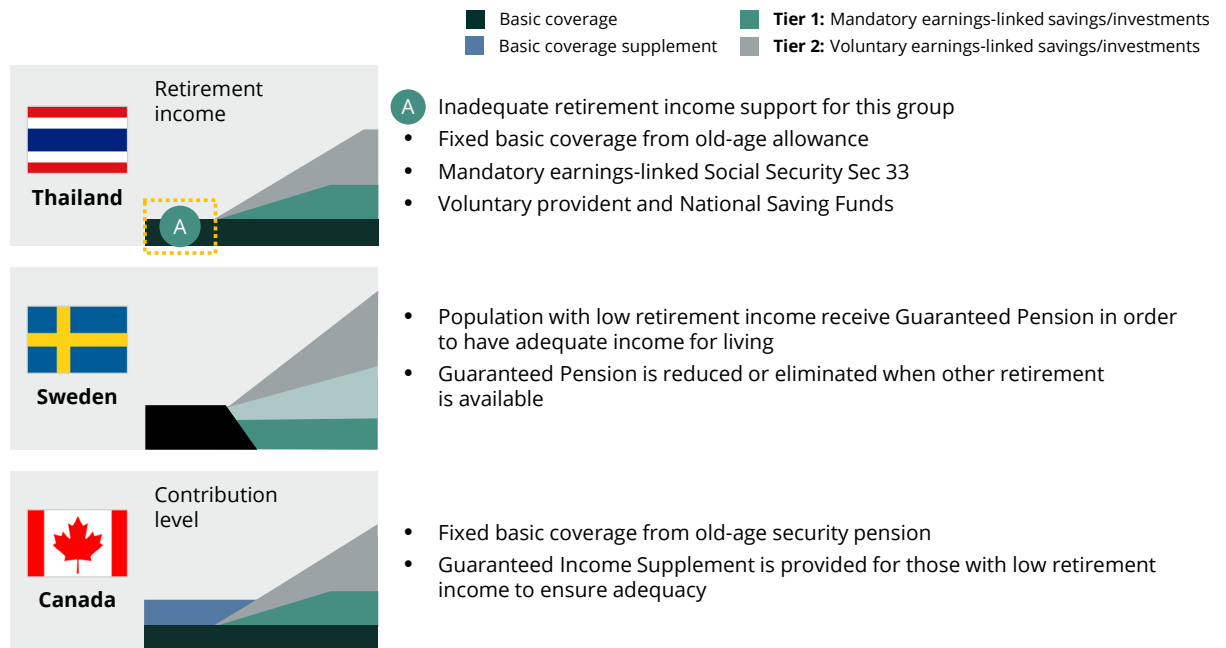
- **Mandatory defined-contribution 20-year scheme for all employees in enterprises with 1 or more employees (formal sector only)¹**
- **Min. salary: THB 10k, max. salary: THB 60k**
 - For those <THB 10k monthly salary, only employers will contribute
- **In terms of enforcement on employer:**
 - From launch of NPF to year 3 – only private companies with >100 employees
 - From year 4-5 – for >10 employees
 - From year 6 onward – for >= 1 employee

1. If an employer already provides provident funds to its employees and the contribution rate is not less than as required by NPF, it is not required to contribute to NPF

Source: United Nations; Press Search

Exhibit 47

Opportunity to synchronize old-age allowance optimize resource allocation and incentives



Source: SSO, International Labour Organization, United Nations, International Monetary Fund

Thailand can explore optimising resource allocation to provide adequate basic coverage. This will mean targeting the lower-income segment with basic coverage (also taking into account the proposed NPF) (see Exhibit 47).

Thailand can consider reviewing the investment policies of social security and provident funds for

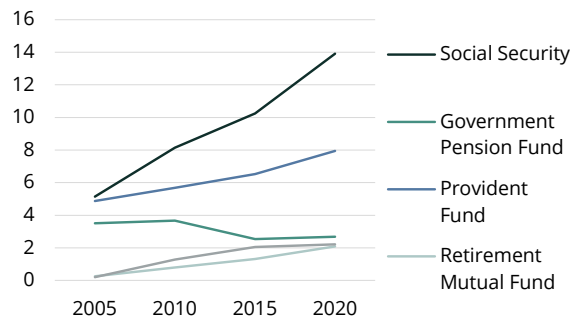
opportunities to increase investments in capital markets, while balancing risks. Currently, social security funds invest 17% of their funds into equities, while provident funds invest 15%. The OECD average as of 2020 was 27% (see Exhibit 48).

Exhibit 48

Thailand can consider a review social security/provident funds to increase capital market participation whilst balancing risks

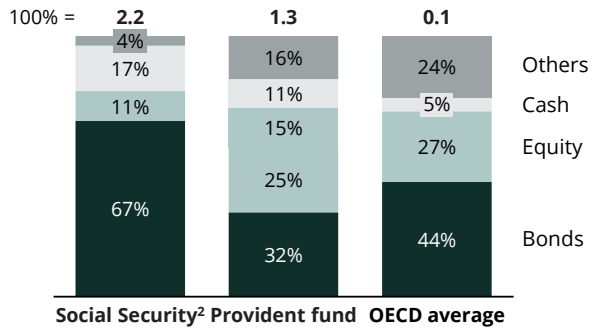
Fund NAV to GDP

Percent



Asset allocation

THB trn, percent (2020)



1. The drop in GPF in 2015 was due to the government allowing government employees to switch to the old civil service pension scheme, which is unfunded

2. Existing regulation allows Social Security Office to invest 60% in low-risk and 40% in high-risk assets.

Source: SSO, AIMC

Pillar 2: Fueling economic growth and innovation

Building block 3: Capital markets can play an important role in nurturing start-ups and SMEs

Small and Medium Enterprises (SMEs) form the backbone of the Thai economy, accounting for an estimated 35% of GDP and 70% of the nation's work force.¹

The country has an emerging start-up and technology ecosystem, exemplified through the growing number of start-ups coming to market. Still, regional peers including Singapore, Malaysia, and Indonesia have more developed capital markets solutions for SMEs and start-ups than Thailand.

Thailand has set bold aspirations to be an innovation-driven economy, aiming to create 1,000 innovation driven enterprises with over THB 1 billion in revenues by 2027. Several initiatives have already been undertaken in Thailand to nurture the development of SMEs and start-ups (see Exhibit 49). Thai Credit Guarantee (TCG), a state-owned specialised financial institution, has provided credit

guarantees to support lending to SMEs and start-ups. While only 20% of Thai SMEs can currently access loans from financial institutions, the TCG aims to increase this number to at least 40% of total SMEs this year.²

SMEs often face an uphill challenge when accessing the finding and liquidity they need for growth. Crowdfunding platforms such as Weeboon, Siam Validus, and Krungsri Securities' debt crowdfunding offer an alternative route for SMEs to access funding. Through the Siam Validus platform, for example, SMEs are able to connect with retail investors in the capital markets to raise funds ranging from THB 200,000 to THB 30 million. The platform aims to disburse THB 3 billion to micro and small businesses in Thailand by the end of 2022.³

The Stock Exchange of Thailand (SET), meanwhile, operates a SME listing venue: the Market for Alternative Investment (MAI). As of 2020, the stock exchange had 176 market listings with a combined market cap of THB 340 billion. Additionally, the stock exchange has established a LiVE platform to nurture smaller SMEs/start-ups and is set to launch a new market, LiVE Exchange, in September 2022 with relaxed criteria for early-stage SMEs and start-ups.⁴

1 Thai Office of SME Promotion

2 <https://www.bangkokpost.com/business/2289150/tcg-lends-a-helping-hand-to-small-business>





















3 <https://www.bangkokpost.com/thailand/pr/2291798/siam-validus-and-scg-partnership-set-to-support-growth-of-thai-smes-while-providing-investors-with-alternative-high-yield-investment-via-crowdfunding>

4 <https://www.nationthailand.com/business/40005958>

Exhibit 49

Globally, multiple initiatives being undertaken to nurture SMEs and startups

Detailed next

Description	Case examples
Setting up of funds to invest in SME and start-ups	  THE YOZMA GROUP <small>MANAGING VENTURE CAPITAL FUNDS SINCE 1993</small> Fostered growth of technology industry by setting up a fund and incubating ~200 tech IPOs
	  STARTUP SG <small>EQUITY</small> Attracts VCs to startup ecosystem by providing co-fund matching and structuring mutually beneficial outcomes
Encouraging funding to SME/start-ups by providing incentives (e.g., risk sharing mechanism in debt lending)	  Enterprise Singapore Provides risk sharing mechanism in debt lending channel to encourage capital outreach to SMEs/start-ups
	  EUROPEAN INVESTMENT FUND Promotes investments into SMEs through incentives including loss guarantees, buying out new bonds from SME (in case of losses)
SME listing venue/ alternate board	  LEAP Market LEAP Market has 49 listed SMEs
	  AIM <small>LONDON STOCK EXCHANGE</small> LSE's AIM has 850 listed SMEs with yearly listing of > 5 Bn GBP
Providing an online platforms to help connecting SME/start-ups with buy-side	  Nasdaq Private Market   ELITE   Capital & Bank Venture Partners Provides a SaaS which connects private companies with investment funds
Crowdfunding	  Funding Circle Funding Circle is the largest online small business loans provider and one of the largest crowdfunding platforms in the world with £13.7 Bn lent globally to 122,000 small businesses so far

Thailand has provided support through the following initiatives

- Setting up of **SME listing venue (MAI)**
- **LiVE platform**
- Setting up of **various PE/ VC funds** e.g., Finnovator Private Equity Trust, SMEs Private Equity Trust Fund, Venture Capital Trust
- **Thai Credit Guarantee (TCG) has provided credit guarantees** to support lending to SMEs and start-ups
- **Crowdfunding platforms** (e.g., Weeboon, Krungsri Securities launching debt Crowdfunding), however the interest rates are high

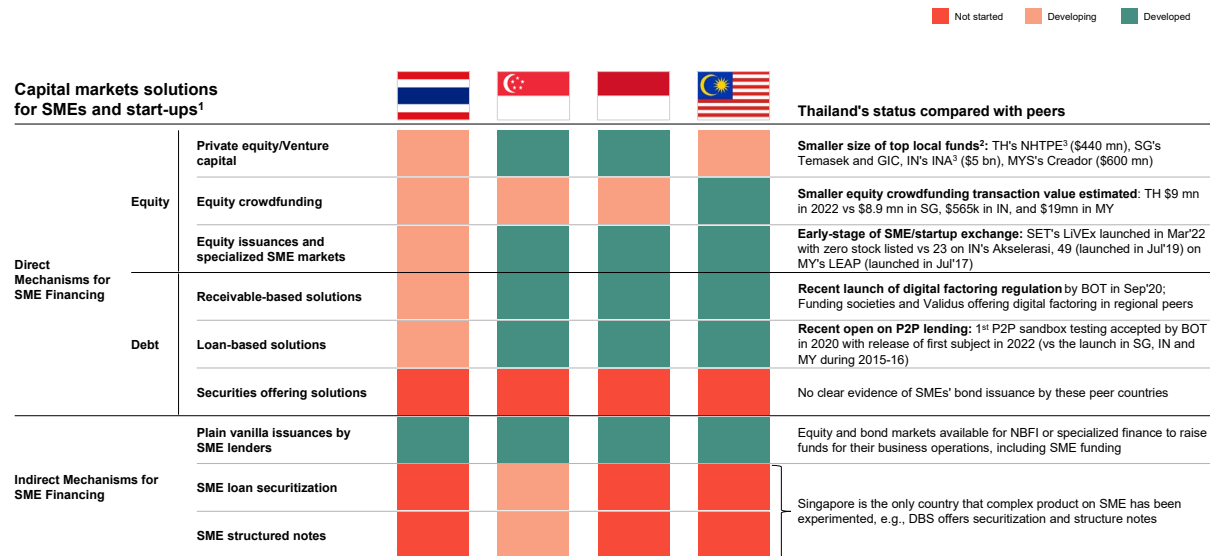
Additional measures could be explored to further strengthen and scale up support:

- **Select incentives** (e.g., risk sharing guarantees in case of debt lending) to boost capital flow for scalability
- Further improve or enhance the current initiatives (e.g., more capital in funds, improve LiVE, further incentivising funding to SMEs/ start-ups)

Source: Expert inputs, press search

Exhibit 50

Capital markets solutions for SMEs and start-ups in Thailand is behind regional peers



- World Bank Framework
- Local funds mean the fund that has local HQ, invest locally and owned by local entities. INA and Creador are local funds. NHTPE is the JV between Morgan Stanley and Bangkok Bank (BBL)
- NHTPE stands for North Haven Thai Private Equity Fund managed by Morgan Stanley Capital Partners; INA stands for Indonesia Investment Authority – a SWF of Indonesia







Source: World Bank, Statista, Press search, Team analysis

Exhibit 51

Several countries have nurtured both SMEs and start-ups under the same organizations and/or set up additional startup-specific units

NOT EXHAUSTIVE

Organizations nurturing SMEs/start-ups in the region and other markets

List of selected examples	Aim to support ...		
	SMEs	Start-ups	
Thailand 	The Office of SMEs Promotion	✓	
	National Innovation Agency	✓	
Regional peers 	Enterprise Singapore	✓	
	Startup SG	✓	
		Ministry of Co-operatives and SMEs	✓
		Ministry of Communication and Information Technology	✓
	SME Corporation Malaysia	✓	
	Ministry of Science, Technology and Innovation	✓	
Other markets 	Ministry of Economy and Industry	✓	
	Israel Innovation Authority	✓	
	Polish Agency for Enterprise Development	✓	

Recently, technology has been adopted across sectors, segments, business sizes and markets – resulting the blur line of difference between SMEs and start-ups

Despite the differences, SMEs and start-ups have shared common needs from capital markets, especially financing needs

Source: Press search

Exhibit 52

The Israeli government fostered growth of technology industry by setting up a fund and incubating ~200 tech IPOs

THE YOZMA GROUP
fostering venture capital funds since 1992



Vision Leverage social capital through guidance effect of government capital to boost development of advanced industries in Israel and build “the 2nd Silicon Valley”

Context of establishment

- In 1992, former Israeli **Chief Scientist**¹ applied for government funding of USD 100mn and set up the nation's 1st government entrepreneurial guidance fund
- Its key mission is to build Israel's **local VC market**, attract **domestic and global investors**, and support growth of domestic high-tech firms

Investment area

- As an FOF, Yozma demands sub-funds to concentrate on **emerging industries with strategic meaning to Israel**, i.e., frontier areas such as communication technologies, electronics & IT, and biomedicine, as well as commercial services, high-tech and emerging industries

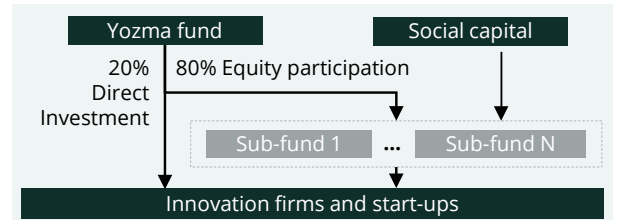
Impact

- Yozma helped enable rapid development of equity investment funds in Israel, with fundraising size of equity investment funds **growing by ~60X during a decade**
- Successfully hatched **208** projects, set up **~800** tech start-ups and delivered **~150** tech IPOs

1. Now Israel Innovation Authority

Source: Press search

Operational model



- Yozma uses 20% of its capital for direct investments, with the rest 80% for setting up 10 VC funds jointly with social capital, and Yozma holds no more than 40% of stake in each fund
- **Sticks to market-oriented operations**; government **only defines investment areas for funds** instead of meddling in daily operations, and it grants some choice-making autonomy to social capital as well as **commitment on government capital exit**
- Government ensures timely entry and exit of its funding, forsakes management functions as LP and may **do something but not everything** to ensure genuine market-oriented operations

Exhibit 53

Poland promotes investments into SMEs through various incentives in cooperation with the European Investment Fund



	Trigger	Description of measures	(Expected) impact
Polish Growth Fund of Funds (PGFF)	Low level of equity investments into SMEs	<ul style="list-style-type: none"> • Fund of fund initiative launched in 2013 by European Investment Fund in close co-operation with stated-owned BGK bank • Initial EUR 30mn commitment from EIF with additional EUR 60mn pledged by BGK • Objective to build portfolio of venture capital, private equity, and funds with investment focus on Poland 	<ul style="list-style-type: none"> • Each EUR invested in the PGFF is expected to translate into 3 EUR invested in Polish economy • BGK aims to build similar funds in the future based on the experience with the PGFF
Silesia EIF Fund of Funds	Low level of SME financing by financial institutions	<ul style="list-style-type: none"> • The Silesia EIF FF of ~EUR 90mn was set up by the regional government in 2017 to catalyze retail investments and facilitate access to finance for SMEs • Provide risk sharing loans and first loss portfolio guarantees to financial institutions 	<ul style="list-style-type: none"> • Significant increase in access to finance for viable SMEs
InnovFin SME Guarantee Facility	SMEs experiencing funding gaps in growing their business	<ul style="list-style-type: none"> • Guarantee agreement signed by European Integration Fund (EIF) and CVI, a private investment company, supporting a ~EUR 200mn portfolio of bonds to innovative Polish companies in 2018 • Part of the EU's InnovFin SEM Guarantee Facility, guaranteeing FIs against a portion of their losses • CVI will purchase new bonds from SMEs under preferential conditions 	<ul style="list-style-type: none"> • CVI plans to purchase new bonds from a total of ~60 Polish SMEs • Due to the risk-sharing agreement with the EIB, much higher overall investment amount compared to private market

Source: European Investment Fund; European Commission; Press

In order to support SME and start-up development, the SET has jointly invested in various private equity trust funds. For example, in Finnovator Private Equity Trust alongside PTT Oil and Retail Business and Siam Rajathanee –a THB 3 billion fund which invests in the fintech, e-commerce and automotive sectors. The stock exchange has also invested in SMEs Private Equity Trust Fund alongside The Government Savings Bank (GSB)– a THB 2 billion fund providing low interest loans for SME working capital needs, and Private Equity Trust for SMEs with Krungthai Bank (KTB) and the National Science and Technology Development Agency (NSTDA). However, compared with regional peers, Thailand still has less developed capital markets solutions for SMEs and start-ups across both direct and indirect mechanisms for SME financing (see Exhibit 50).

In several countries, SMEs and start-ups have been under support of a specific organization for start-ups (see Exhibit 51). Governments in Asia, the Middle East, and Europe have launched a variety of initiatives to support the growth of SMEs and start-ups. For example, Israel’s Yozma fund was set up with the aim of enabling the rapid development of equity investment funds in Israel and attract and develop domestic and global investors.

Yozma’s operating model: A case study

- Yozma uses 20% of its capital for direct investments, with the rest 80% for setting up ten VC funds jointly with social capital, and Yozma holds no more than 40% of stake in each fund.
- **Sticks to market-oriented operations; government only defines investment areas for funds** instead of getting involved in daily operations, and it grants some choice-making autonomy to social capital as well as **commitment to government capital exit**.
- Government ensures timely entry and exit of its funding, forsakes management functions as an LP and may do something but not everything to ensure genuine market-oriented operations

Yozma successfully delivered an estimated 200 tech IPOs (see Exhibit 52). Poland promotes investments into SMES in cooperation with the European Investment Fund (EIF) (see Exhibit 53). Singapore’s Startup SG initiative aims to stimulate private sector investment into Singaporean start-ups (see Exhibit 54 and 55).

Exhibit 54 Singapore government attracts VCs to startup ecosystem by providing co-fund matching

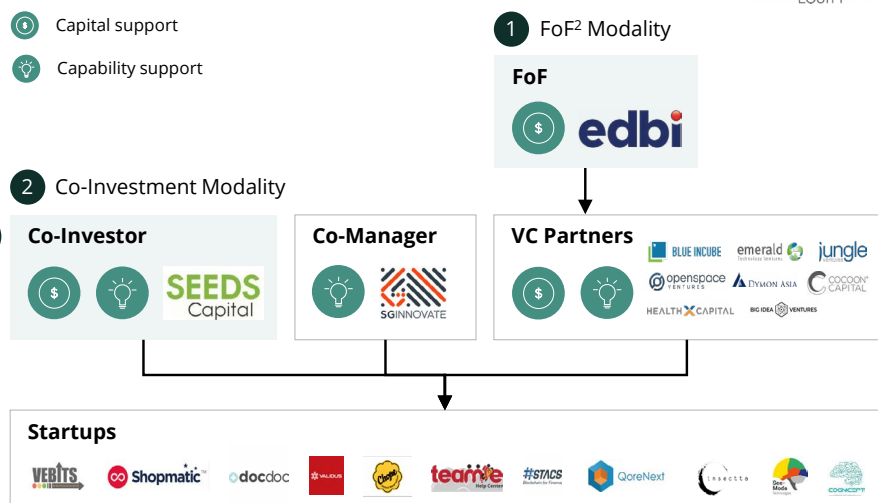
Startup SG is an initiative by **Enterprise Singapore**¹ to promote Singapore start-ups both **locally and overseas**

Startup SG Equity is a **scheme** under Startup SG - aims at **stimulating private sector investments** into innovative, Singapore-based tech startups with **intellectual property** and **global market potential** with **2 interventions**:

- 1 **FoF modality**
- 2 **Co-investment modality**

Startup SG Investment Ecosystem

- Capital support
- Capability support



1. Statutory board by the Ministry of Trade and Industry
 2. Fund-of-funds
 3. Start-ups whose business model is built around critical, proprietary technologies, research, or hardware, and for which significant developmental efforts are needed before the product is ready for sale

Source: Press search

Exhibit 55

Singapore provides risk sharing mechanism as an incentive in debt lending channel to encourage capital outreach to SMEs/start-ups

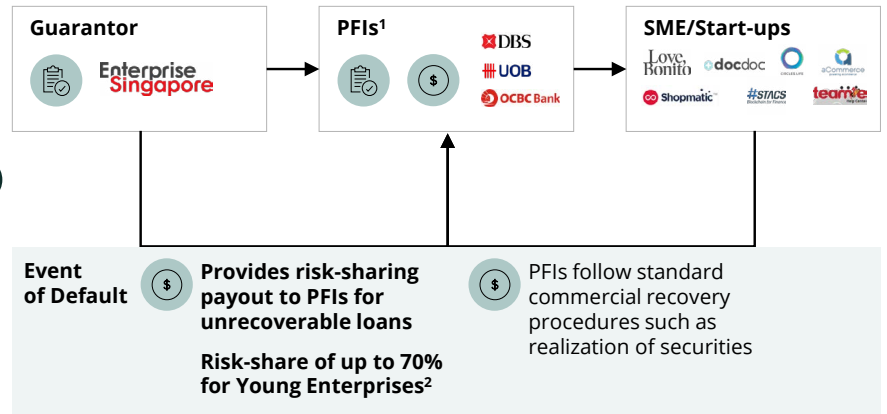
Context

Venture Debt Program announced in Singapore's 2015 Budget to **expand financing options** for SMEs/start-ups

This provides an **alternate form of financing** for companies which **have not yet established their sources of revenue**

Provision of risk-sharing along with **different collaterals** (e.g., share warrants) **expands the scope of lending**

Venture Debt Program



1. Participating Financial Institutions

2. Firms formed within the past 5 years with at least 1 employee, and more than 50% equity owned by individuals

Source: Enterprise Singapore, press search

Exhibit 56

Bursa Malaysia established LEAP Market as a separate board for SMEs

Basic info



- LEAP Market, the SME exchange founded in 2017 by Bursa Malaysia¹
- Run with **advisor-driven model** in which SMEs need to be endorsed by advisor post suitability and viability assessment

Objectives



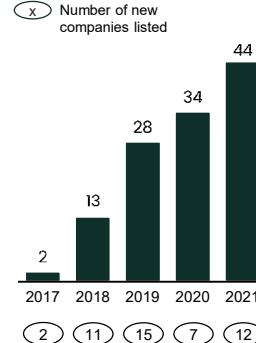
- To support the **country's direction to develop SMEs**
- To create a **platform for SMEs** and companies to raise funds
- To provide an alternative and complementary platform for **Sophisticated Investors³ to invest in the growth of SMEs** and companies
- To provide Sophisticated Investors³ **access to a wider pool of potential investments**

Outputs and market feedback



- As of 2021, **47² companies listed** on LEAP market and **raised almost \$60 mn** since 2017
- Higher level of investor's awareness toward LEAP market driving **increased visibility of listed SMEs** and **higher interest of SMEs to list** and raise funds on LEAP
- Transparency in post-listing's **disclosure of SME's financial statements** encouraging proper bookkeeping and **better accounting/operational management**
- Lack of 'transfer of listing' framework** to other exchanges causing 3 companies de-listed from the market; Bursa Malaysia taking the feedback and conducting public hearing in the consultation paper in Aug'22 on drafting 'transfer of listing' framework for LEAP market
- Low liquidity** with restriction on participating investors to sophisticated investors only³

Number of SMEs listed on LEAP



1. A stock exchange of Malaysia that regulates the capital market in Malaysia along with the Securities Commission of Malaysia. 2. one company were delisted in 2020 and 2 companies were delisted in 2021. 3. Accredited investors; High net-worth entities (Net Assets >\$2M); and High net-worth individuals (Net Assets >\$700k or Income >\$70k)

Source: Bursa Malaysia, Press search



A few key lessons Learned:

- Growth of the SME exchange is driven by investor's awareness of the exchange and visibility of listed SMEs** -- both of which incentivize more SMEs to be listed on the exchange; number of new companies listed on LEAP equivalent to the sum of number of newly listed companies in ACE and main exchange combined in 2018 and 2019
- Strategy of the market should include the entire growth journey of a company**, e.g., the transition from SME exchange to the larger exchange
- Regulators should be responsive to listen to market feedback and facilitate higher efficiency**, e.g., LEAP plans to put in place the 'transfer of listing' framework to support growth of SMEs



Capital market entities such as exchanges have led platforms for SME/ start-ups to, (i) list and raise capital from market (for example, LSE-AIM, SET-MAI , Bursa-LEAP), and (ii) to connect SME/start-ups with the buy-side, along with other incubation tools (for example, Nasdaq's Private Markets, Deutsche Boerse's Venture Network, and Borsa Italiana's Elite).

Thailand could learn from the growth story of a number of SMEs listed on Bursa's LEAP over the past five years, both in terms of the strategic positioning of the exchange and the regulator's actions on market feedback (see Exhibit 56).

Thai capital markets can contribute to the development of SMEs by enhancing capital/ financial support (e.g., through co-investments and credit risk guarantees). They can nurture start-ups and facilitate capability building and innovation by bringing in the right talent/advisory teams. They can also create active platforms, such as SET's LiVE platform, and deal-making databases, such as Angellist, to create a marketplace for pre-IPO fundraising.

Building block 4: Digital assets and exchanges

Thailand has already proven itself to be an early adopter of digital assets in the region. The granting of such licences, awarded since 2019, has led to the creation of digital platforms in Thailand such as Bitkub, Zipmex, and Satang.

The SET also plans to launch the Thai Digital Exchange (TDX) in the third quarter of this year, which will offer a platform for ICOs and tokenisation of assets.

Thailand's Central Bank, meanwhile, plans to launch a retail Central Bank Digital Currency (CBDC). The pilot, planned for the fourth quarter this year, will test deposits, withdrawals, and transfers.⁵

Globally, digital asset use cases have evolved from store of value (e.g., Bitcoin) to medium of exchange (e.g., central bank digital currencies), to becoming increasingly prevalent in financial services and tokenised assets (see Exhibit 57).

Both digital assets and exchanges are at a nascent, fast-evolving stages of their development.

5 <https://www.coindesk.com/policy/2022/06/01/this-is-the-usual-thai-central-bank-governor-on-cbdc-pilot-delay/>

Exhibit 57

Globally, digital asset use cases have been fast evolving

Use case	1	2	3
Evolution	Store of value	Medium of exchange (Central Bank) Digital Currencies	Financial services & Tokenized assets
Description	<ul style="list-style-type: none"> • Distributed, immutable ledgers • New type of currency • Smart contract functionality 	<ul style="list-style-type: none"> • “Programmable money”, issued by central banks or foundations that enables new monetary policy • Potential to enhance financial inclusion and infrastructure simplicity • Enables 24/7 instant payment and settlement 	<ul style="list-style-type: none"> • Ecosystem of decentralized applications • Digital asset banking that is interoperable and enables new yields for consumers • Tokenized form of existing assets and novel tokenized assets (including Non-Fungible Tokens)
Examples	Bitcoin & Ethereum	E-yuan, e-krona, Sand Dollar, etc.	DeFi apps (Yield on digital assets), digital equities, tokenized real estate, securitized bonds
Relative maturity			
Market cap of digital assets, \$, as in Jul 2021	>1.5T	~100B	>100B
<ul style="list-style-type: none"> • Macro-economic environment could increase demand for inflation-protected currencies and store of value use cases (e.g., BTC) • Digital currencies could enable new forms of monetary policy (e.g., negative interest rates) and yield (e.g., DeFi) and simplify certain infrastructure • Financial services built on digital asset infrastructure could enable meaningful savings longer term 			

Source: Company websites, press search, expert interviews, The block trading volumes

Exhibit 58

Digital asset regulation goes beyond token classification and licensing

Select global examples

NOT EXHAUSTIVE

 #1 Classification of digital assets Switzerland published regulatory guidance on their token classification framework providing reg. certainty	 #2 Licensing regime of providers Singapore has established a licensing regime with clear requirements and an exemption period of ~ 6 months	 #3 National strategy re blockchain / DLT Ireland launched "Ireland for Finance" a government strategy for 2025 incl. become leading in DLT/blockchain
 #4 Regulatory sandbox Australia offers a regulatory sandbox not only for crypto start-ups but also established firms	 #5 Significant prohibitions/ precautions in crypto Germany has set limitations on the max. leverage of crypto derivatives to retail investors (e.g. CFOs)	 #6 KYC/AML requirements Clear CDD requirements, transaction monitoring, suspicious transaction reporting as key controls
 #7 Max. fines for non-compliance cases Fines esp. for data protection-, KYC/AML-, cyber security violations - are considered non-distinction events	 #8 Digital KYC UK allows multiple Digital KYC methods (e.g. Video-/autoident) Which increases user experience and growth	 #9 Tax incentives/ government subsidies Low corporate taxes, tax breaks to Fintech investors and expats, R&D tax breaks as popular tax incentives

Source: Press search, expert interviews

Exhibit 59

Singapore has created an attractive environment to develop digital assets through supportive regulations and infrastructure

Strong and proactive regulatory market environment...

Enacted Payment Services Act to **regulate crypto currencies and exchanges**, one of the first regulator in Asia

Expansion of Securities and Futures Act (SFA) for **public offerings or issues of digital tokens** as well as releasing new guidelines on Digital Token Offerings

Announced Project Guardian, an initiative to explore the economic potential and value-adding **use cases of asset tokenization**

..supported by base infrastructure from government entities..

Setup Marketnode, a JV between Temasek and SGX to **advance digital asset infrastructure in capital markets through smart contracts, ledger and tokenization technologies**

SGX partnered with technology firm Cobalt on **FX post-trade processing network**, based on shared infrastructure and digital-ledger technology

...resulting in strong participation from private players

DBS established its digital asset ecosystem with the launch of DBS Digital Exchange (DDEX)

Marketnode launched a completely digital (DTL) bond issuance platform in partnership with banks like HSBC, StanC, Citi, UOB

SDX and SBI Digital Assets announced plans to **launch a Singapore-based institutional digital assets issuance, exchange and CSD platform**



Source: Press search

Exhibit 60

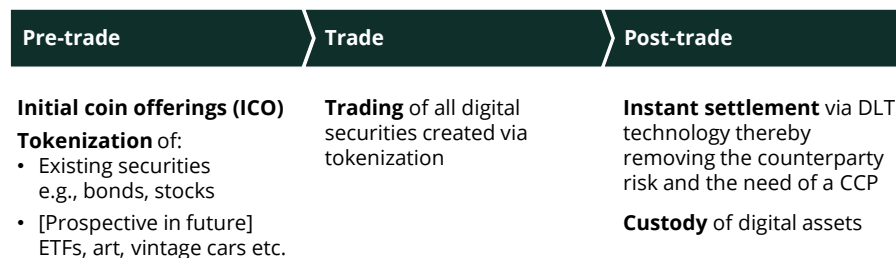
SIX Digital Exchange is world's first fully regulated integrated digital asset ecosystem

SIX Group (Switzerland) launched **Swiss Digital Exchange (SDX) as a fully owned subsidiary**

SDX offers an **end-to-end digital ecosystem** based on distributed ledger technology (DLT)

World's first fully regulated digital exchange and a digital central securities depository

Offers an entire digital ecosystem



Source: Press search



SDX, a fully owned subsidiary of the SIX Group offers **world's first regulated digital financial markets ecosystem** for global participation

Tapping into **rising demand of digital assets and being a regulated venue**, SDX further expects global acceptance and participation from banks, insurance firms and other institutional investors who were not participation in other digital platforms earlier

Nonetheless, the expectation is that a significant share of capital market activity from five years' time could be via digital assets. Globally, two archetypes amongst exchange groups exists in entering digital assets markets:

1. B2B: offering a platform for ICOs and tokenisation of traditional assets such as SDX and TDX.
2. B2B2C: building a financial services ecosystem with a suite of financial services on digital assets, for example, Bakkt (ICE Group), Coinbase, and SGX investing in DBS Digital Exchange.

Thai capital markets can consider opening up digital assets and exchanges, at the right time with the right oversight (see Exhibit 58). This will require the exploration of further use cases of digital assets (e.g., new tokenised asset classes, wallet, rewards, gifts, crypto, NFT, real estate tokens), balancing risk with market readiness.

It is worth noting that Singapore, a leading market for digital assets in Asia, has created an attractive environment to develop digital assets through supportive regulations and infrastructure driven by regulators, government entities, and private entities (see Exhibit 59). For example, regulations and guidelines have been updated to cover cryptocurrencies and exchanges as well as the offering and issuance of digital tokens. Temasek and SGX have set up a joint venture called Marketnode to advance digital asset infrastructure in capital markets through smart contracts, DTL, and tokenization technologies. DBS has launched

DBS Digital Exchange (DDEX), its digital asset ecosystem. Indeed, regulation across the globe has evolved beyond regulating cryptocurrency trading towards a broader picture focused on activities such as decentralised finance and tokenized assets (see Exhibit 60).

Learning from global players, Thailand can explore potential collaboration between public and private players (e.g., exchanges, banks, or a new entity) to launch new market infrastructure based on digital ledger technology (see Exhibit 61), echoing Singapore's Marketnode and Cobalt. Efforts can also be made to establish clear, up-to-date digital assets regulation to enhance investor protection and nurture innovation.

Pillar 3 – Expanding access and knowledge for wealth creation

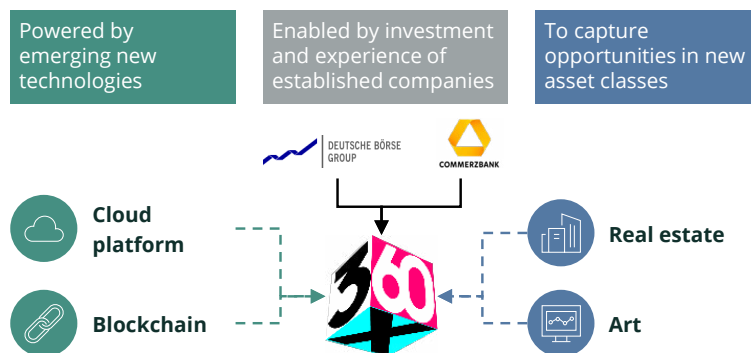
Building block 5: Improving financial literacy for the Thai population through financial education programs

In 2021, retail investors accounted for almost 50% of the trading volume of cash equities on the SET. However, looking at absolute numbers, there are approximately two million investors trading via the SET, whereas cryptocurrency investors in Thailand is estimated to range closer to the four million mark- indicating a gap in active public investors on the SET. As indicated in Chapter 1, pensions funds are another key area that needs to see improvements before Thai capital markets can reach the aspiration of increasing active public investors by 100% over the next five years.

Exhibit 61

Deutsche Boerse jointly invested with Commerzbank to establish 360X, new digital asset marketplaces focusing on real estate and art

360X overview



Source: Press Search



One measure that could help in this regard is improving financial literacy and simplifying retail investors' journeys. According to OECD's recent adult financial literacy survey, conducted across 26 countries in Asia, Europe and Latin America, 77% of Thai respondents have positive attitudes towards finance, compared to the survey average of 59%. However, they are ranked lower in terms of investment-related knowledge (e.g., knowledge of terms such as risk and return and time value of money), with an average 56% of Thai respondents able to correctly identify financial terms, compared to the survey average of 63%.

The survey found that, while Thai respondents' financial attitudes reflect a high awareness of long-term financial planning, financial knowledge is still limited to basic knowledge. Enhancing investment-related knowledge therefore has the potential to improve financial management among respondents (see Exhibit 62).

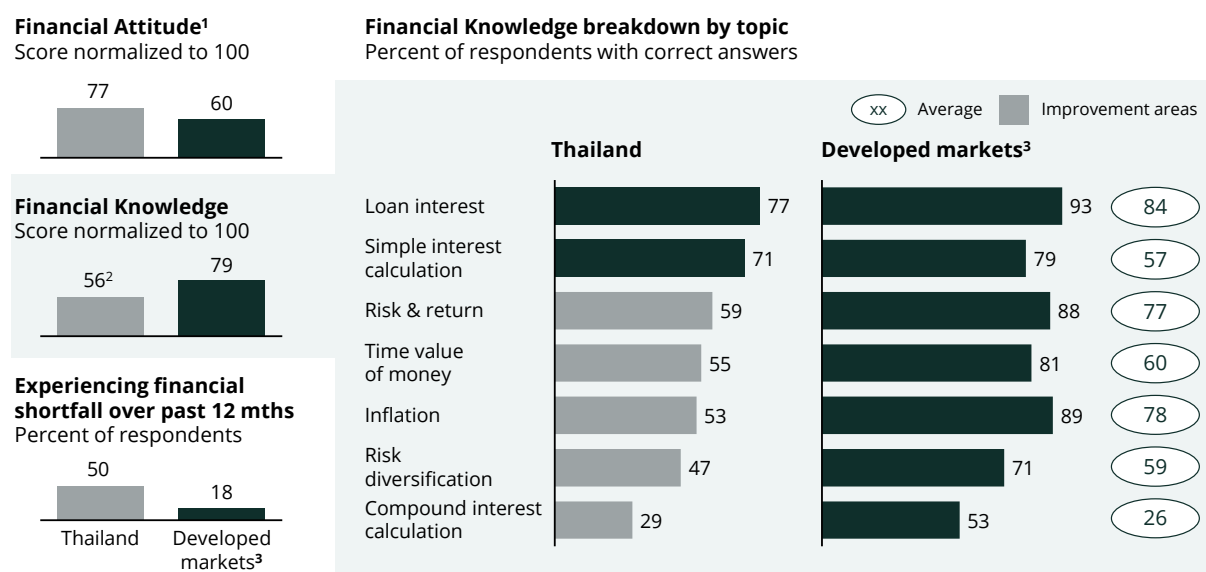
Public and private organisations have implemented several initiatives to increase financial literacy among the Thai population. The SET for example, has set up a foundation which offers various creative learning methods. Its digital channels and tools can also be leveraged to scale up financial literacy efforts nationwide (see Exhibit 63).

However, improving financial literacy nationwide will require collaboration and support from both public and private sectors.

There remain challenges facing the widespread adoption of financial literacy programs. While the majority of both developing and developed countries globally have already established national financial education strategies at schools and universities, Thailand's effort has been driven mostly by individual organisations and agencies, making having a nationwide agenda an imperative (see Exhibit 64).

Several countries around the world, for example, France and Spain, are shifting towards the inclusion of financial education within the national strategy/agenda and introducing compulsory education at schools and universities. These countries assign clear, dedicated units/organisations to increase financial literacy among retail investors. For example, in Spain, the Ministry of Economy and Competitiveness was tasked with leading financial literacy efforts under its "Finance for all" program. The initiative had approximately two million 15-year old students in schools (95% of this age group) enrolled in its 2019 financial education program (see Exhibit 65).

Exhibit 62 Thailand can build on its high financial awareness/positive attitudes to further deepen financial knowledge



1. 11,129 participants in OECD/ INFE 2020 International Survey of Adult Financial Literacy

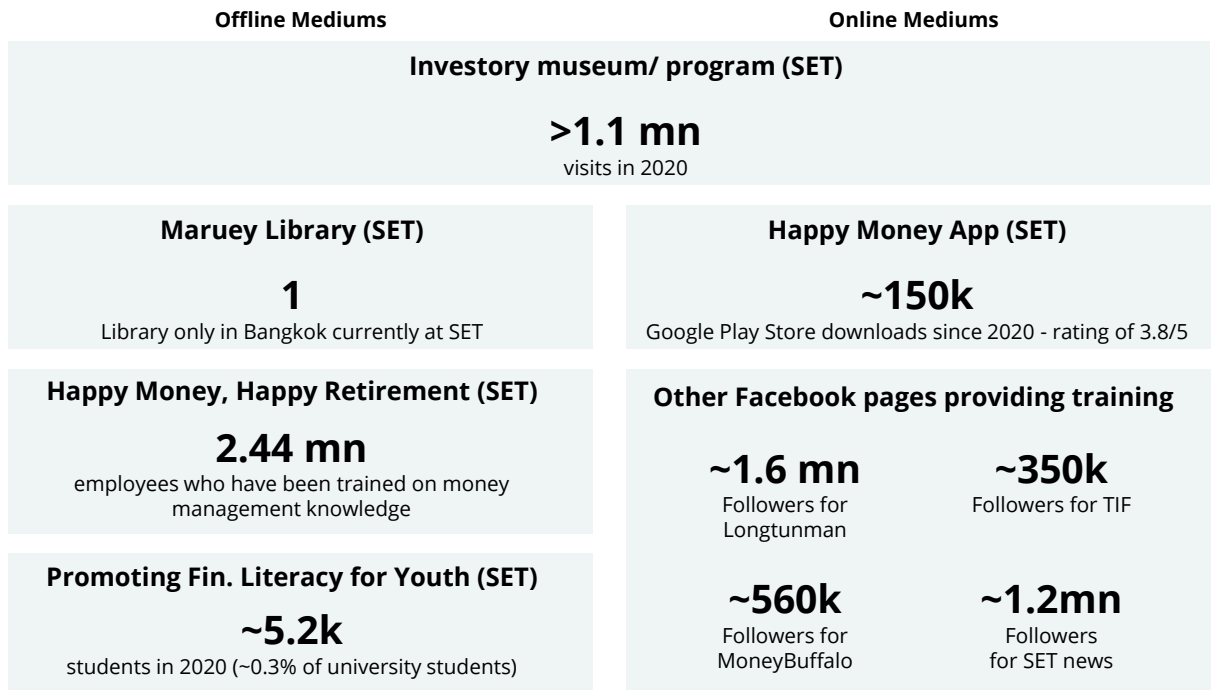
2. Thailand has used 2015 OECD toolkit; the inflation question was modified which may help overestimate the understanding of inflation definition

3. Includes Austria, Germany, Hong Kong

Source: OECD/ INFE 2020 International Survey of Adult Financial Literacy

Exhibit 63

SET's programs to promote financial literacy can be leveraged for further content creation and collaboration to expand reach



Source: BOT, SET, Press Search

In a bid to improve financial literacy among the Thai population, Thai capital markets can consider to work on developing a financial education programme as a national mandate (see Exhibit 66). On top of defining lead sponsors with government involvement, three key success factors to execute a nationwide financial literacy program are:

1. Collaboration of various institutions, including stock exchanges, government regulators, and non-profit organisations.
2. Adequate program funding.
3. An awareness program focusing on both direct and indirect investments.

Successful delivery of a nationwide financial education program will require the synchronisation of efforts between multiple public and private entities, for example, the Ministry of Education, schools, universities, corporates, the SET, and security companies. It also requires end-to-end execution design (see Exhibit 67).

Building block 6: Simplifying retail investors' journeys

The number of Thai retail investors currently stands at around two million, with aspirations to double this number over the next three to five years. While growing retail investment has been an increasing trend over recent years (2019-21), there is still a 20-30% one-year drop-off rate witnessed among new investors.

In an attempt to improve retail market participation, various countries have adopted multiple initiatives, including: (1) replicating risk-returns of physical investments through capital-market-linked products; (2) deepening penetration and reach of intermediaries in tier-2 and tier-3 cities; (3) disinvestments of large well-known companies; (4) investor education and awareness for retail investors; (5) tax incentives; and (6) further diversification of investment products (see Exhibit 68).

While, Thailand has done a lot in way of ensuring a seamless retail investor journey, a few opportunities still exist. For example, investors are

Exhibit 64 Stances taken by various countries on financial literacy

Countries by national strategy for financial education, 2021

Archetype	Minimal government's intervention/effort	Direction steered by government	Direction and education program driven by government
Level of government involvement			
Description	<ul style="list-style-type: none"> • No national strategy for financial education • No compulsory education in schools/universities 	<ul style="list-style-type: none"> • National strategy for financial education exists • No compulsory education in schools/universities 	<ul style="list-style-type: none"> • National strategy for financial education exists • Compulsory education in schools/universities
Selected Examples	Germany Ireland Belgium Thailand Indonesia	Japan Netherlands Italy India Malaysia	Spain Finland France Singapore USA

Source: OECD, EEF

Exhibit 65 Defining clear leading sponsors with government involvement is the first critical step to the success of financial education program

	Spain	Finland
Leading unit /organization	Treasury and Financial Policy Ministry of the Economy and Competitiveness	Ministry of Education (FFI) Bank of Finland
Impact	1.9mn 15-year-old students in schools (95% of same age population) enrolled students in the financial education program in 2019	99.5% enrollment rate into personal finance classes in schools
Examples of financial literacy interventions	<p>Standard educational materials for teachers and pupils</p> <p>Partnership entities from both the public and private sectors (e.g., Bank of Spain, National Securities Market Commission, PISA Financial Literacy division, AEB Junior Achievers etc.)</p> <p>Strong branding and marketing campaigns: e.g.,</p> <ul style="list-style-type: none"> • Consolidation of the "Finance for all" brand - the public image of the National Financial Education Plan • Radio and TV programs with interviews, debates and round tables on financial education <p>Incentives, e.g., Financial education prizes awarded to the winning schools</p>	<p>Standard curriculum and study materials starting in early primary school</p> <p>Integrated, end-to-end online education platform, incentives, and competition:</p> <ul style="list-style-type: none"> • Zaldo: Online gamified, financial education program targeting 10-16 years old students with tailored materials • Cash prize raffles upon whole classes' completion of final tests on Zaldo • European Money Quiz finals: best scoring class on Zaldo will be auto-represent Finland in this competition <p>Competitions with right incentives for right group of target audience: e.g., Economic Guru competition for upper secondary school students, offering the chance to win a place of study in eight different universities</p> <p>Workshops targeting young people, e.g., Finance Finland (FFI) offered 100 "insurance knowledge" workshops</p>

Source: OECD, FFI

Exhibit 66 Key parameters of financial education program design






Potential next steps for Thailand

Design choices by key parameter

Leading Stakeholders	Government	Quasi-government organizations	Schools/ Universities	Corporates		
	Government units should consider leading the effort similar to Spain and Finland to steer the direction and execution of financial literacy program					
Partnerships needed	Asset Management firms	Thai brokerage firms	Government regulators	Schools/ Universities	Independent financial training centres	Non-Profit Organizations
	Partnership will allow the government to leverage existing resources from capital markets stakeholders, e.g., talents to train populatio, or expand reach of the program					
Target segment	School students	University students	Mass to mass affluent investors	HNW/Private investors		
	Financial education program can start as early as in primary schools					
Content/ sub-theme	Basic savings/ investment knowledge	Asset classes (e.g. Equities, Fixed Income, ETFs)	Risk Management	Thematic Topics (e.g. ESG, Covid-19)	Private Equity Invest-ments	Retirement planning (e.g. Long term investments)
	Content should be comprehensive and standardized while customizing for different target audience					
Geographic focus of content	Thailand	Southeast Asia	Asia	Global		
	Geographic coverage should gradually increase as students/ investors advance in their learning journey					
Incentives / Rewards	Certificates	Awards	Placement programs/ internships	Entry level career opportunities		
	Monetary and non-meneraty incentives/ rewards can drive nation-wide attention and participation to the program					
Delivery format	In person classes	Digital – online classes	Gamified Assesment	Digital - Webinars	Digital - Social Media	App/Website
	Integrated delivery formats, esp digital channel – scoial media and gamification, can help drive adoption and understanding of the program among Thais					

Exhibit 67

Delivering financial education program at scale requires end-to-end execution design

	Implement rigorous train-the-trainer program	<ul style="list-style-type: none">• Teacher/trainer selection, tests and certification• On-the-job observation and follow-on coaching/evaluation
	Utilize effective learner-centric training tools	<ul style="list-style-type: none">• Real-life case examples relevant to target audience• Simple, standardized, re-usable tools ready for adoption in daily life
	Create learning experience leveraging digital technology	<ul style="list-style-type: none">• Gamification, online collaboration and competition• Frequently updated, trendy media production
	Collaborate with partners on marketing and communication	<ul style="list-style-type: none">• Maximum reach with limited costs through partnerships• Leveraging CSR promotion
	Incentivize and celebrate success with rewards that matters	<ul style="list-style-type: none">• School and university awards• Corporate partner awards (e.g., SET Awards) and awards from government

required to perform know-your-customer (KYC) and suitability tests every time they open new investment accounts. Second, the SET's securities depository service (TSD) currently provides depository services for only some asset classes, such as equities and scripless bonds, whereas there is no consolidated depository services provider for other asset classes, such as mutual funds and scrip bonds.

Some countries have taken steps to streamline the account opening and trading process. For example, Singapore offers a centralised e-national ID application that consolidates all government documents and personal information; links e-national ID with a Centralised Depository Account (CDP) app; and links this app with brokerage companies to provide a seamless e-KYC and document submission process (see Exhibit 69).

Online trading platforms have taken steps to simplify the digital retail investor journey. India-based Zerodha, for example, which is known for its discount broking model and technology, expanded its investor base 2.5x to five million investors in one year (see Exhibit 70).

Looking ahead, Thailand is reviewing requirements for KYC, customer due diligence, and suitability tests in order to increase retail participation. Additionally, e-KYC leveraging National Digital ID (NDID) infrastructure can simplify the onboarding process. In line with these initiatives, Thailand can increase retail investor participation through the following steps:

- Streamlining/reducing pain points in the retail investor journey: for example, expanding TSD

to become Thailand's centralised depository account covering listed/non-listed, scripless/non-scripless asset classes for e-KYC and consolidated statement.

- Enabling digital first securities players by streamlining requirements for digital KYC and trading - adequately balancing risks.












It is clear that the foundation is there for Thai capital markets to reach its aspiration to double active investors in five years through financial literacy education, and simplifying the retail investors' experience - similar to the steps taken by other markets. On top of these two key building blocks, stakeholders in Thailand's capital markets could be inspired by the six levers that many countries have used to drive retail investor participation, to drive the actions necessary to realise its ambitious aspiration.

Pillar 4: Fostering long-term capital deployment

In Thailand, institutional investment and foreign long-term investment are the two fund sources that can help increase market liquidity and stability, and develop the market. Thailand's capital markets could attract long-term capital deployment from local and international institutional investors through two key building blocks: broadening long-term domestic institutional investment and increasing Thailand's international visibility and accessibility to attract long-term foreign institutional investors.

Exhibit 68

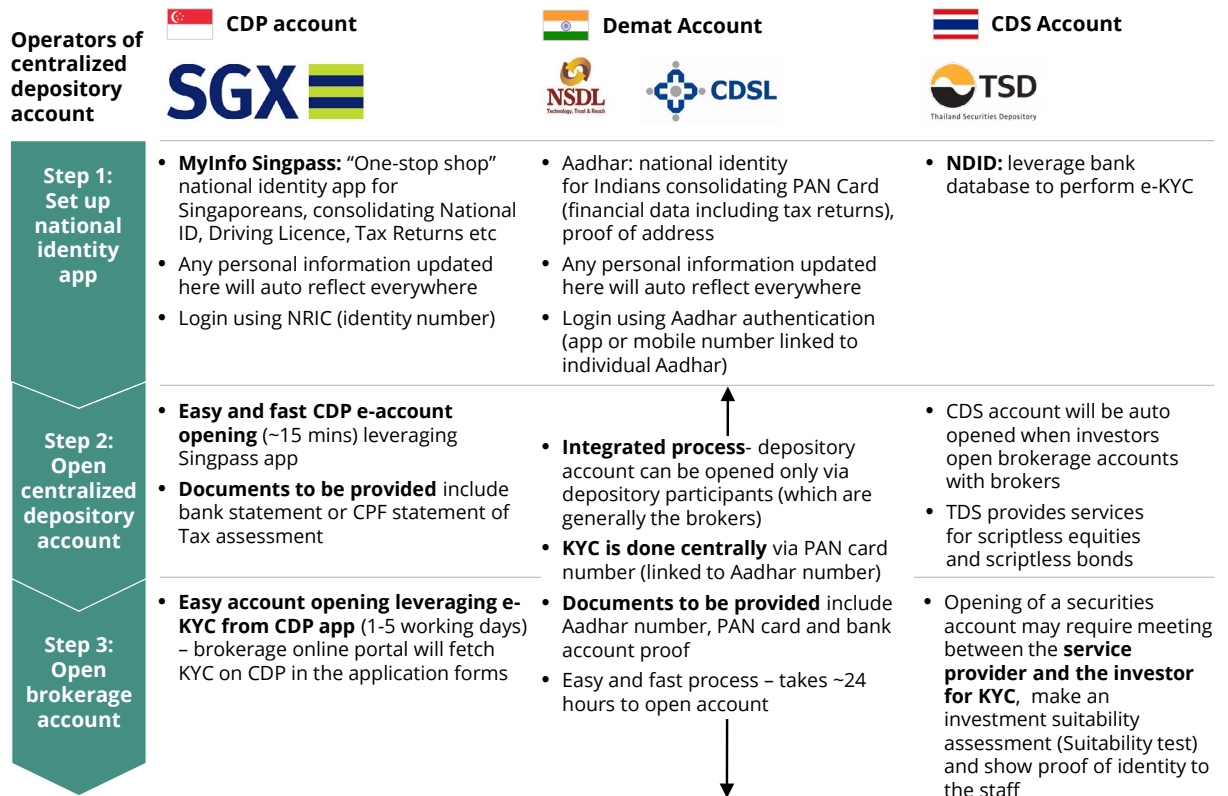
Six levers used by countries to drive up retail investor participation

Levers	Description	Selected examples
 <p>Replicating risk-returns of physical investments through capital-market linked products</p>	<ul style="list-style-type: none"> • Retail investors in developing markets are likely to invest in physical assets (e.g., real estates and gold) more than in financial assets at ~60-70% compared to 20-40% for more developed markets) • Capital markets can monetize the capital locked in physical assets and invite more retail investors to capital markets by offering financial assets which have physical assets as underlying and provide comparable risk and return pattern, e.g., REIT, digital gold (e.g. Gold ETF, Gold funds, Sovereign gold bonds) 	 NYSE Gold ETFs  Sovereign Gold Bond
 <p>Deepening penetration and reach of intermediaries in tier-2 and tier-3 cities</p>	<ul style="list-style-type: none"> • 60-90% of money flows in capital markets in India, China and Malaysia comes from 5-8 tier-1 cities • Capital markets require digital intermediaries or traditional brokers with digital channels to offer low costs and simplified model to increase their penetration in smaller cities and villages 	 Zerodha
 <p>Issuance of large well-known companies</p>	<ul style="list-style-type: none"> • Capital markets can attract more retail investors by issuing household brands. In India, the upcoming mega-IPO of Life Insurance Corporation (LIC) which has about 100 million policy holders is estimated to create 10 mn new demat accounts (10-15% increase from existing base of ~70-80 mn) to be opened in the run-up to the IPO 	 LIC IPO  PTTOR IPO
 <p>Investor education and awareness for retail investors</p>	<ul style="list-style-type: none"> • Successful execution of investor education and awareness needs several institutions take a lead on this initiative, including stock exchanges, capital market regulator, mutual fund association, broker association etc • Some countries (e.g., Korea) have created funds originating from small taxation on equity trading to enable this program • Awareness program could focus on both direct investments and indirect investments. For examples, "Mutual funds Sahi Hai campaign in India" run by AMFI¹ is a runaway success which has led to significant ramp-up in SIPs from mass retail 	 Korean Funds  Mutual funds Sahi Hai campaign
 <p>Tax Incentives</p>	<ul style="list-style-type: none"> • One example of tax scheme is to allow the formation of specific mutual funds and insurance funds for tax deductions with specific thresholds, e.g. India has ELSS funds investing in equity products to promote indirect investment in equity 	 ELSS funds
 <p>Further diversification of investment products</p>	<ul style="list-style-type: none"> • Capital Markets can apply several measures to diversify investment products, for example: <ul style="list-style-type: none"> – Enable variety of investment asset classes, e.g., fixed incomes, ESG products – Reduce tick size for retail participation in government securities and corporate bonds 	 US Bond Market  India Bond Market

1. Association of Mutual Funds in India
Source: Press Search

Exhibit 69

Singapore and India have streamlined e-KYC process with centralized depository accounts



Source: Singpass, SGX, CDSL, Aadhaar, NDID, Press Search

Exhibit 70

Zerodha: India's largest retail broker in the industry on back of disruptive pricing and strong in-house tech platform

ZERODHA

Company profile

- Financial services firm that offers broking, distribution and trading services, known for its **discount broking model and technology**
- **Serves India** (contributes to 66% of monthly visits), **US, UAE, UK, Indonesia**

Highlights

India's first and **largest discount broking player** with 15-20% market share as of Dec 2021

Acquired 2 mn customers during first ~10 years of operations before **expanding investor base 2.5 times to 5 mn investors in 1 year due to:**

- **Low to zero transaction cost value proposition** (e.g., Free equity delivery trades with zero brokerage, free direct mutual fund buying with no fees/ brokerage)
- **100% digital platform**
- **Target young investors** with average age of 30-35 who can invest 1 or 2 months of their salary
- **Various, diversified products and services**
- 10 regional languages, e.g., Kannada, Tamil, Gujarati, etc.
- COVID pandemic

Examples of products and offerings

Kite: Online trading platform for stocks, F&O

Console: Central dashboard with in-depth reporting and analytics on trading and investments

Kite Connect API: "Platform as a service" for startups to build full-fledged investment / trading platform

Zerodha Coin: Platform to buy direct mutual funds online, with 0 commission, directly from AMC

Zerodha Pi: Trading application features advanced charting, algos, strategies and back testing

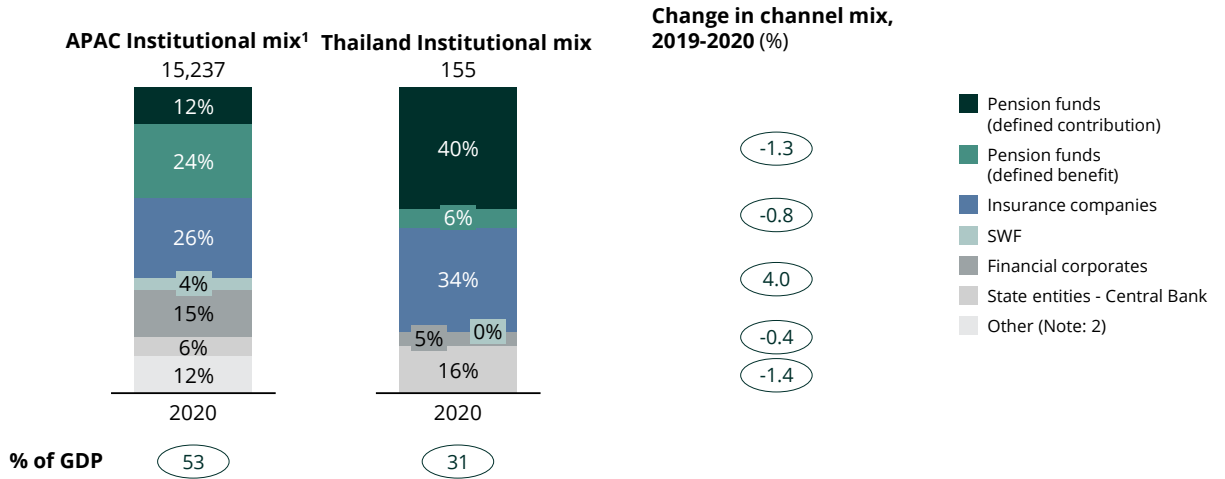
Varsity: Education initiative that includes in-depth learning modules on stock market trading

Source: Expert interviews, press releases, company's website

Exhibit 71

Domestic institutional investors are still nascent, with ~80% of AUM held through Pension funds and Insurance companies

Thailand institutional client segment mix AUM benchmarking, USD Bn, %



1. Based on survey average - not representative of entire market

2. Non- Financial corporates, universities, endowments & foundations, state entities- others (Municipal and govt related entities)

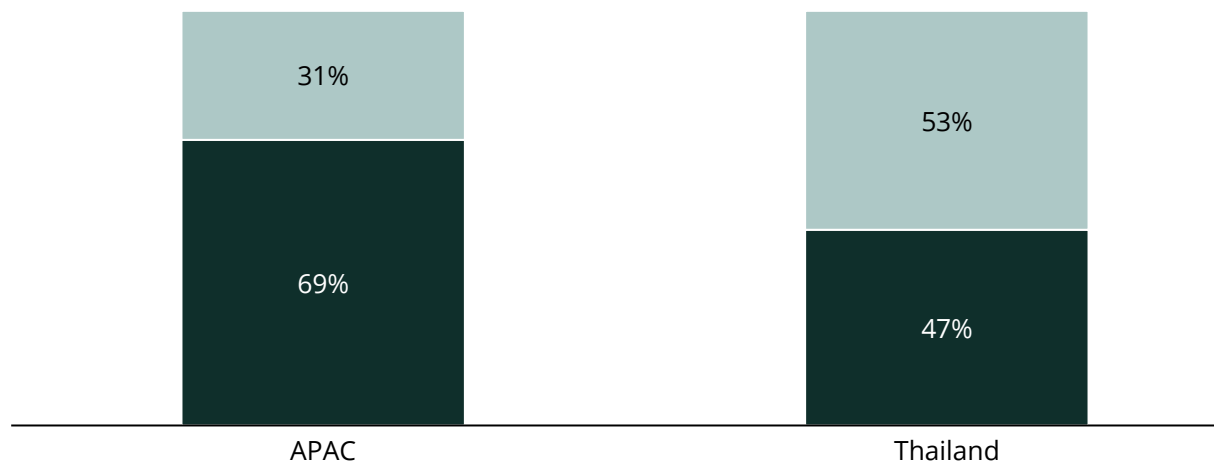
Source: McKinsey Performance Lens Global Growth Cube, 2021 McKinsey Asia asset management survey

Exhibit 72

Thailand has a higher proportion of Retail AUM than APAC

■ Retail ■ Institutional

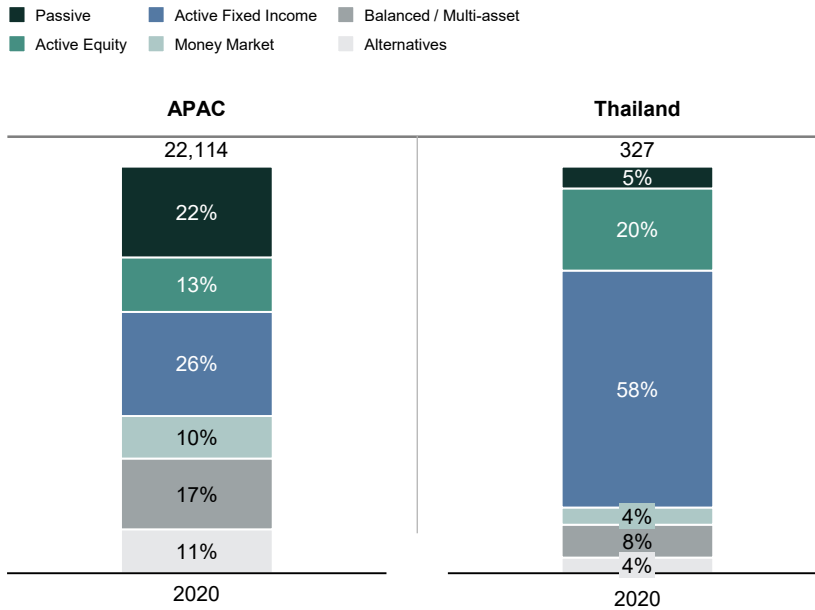
Assets under Management segmentation, 2020, USD Bn



Source: 2021 McKinsey Asia asset management survey

Exhibit 73 Thailand product mix is skewed towards Fixed Income assets

Overall retail and institutional product mix, USD Bn, %



Source: McKinsey Performance Lens Global Growth Cube

Retail investors in Thailand are **generally more conservative** vs APAC, and typically seek **yield-generating products** that provide **regular distributions**

Institutional investor base dominated by **Pensions and Insurance**; hence **propensity to invest in fixed income** assets to **match their payouts**

Building block 7: Broadening long-term domestic institutional investment

Domestic institutional investors are still nascent, with ~80% of AUM held through pension funds and insurance companies (see Exhibit 71).

The Thai asset management industry had assets under management (AUM) of USD 327 billion in 2020 and is set to grow at about 8% a year. Thailand has room to deepen institution investment in total AUM, which is currently weighted towards retail (53% of total AUM compared with an average of 21% across APAC) (see Exhibit 72). Product mix of Thai investment in total is skewed toward fixed income assets (see Exhibit 73). Currently, about 80% of domestic institutional AUM is held through pension funds and insurance companies, compared with 60% across APAC. The bond markets are important to pension funds and insurance companies: SSO invests 67% of its assets in bonds; GPF invests about 60%; non-life companies invest 40%, and life insurance companies invest 80%.

Yet Thailand's bond market has limited government and corporate bonds with a long-term tenure (over 20 years). Thailand also does not have a liquid secondary bond market, as bonds are mostly traded over the counter (OTC) and take the form

of hold-to-maturity (HTM) retail investments (approximately 30% of outstanding bonds).

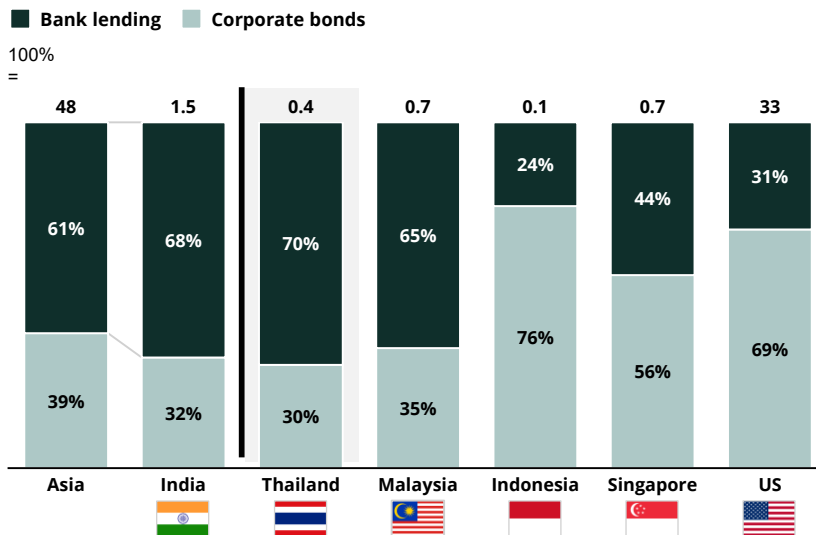
India has taken steps to encourage corporates to raise funds from capital markets –for example, equity, bonds, and syndicated loans– instead of depending on bilateral lending from banks (see Exhibit 74). The country's deepening corporate bonds and syndicated loan markets with long-tenured products have captured investment from domestic long-term institutional investors such as pension funds and insurance companies. It has built a robust bond ecosystem across four dimensions: 1) new products (e.g., long-tenured to capture more investment from domestic long-term institutional investors); 2) supportive regulation; 3) a corporate repo market, and 4) a consolidated database setup. Thailand could get inspiration from India's development plan to deepen its capital markets (see Exhibit 75). Similar to India, Thai corporates have high reliance on bank lending (~70%) compared to Singapore or Indonesia. Thailand could look at India's development plan to deepen its capital markets.

In response to these challenges, Thai capital markets could consider exploring building a robust bond ecosystem. Long-tenured (20+ years)

Exhibit 74

India has potential to tap an additional ~US\$100 billion from capital markets by reducing reliance on bank lending

Mix of Bank lending and Corporate bonds outstanding in 2020, USD trillion



Note: Above analysis based on outstanding bank lending and bonds
Source: Global Banking Pools, BIS, SingStat, Bank Indonesia, Bank Negara Malaysia, Monetary Authority of Singapore

With the exception of US and some developed markets, companies around the world are heavily dependent on bank lending for their funding

In India, there is a potential opportunity to tap an additional US\$100-120 bn annually through capital markets (~40% funding through bonds, equivalent of Asia avg) if the country reduces its reliance on bank lending

Similar to India, Thai corporates have high reliance on bank lending compared to Singapore or Indonesia. Thailand could look at India's development plan to deepen its capital markets

corporate bond markets and syndicated loan markets should be available to reduce reliance on the balance sheet for banks. Capital markets could also offer hedging instruments, which may include credit default swaps or monoline insurance, as well as distressed bond management products and services. A corporate bond repo market would enable more sophisticated hedging and position-taking activities. These moves would be more effective if backed by investment in bond data infrastructure.

Investment of institutional investors would be able to diversify beyond fixed income assets, and the growth of institutional investment could be accelerated through concerted efforts to build capabilities among asset managers, as well as encouraging new investors such as university endowments to participate in capital markets. The global institutional segment is also increasing outsourcing to third party asset managers for solution oriented, non-traditional mandates and seeking higher returns and more global allocation (see Exhibit 76).

Building block 8: Attracting long-term foreign institutional investors by increasing Thailand's international visibility and accessibility

Foreign investors form a significant part of Thailand's cash equity market, accounting for 37% of total cash equity's trading volume in 2021. According to the MSCI Global Market Accessibility Review, Thailand is slightly less open to foreign ownership than regional peers such as Singapore and Malaysia (see Exhibit 77).

Policies to boost the proportion of foreign investors could include:

- Accounting for risks, increasing foreign ownership levels beyond 49% as it currently stands in Thailand, to a higher level (e.g., Indonesia, which has no limit except for banks and broadcasting companies, and Singapore, where there are no restrictions).
- Improving the ease of capital inflows and outflows by improving the levels of foreign exchange market liberalisation (for example Singapore, which has no restrictions)
- Increasing the efficiency by improving market infrastructure across clearing, stock lending

Exhibit 75 India's development plan to deepen its bond markets

Key areas	Examples of interventions
New products introduced	<ul style="list-style-type: none"> • Issuance of Rupee offshore bonds (Masala bonds) allowed in 2014; 10+ issuances of Masala bonds completed (e.g, IFC, Adani, HDFC, NTPC) • Repo on corporate bonds permitted that will indirectly increase market liquidity • Develop hedging instruments, e.g. Credit Default Swaps (CDS) introduced for hedging credit exposure, by considering review of eligibility norms of market makers and allowing netting of MTM positions against the same counterparty (HR Khan report¹ City of London Report³)
Regulations made more conducive	<ul style="list-style-type: none"> • Foreign Portfolio Investors (FPIs) investment limit enhanced in corporate bonds and G-Secs to \$51bn and \$30bn respectively • Withholding tax on corporate bonds for FPIs reduced to 5% from 20% • New Bankruptcy law has been passed by the parliament which proposes a new ecosystem • Guidelines issued to enhance "Credit Supply for Large Borrowers through Market Mechanism" asking banks to set aside an additional provision of 3% on incremental exposure of the banking system to large borrowers if they cross a certain threshold. This would encourage sources of funding other than bank credit, e.g. corporate bonds for the corporate sector to finance growth • Guidelines issued for raising limit for Partial Credit Enhancement (PCE) from 20% to 50% provided no single bank exposure exceeds 20% • RBI will issue guidelines by end Oct 2016 for introduction of Electronic trading platforms for repo in corporate bonds • Credit rating agencies (CRAs) to strictly comply with prescribed regulatory norms and adhere to international best practices (e.g. robust surveillance mechanism and rating methodology) resulting in greater transparency in the market (HR Khan report¹)
Corporate repo market developed	<ul style="list-style-type: none"> • Introduce a series of measures for developing corporate bond repos market - brokers as market makers, electronic dealing platform, allowing corporate bonds under LAF and CCIL to introduce CBLO-type guaranteed clearing and settlement (RBI Press release Aug'16, Union Budget 2016-17, HR Khan report¹, Dr. R.H. Patil Report², City of London Report³)
Database set up and Consolidated	<ul style="list-style-type: none"> • Expedite creation of secondary market data segment of centralized Trade Repository (TR) database for corporate bonds on NSDL and CDSL covering both primary & secondary markets to enhance market transparency and enable informed decision making from investors (Union Budget 2016-17, HR Khan report¹, Dr. R.H. Patil Report²) • Consolidate ISINs from issuers (e.g. for issues in same quarter) to increase floating stock in a specific security and resulting in potentially high turnover (HR Khan report¹, Dr. R.H. Patil Report²)

1. Report of the Working Group on Development of Corporate Bond Market in India - August 2016;

2. Report of High Level Expert Committee on Corporate Bonds and Securitization;

3. The Development of India's Corporate Debt Market - City of London

and short selling functions (e.g., Singapore and Malaysia).

Some countries have improved the attractiveness of their capital markets to foreign investors by reforming the capital markets in line with MSCIs' market accessibility metrics. For example, Saudi Arabia has reformed its capital markets over the past five years, increasing the proportion of qualified foreign investors (QFIs) in share trading from 3% in 2016 to 80% in 2021 (see Exhibit 79).

Several countries are creating value propositions to attract foreign investors (see Exhibit 80), building across the following themes:

- Promotion of capital transparency principle and

non-discrimination against foreign investors (for example, Chile).

- Specialisation in "new-economy" sectors with growth potential, resulting in rapid economic development (e.g., Korea, Chile, and Indonesia).
- Relaxation of restrictions on foreign entrants, with plans to liberalise FDI policies and streamline tax regime (e.g., India, Philippines).

Thai capital markets could review market accessibility to increase competitiveness amongst regional markets by learning from regional peers (see Exhibit 78), as well as work to better communicate the value proposition to investors. They can consider offering a full range of capital

Exhibit 76 Strong institutional net flows across all asset classes driven by DC and insurance companies

Average Annual Net Flows 2010-20 as % of Average YE AuM 2010-20, USD Bn

	Passive	Active Equity	Active Fixed Income	Active Multi-Asset	Alternatives	Money Market	Total	AuM 2020
Defined Benefit	6.4%	5.3%	7.1%				6.8%	\$9.7
Defined Contribution	5.8%	6.0%	6.5%	17.7%	15.6%	14.3%	7.0%	\$61.2
Insurance Companies	12.7%	9.9%	13.6%	10.4%	17.6%	15.2%	13.1%	\$52.7
Financial Corp	-1.7%	-2.0%	3.3%	-0.6%		5.0%	2.9%	\$7.1
State Entities & Other		18.4%	2.3%				2.4%	\$24.0
Total Flows	8.4%	6.7%	7.2%	10.7%	15.9%	11.9%	7.6%	\$154.7
AuM 2020	\$11.3	\$22.0	\$111.1	\$1.7	\$6.2	\$2.5	\$154.7	

Institutional segment increasing outsourcing to third party asset managers for solution oriented, non-traditional mandates and seeking higher returns and more global allocation

Source: McKinsey Performance Lens Global Growth Cube

Exhibit 77 Thailand's market accessibility

		Thailand	Regional exchanges					
Market accessibility metrics	Openness to foreign ownership	Investor qualification requirement	Open	Open	Open	Open	Open	
	Foreign ownership limit (FOL) level	Restrictions	Open	Select restrictions	Open	Restrictions	Restrictions	
	Foreign room level	Restrictions	Open	Open	Open	Restrictions	Restrictions	
	Equal rights to foreign investors	Restrictions	Open	Select restrictions	Open	Select restrictions	Restrictions	
Ease of capital inflows/outflows	Capital flow restriction level	Open	Open	Open	Open	Open	Open	
	Foreign exchange market liberalization level	Select restrictions	Open	Select restrictions	Restrictions	Select restrictions	Restrictions	
Efficiency of the operational framework	Market entry	Investor registration & acct set up	Open	Open	Open	Open	Select restrictions	
	Market organization	Market regulations	Open	Open	Open	Open	Open	
		Information flow	Open	Open	Open	Select restrictions	Open	Restrictions
	Market infrastructure	Clearing and settlement	Select restrictions	Open	Open	Select restrictions	Select restrictions	Restrictions
		Custody	Open	Open	Open	Open	Open	Open
		Registry / depository	Open	Open	Open	Open	Open	Open
		Trading	Open	Open	Open	Open	Open	Open
		Transferability	Open	Open	Select restrictions	Select restrictions	Open	Open
		Stock lending	Select restrictions	Open	Open	Select restrictions	Restrictions	Restrictions
Short selling	Select restrictions	Open	Select restrictions	Select restrictions	Restrictions	Restrictions		
Availability of investment instrument		Open	Open	Open	Open	Open	N/A	
Stability of the institutional framework		Select restrictions	Open	Select restrictions	Select restrictions	Open	Open	

Source: MSCI Global Market Accessibility Review, June 2021



markets products in "new economy" sectors, in sync with national priorities (e.g., technology focusing mainly on R&D, the food science sector, and S-curve industries).

In summary, Pillar 4 demonstrates that fostering long-term capital deployment in Thailand requires a focus on two key areas -broadening long-term domestic institutional investment, and increasing Thailand's international visibility and accessibility, through measures such as promoting the capital transparency principle and relaxing restrictions on foreign entrants.

Core enablers to ensure competitive and efficient capital markets

Building block 9: Creating a centralised database to unlock data analytics










Data relevant to Thailand's capital markets is stored at several data owners (e.g., the Thai stock exchange, ThaiBMA (bonds), multiple mutual fund houses, and the Central Bank). Currently, accessing all of this data in an one-stop-shop is challenging. Organizations could take days to months to get data/reports from different data owners.

Globally, there are comprehensive single source data solutions which aggregate data from multiple data sources. For example, Brazil's Datawise consolidates data from the markets - both from internal sources such as trades carried out in the cash equities market, and external sources such as the Central Bank, IBGE (Brazilian Institute of Geography and Statistics), and Ipedata (Brazil's macroeconomic, regional and social database) (see Exhibit 81). Indeed, developed markets including the US (see Exhibit 82), Europe and Singapore have enhanced capital markets data availability, for example, through trade repositories for OTC data, and boosted data depth, for example, by managing reference data through utilities (see Exhibit 83).

In order to improve data sources infrastructure, Thai capital markets can consider creating a single source of capital-market-related data which aggregates data from several sources. This will increase efficiency and unlock further insights, including, those based on advanced analytical capabilities. The other way to support this would be to enhance reporting of currently unavailable or unstructured data (e.g., OTC trading data) to improve market transparency.

Exhibit 78

Thailand's openness to foreign investment compared with regional peers house tech platform

Market accessibility metrics		Foreign investor norms in Thailand	Regional peers	
Openness to foreign ownership	Foreign ownership limit (FOL) level	<ul style="list-style-type: none"> • Foreign ownership limit of 49% across all industries in general affecting a major proportion of the equity market, although foreign investors can obtain access to Thai companies through Non-Voting Depository Receipts (NVDRs) 	<ul style="list-style-type: none">  No limit, 100% is allowed  No general restrictions except for banks (99%) and broadcasting companies (newly issued shares only, <20% of total capital) 	
	Foreign room level	<ul style="list-style-type: none"> • Limited NVDR issuance or prohibited NVDR issuance for companies from specific sectors, e.g., prolonged low level of foreign room in Bangkok Bank due to limits on NVDR issuance • >1% of the MSCI Thailand Investable Market Index (IMI) impacted by low foreign room 	<ul style="list-style-type: none">  Rooms available for foreign ownership through government's effort in revising the negative investment list 	
	Equal rights to foreign investors	<ul style="list-style-type: none"> • Unequal voting right terms for foreign investors holding NVDRs • Company related information is not always readily available in English 	<ul style="list-style-type: none">  Unequal voting right terms for foreign investors exceeding FOL 	
Ease of capital inflows/outflows	Foreign exchange market liberalization level	<ul style="list-style-type: none"> • Offshore currency market available, however interventions by the authorities to restrict the functioning of the foreign exchange market is possible 	<ul style="list-style-type: none">  Established offshore market available as the regional financial hub 	
Efficiency of the operational framework	Market infrastructure	Clearing and settlement	<ul style="list-style-type: none"> • No nominee status in the market 	<ul style="list-style-type: none">  Established offshore market available as the regional financial hub
		Stock lending	<ul style="list-style-type: none"> • Allowed but restricted to the stocks included in the SET 100 Index only 	<ul style="list-style-type: none">  Eligible through application to Bursa Clearing
		Short selling	<ul style="list-style-type: none"> • Allowed but restricted to stocks included in the SET 100 Index and those that meet the SET criteria only 	<ul style="list-style-type: none">  Allowed but reporting required  Allowed but restricted to ~260 approved securities only

Source: MSCI Global Market Accessibility Review June 2021, press search



Building block 10: Attracting and nurturing talent

Thailand's pool of science, technology, engineering, and maths (STEM) graduates is 4.1% of the workforce aged 25 years and over, compared to 10% in Singapore and 8.6% in South Korea. Thailand needs more talent to power its capital markets. Yet Thailand is below the global average when it comes to developing and attracting talent, ranking 43rd out of 64 countries in the 2021 global survey on developing and attracting talent, conducted by the IMD World Competitiveness Centre.

In order to attract world-class talent, the Thai government started giving ten year long-term residency visas in 2022 to attract highly skilled professionals and workers to the country. The government scheme aims to attract one million new foreign residents over a five-year period. This initiative is in line with some of the major financial centres globally, for example, Hong Kong, Singapore, New York, and London, which offer employment sponsorship to attract talent to large multinational corporations and financial institutions.

Around the world, leading companies have adopted a three-pronged strategy to attract and retain top

tech talent: first, they have upskilled and reskilled the existing workforce with innovative training and capability building along the employee journey. They have also attracted talent with digitally-led demand, source, and select approaches (see Exhibit 84). Finally, they have worked to energize employees with engaging and personalized experience.

Thai capital markets can consider initiatives to upskill talent along all stages of the employee journey (see Exhibits 85 and 86). Stakeholders can leverage technology to attract and recruit talent, using a demand, source, and select approach. In addition, efforts should be made to create an engaging employee experience. Furthermore, nurturing talent will require an orchestrated effort among public and private entities such as schools, the Office of Vocational Education and Commission, universities and corporates to put in place a certificate system, along with training, recruitment, and certificate preparation programs within Thailand's focus industries (see Exhibit 87).

Exhibit 79

Saudi Arabia's reforms to attract foreign investments highly visible in investor growth and participation

Market Capitalization of securities held by foreign investors in KSA, SAR Mn

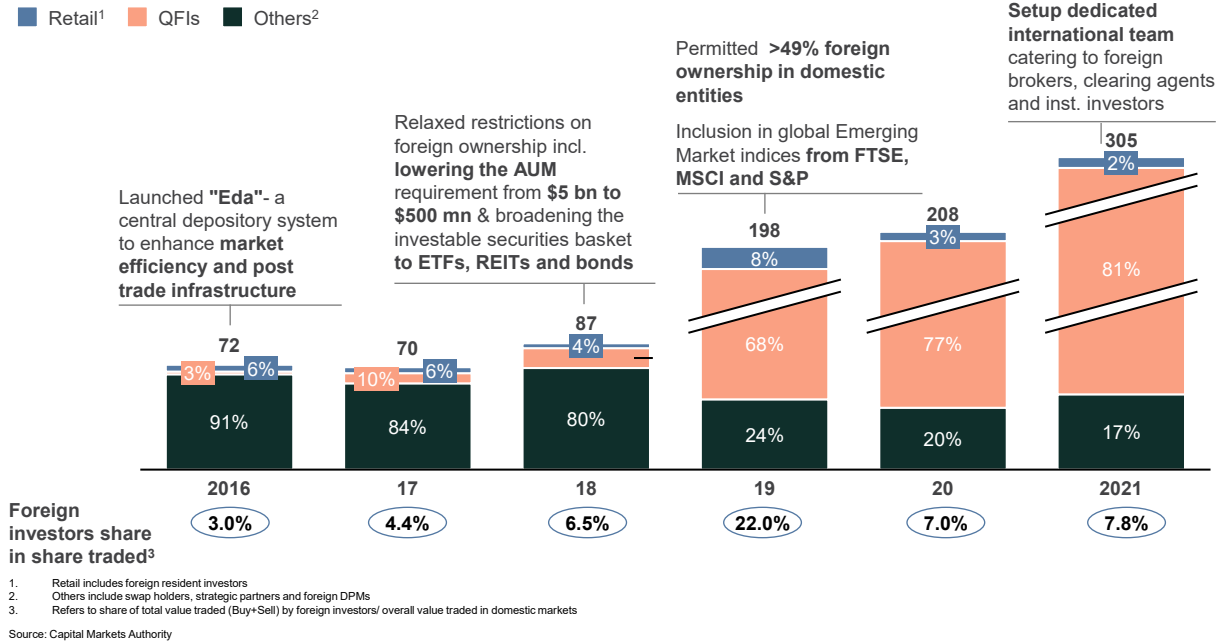


Exhibit 80

Globally, several countries are creating value propositions to attract foreign investors

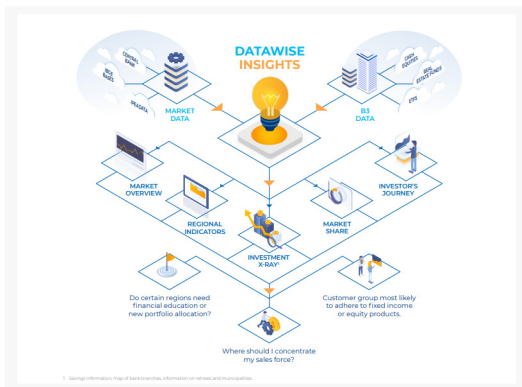
NOT EXHAUSTIVE

Themes of value propositions	Country examples
Promotion of capital transparency principle and non-discrimination against foreign investors	 Chile's principle of capital transparency and non-discrimination against foreign investors make it appealing as an investment destination
Specialization in 'new-economy' sectors with huge growth potential	 Indonesia is shifting towards "new-economy" stocks (e.g., tech-start ups across e-commerce, ride-hailing) with unicorns (e.g., Bukalapak) listing locally
	 Chile's commitment to green transition attracted additional foreign capital into green energy industries - 40% of greenfield announcements in 2020 are from the renewable energy industry
	 Korea specializes in new information and communication technologies resulting in rapid economic development
Relaxation of restrictions on foreign entrants, liberalization of FDI policies and streamlining of tax regime	 India recently relaxed FDI norms across various sectors (e.g., stock exchanges) to attract foreign investments, with plans to streamline tax regime, liberalise FDI policies and encourage technological innovations
	 Philippines recently loosened the restrictions on foreign entrants to allow foreign ownership up to 100% for some enterprises

Exhibit 81

DATAWISE consolidates data exchange and external sources to provide an efficient source of data, which can further be tailored to meet investor-specific needs

- DATAWISE **consolidates data from the markets operated by B3** and organizes it in the form of **dashboards**
- **Insights are searched from internal sources** (trades carried out in the cash equities market, real estate funds and ETFs) and **externally** (Central Bank, IBGE (Brazilian Institute of Geography and Statistics) and Ipedata (Brazil's macroeconomic, regional and social database))



Source: DATAWISE by B3, press search

DATAWISE products

- **DATAWISE Dashboard** provides consolidated stock market data via user-defined and customizable dashboards
- **DATAWISE Insights** further unlocks various insights and provides investor behavior patterns by analyzing the consolidated data from multiple sources
- **DATAWISE Reports** contains analytical trading and post-trade data on OTC assets



Exhibit 82

Case study: US Consolidated Tape

CTA association

Since the late 1970s, **SEC-registered exchanges and market centers** that trade Network A or Network B securities **are required to send their trades and quotes to a central consolidator** where the **Consolidated Tape System (CTS) and Consolidated Quote System (CQS) data streams are produced and distributed worldwide** as well as calculating derived information from the streams

This was done to **ensure basic access to trade information** from the large number of regional exchanges across the US **for all market participants** at a time when **internet based networks were not available**, as not all players had the resources to receive data from across the country, given the geographic spread of exchanges and the early stage of development of the communication infrastructure.

Source: CTA association

Participants include:



Enables broad **investors access to real-time prices via the consolidated tapes**

Most **small investors access without fees** because the low cost allows for brokerage firms to include **real-time prices as part of their service**

Exhibit 83 Comparison of Thailand's capital markets data availability with regional and global peers

Capital markets data/information availability and quality assessment

NOT EXHAUSTIVE OUTSIDE-IN

Improvement potential to become market leaders (Red) | Market-leading practice (Green)

	Thailand	Malaysia	Singapore	US	EU
Aggregate trade data/indices and benchmarks	Basic information available via index providers (standalone entities (e.g., S&P, MSCI etc.) or exchange on index data, customized index creation and licensing)		Comprehensive bespoke index solutions offered via index providers (standalone entities (e.g., S&P, MSCI etc.) or exchange) – indices for factor investing or ESG indices		
Mutual funds data	Regulatory framework for basic disclosures available via administrators, aggregators (e.g., Bloomberg, S&P SNL etc.) MF Industry statistics and reports available from Mutual Fund Associations				
	AIMC	FIMM	IMAS	ICI	EFAMA
Real time trade data	Basic information available via exchanges, data aggregators (e.g., Bloomberg, S&P SNL etc.) with individual access Low latency data available from exchange for high frequency or algorithmic traders				
Clearing and OTC data	Basic clearing and OTC data available from CMIs ¹		Basic clearing (incl. OTC) data available from CMIs (only aggregated data) Aggregated OTC derivatives data available via CMIs/ Trade Repositories		
			DTCC (SG)	DTCC	E.g., EUREX
Historic trade data	Basic information available via exchange as standard data and non display direct feeds, also available via data aggregators				
Post-trade and collateral trade data	Basic post trade data available from CMIs		Aggregated post trade and collateral data along with rich data/analytical offerings via Trade Repositories		
			DTCC	Euroclear	
Instrument and reference data	Basic information available via exchanges, standardized via CSDs, listing services of exchange groups		Availability of high-quality reference data from capital market utilities (e.g., SmartStream Reference Data utility) to provide high quality standardized data across market participants		

1. Capital markets infrastructure institution
Source: Press search

Exhibit 84 Leading companies globally have implemented the 'Demand, Source and Select' stages to attract and recruit new-age talent

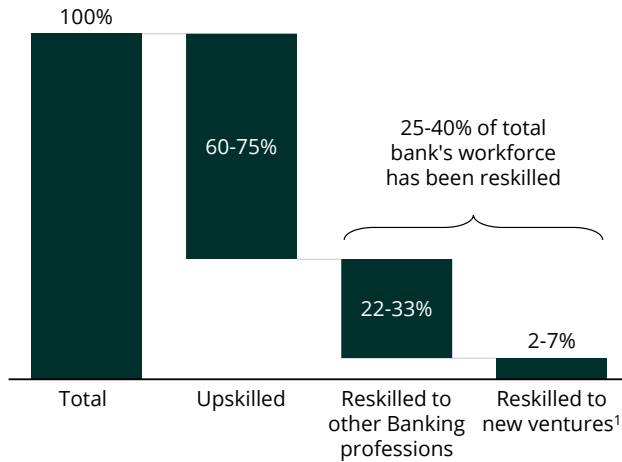
NON-EXHAUSTIVE

	Description	"What" - Idea in detail	"Who" - Companies
Demand	Talent-based location strategies Flexible + remote working	Availability of talent drives where work will be conducted / HQs placed. As a result, centers such as Georgia Tech's "Technology Square" (engineering talent) or "Florida's Space Coast" (former space shuttle workers) emerge Exploring the concept of "talent can work from anywhere" and international mobility	
Source	Easier applications utilizing technology (e.g. "text-to-apply") Partner with startups innovating in sourcing talent Acquire to gain scarce skillsets Work-study programs	McDonalds announced Alexa-enabled applications. Sprouts, and many others, use the Ally text-to-apply recruiting service. (Try it yourself, text "careers" to 1-480-646-4920) Muse connects employers and candidates in a consumer-marketing style. Talent Tech Labs tracks 1,400 start-ups in the pre-hire space (technology and analytics-related). Acquire companies to gain their specific skillsets, which would be too hard to build yourself Offer work-study programs that include a degree in a relevant field and some earnings, possibly in collaboration with universities and international locations	
Screen	Partner with startups for new forms of assessment to find "hidden" or previously overlooked talent	Pymetrics helps to assess applicants using AI and gamification to determine their best path in the company Catalyte uses AI to find people with potential for a role regardless of experience and trains them at no cost to the jobseeker. HackerRank helps assessing coding skills to find talent from non top tier schools	JPMORGAN CHASE & CO.
Select	Use video and AI interviews to drive greater scale	Embedding video interviews into campus recruiting drives greater scale (around 40% increase in interviewed candidates) and expand to new campuses L'Oréal introduced gamified assessments for recruitment, including asking candidates to play a marketing director, testing for innovation, communications, analysis and strategic skills	
Onboard	Leverage new technologies (incl. VR and AI) to get people up the productivity curve more quickly Youth employment accelerator	VR is used to create a truly immersive learning experiences. AI-powered learning programs can understand peoples learning styles and hang-ups to create newcomers who outperform people with several years of experience. Harambee offers a youth employment accelerator providing training and onboarding support	

Exhibit 85

A European bank followed the principle "zero lay-offs" -- reskilling Bank's workforce to its evolving strategy

% employees engaged in learning initiatives



2-7% of Bank's employees considered redundant to cover "business as usual" activities following acquisitions and digitization efforts

Instead of releasing employees, the Bank **took advantage of this extra- capacity to investigate possible new ventures and diversify its business**

So far, ~5 new ventures have been launched – both in financial and non-financial businesses

1. Financial and non-financial activities on top of traditional business perimeter

Note: redeployment lever also used in overlap with either upskilling or reskilling initiatives

Source: McKinsey People & Organizational Performance

Exhibit 86

As a result, the bank reskilled ~10K people and increased employee satisfaction score from 70% to 80%

~10k people displaced by technology changes and strategic shifts, yet regulation does not allow layoffs

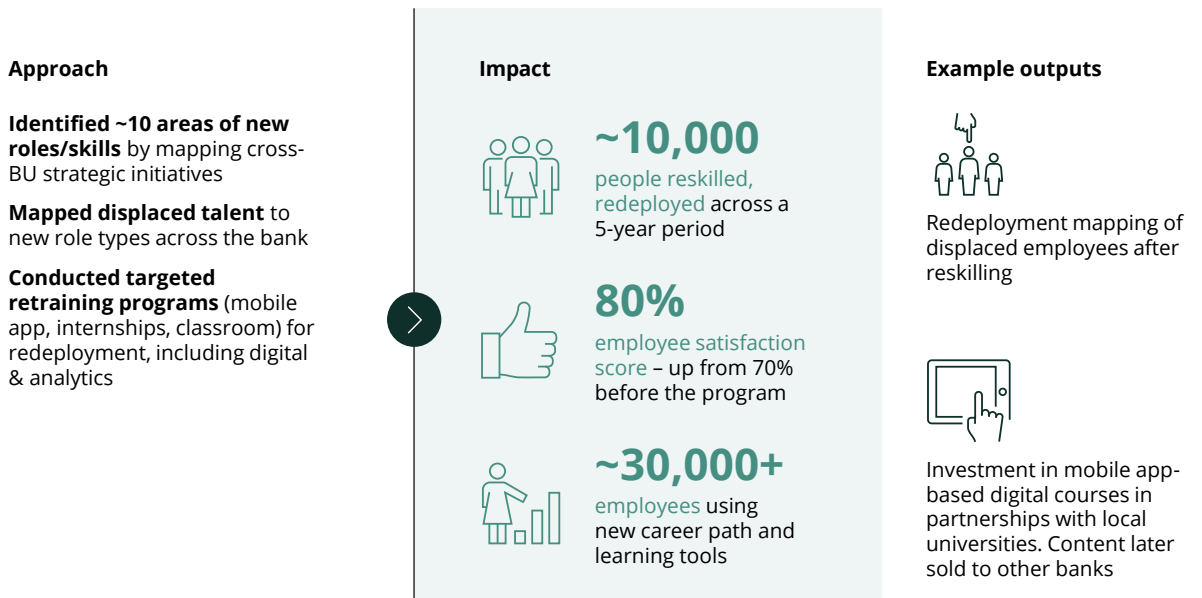


Exhibit 87

Potential stakeholders to help execute the priority initiatives to improve competitiveness and efficiency over the next 5 years

Building blocks	Potential solutions	Potential stakeholders
1: Foster “sustainability” financing to help Thailand meet its NCZ goals	<ul style="list-style-type: none"> Looking ahead, Bank of Thailand has constituted a working group to resolve ESG reporting standards and to consider incentives to support demand for sustainable finance. Further to such efforts underway, Thailand would need to: <ol style="list-style-type: none"> Clarify taxonomy on sustainable financing in Thailand, in sync with evolving regional and global definitions Foster setting up of dedicated sustainability/green funds (in partnership with Corporate Ventures) Setup a thriving voluntary carbon exchange in Thailand, to realize value from domestic (and potentially, regional) carbon assets 	<ul style="list-style-type: none"> SEC¹, SET², BOT³, TBA⁴, ThaiBMA⁵, TGO⁶, MoNRE⁷ MoF⁸, MoNRE, Funds MoF, SEC, SET, TGO, MoNRE
	<ul style="list-style-type: none"> Thailand is setting up a new National Pension fund, which aims to increase mandatory contributions by employers and employees; to further bridge the needs to support its aging population <ol style="list-style-type: none"> With holistic view of pension system, Thailand can consider increasing participation through <ul style="list-style-type: none"> For employed workers: Synchronize and increase contribution through National Pension Fund For transitional and informal workers: Align coverage with employed workers and enable smooth portability across schemes Consider increasing the caps on contributions and balancing tax-incentives Review investment policies of social security and provident funds for opportunities to increase investments capital markets; whilst balancing risk 	<ul style="list-style-type: none"> SSO⁹, MoI¹⁰, MoF, SEC, large corporates SSO, MoI, MoF, SEC
	<ul style="list-style-type: none"> Consider enhancing capital/financial support (e.g., through co-investments and credit risk guarantees) to nurture startups; and facilitate capability building and innovation through support for brining in the right talent / advisory Create active platforms (e.g., SET’s LIVE platform) and dealmaking databases (e.g., Angel-list) to create a market-place for pre-IPO fund raising 	<ul style="list-style-type: none"> SET, CMD¹¹, MoF, MoC¹², NIA¹³, OSMEP¹⁴ SET, TBA, Fintech association and other start-up associations, IB clubs, PE/VCs
4: Expand digital assets and regulated exchanges at the right time considering market development	<p>Thailand to consider opening up digital assets and exchanges, at the right time with the right oversight</p> <ol style="list-style-type: none"> Explore collaboration between public and private players (e.g., exchanges, banks, or a new entity) to launch market infrastructure based on digital ledger technology, e.g., Singapore’s Marketnode and Cobalt Strengthen and launch clear, up-to-date digital assets regulatory framework/guideline to enhance investor protection as well as proactively address new applications in digital assets market Explore further use cases of Digital Assets (e.g., wallet, rewards, gifts, crypto, NFT, real estate tokens, et c.) balancing risk and market readiness 	<ul style="list-style-type: none"> SEC, SET, BOT, TBA, IB clubs, AIMC¹⁵, ThaiBMA, Fintech association and other start-up associations
5: Improve financial literacy for Thais with financial education program	<ul style="list-style-type: none"> Develop the Financial Education Program as a National mandate 	<ul style="list-style-type: none"> MoF, MoE¹⁶, BoT, SEC
	<ul style="list-style-type: none"> Synchronize efforts of multiple public and private entities (e.g., Education Ministry, Schools, Universities, Corporates, SET, Securities Companies, etc) to deliver on financial education program for Thais 	<ul style="list-style-type: none"> MoF, MoE, BoT, TBA, TIA¹⁷, ASCO¹⁸, ThaiBMA, SET, SEC, AIMC, schools, universities

1. Securities and Exchange Commission 2. Stock Exchange of Thailand 3. Bank of Thailand 4. Thai Bankers' Association 5. Thai Bond Market Association 6. Thailand Greenhouse Gas Management Organization 7. Ministry of Natural Resources and Environment 8. Ministry of Finance 9. Social Security Office 10. Ministry of Interior 11. Capital Market Development Fund 12. Ministry of Commerce 13. National Innovation Agency 14. Office of SMEs Promotion 15. Association of Investment Management Companies 16. Ministry of Education 17. Thailand Innovation Awards 18. Association of Securities Companies

Building blocks	Potential solutions	Potential stakeholders
6: Simplify retail investors' journey	<p>Looking ahead, Thai government is reviewing requirements for KYC, CDD, and suitability tests. Additionally, e-KYC leveraging NDID infrastructure is introducing to simplify onboarding process. In-line with these initiatives, Thailand can increase retail investor participation through:</p> <p>6.1 Streamlining / reducing pain points in the retail investor journey: e.g., enhance TSD¹⁹ to become Thailand's centralized depository account covering listed/non-listed, scripless/non-scripless asset classes for e-KYC and consolidated statement</p> <p>6.2 Consider enabling digital first securities players by streamlining requirements for digital KYC and trading; adequately balancing risks</p>	<ul style="list-style-type: none"> TSD, MoI, BOT, TBA, AIMC, ThaiBMA, SET, SEC, and financial companies (e.g., banks, securities company, AMs, start-ups) BOT, SEC, and financial companies (e.g., banks, securities companies, AMs, start-ups)
	<p>7: Broaden long-term domestic institutional investors</p> <p>7.1 Build robust bond ecosystem:</p> <ol style="list-style-type: none"> 1. Launch new products (e.g., explore building long-tenured (20+ years) corporate bond markets, deepen syndicated loan markets which will reduce reliance on bank's balance sheet and activate bond market activities, offer hedging instruments (e.g., CDS)/ monoline insurance, and provide distressed bond management products/services 2. Consider conducive regulations (e.g., provide clear guideline on bankruptcy laws, regulations and process) 3. Consider setting up corporate repo market 4. Adopt digitization and invest in data infrastructure to consolidate bond-related data <p>7.2 Diversify institutional investment in other asset classes through capability building of asset managers</p> <p>7.3 Encourage and educate other types of institutional investors (e.g., university endowment) to invest in capital markets</p>	<ul style="list-style-type: none"> ThaiBMA, SEC, issuing companies and institutional investors ThaiBMA, SEC, SET, AIMC institutional investors managers ThaiBMA, SEC, SET, MoE Universities
8: Attract long-term foreign institutional investors by increasing Thailand's visibility and accessibility internationally	<p>8.1 Review MSCI's market accessibility metrics to increase competitiveness amongst regional markets</p> <p>8.2 Build and communicate value proposition of the capital markets to attract investors. One potential is to offer full range of capital markets products on securities of 'new economy' sectors in sync with national priorities²⁰ – high technology, focusing mainly on R&D, the food science sector, and S-curve industries</p>	<ul style="list-style-type: none"> SEC, SET, FETCO SEC, SET, FETCO, IB club, TBA, MoFA²¹, MoC
	<p>9: Create centralized database to unlock data analytics</p> <p>9.1 Enhance capital markets data reporting currently unavailable or unstructured (e.g., OTC trading data) to improve market transparency</p> <p>9.2 Create a single source of capital market related data, which aggregates data from several sources (e.g., SET, central bank, ThaiBMA, industry associations) to increase efficiency and unlock further insights using analytical capabilities</p>	<ul style="list-style-type: none"> MoI, BOT, TBA, AIMC, ThaiBMA, SET, SEC, TSD
10: Attract and nurture talent	<p>10.1 Upskill/reskill talent with training/capability building roadmap along all stages of employee journey</p> <p>10.2 Leverage technology to attract and recruit new-age talent with 'Demand, Source and Select' approach</p> <p>10.3 Create engaging employee's experience</p> <p>10.4 Arrange orchestrated effort among public and private entities (e.g., schools, OVEC²², universities, corporates) with certificate system for the public on the topics relevant to Thailand's focus industries</p>	<ul style="list-style-type: none"> Players and regulators in capital markets MoE, schools, OVEC, universities, corporates

19. Thailand Securities Depository 20. The new BOI strategic investment plan is scheduled for implementation in early 2023 aiming to upgrade Thailand in terms of high technology, focusing mainly on R&D, the food science sector, and S-curve industries (e.g., robotics industry, aviation and logistics industry, biofuels and biochemical industry, digitals industry, and medicals hub industry) 21. Ministry of Foreign Affairs 22. Office of Vocational Education and Commission

Taken together, the ten building blocks create a blueprint for the continued development of Thai capital markets as a key enabler of economic growth. Through investment, education, and innovation, Thai capital markets can become a global leader in efficiency and inclusiveness to drive Thailand's prosperity. This has the potential to provide all market participants with the finance, support, and inspiration they need to plan for their future. The markets can help Thailand address demographic challenges - all while expanding financial inclusion, nurturing economic ecosystems, and establishing the conditions that will create growth and prosperity in the years ahead.



