

Benchmarking Bonds in the ASEAN+3: From LIBOR to Eternity?¹

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“The first step towards getting somewhere is to decide that you are not going to stay where you are.”

J.P. Morgan
American banker, 1837–1913

I. Introduction

1. The London Interbank Offered Rate (LIBOR) has been used extensively in financial markets but will be discontinued in due course. Since the 1980s, LIBOR has served as both, a reference rate (to establish terms of agreement) and a benchmark rate (as a relative performance measure) (Hou and Skeie 2014). It has been used extensively in pricing loans, mortgages, derivatives, and other financial instruments. At its peak, more than USD 370 trillion worth of contracts were referenced to LIBOR (Cantwell and others 2018). The USD LIBOR will be discontinued in phases: 1-week and 2-month USD LIBOR on December 31, 2021; overnight and 12-month USD LIBOR on June 30, 2023; 1-month, 3-month, and 6-month USD LIBOR will be deemed “not representative” on June 30, 2023, but a synthetic LIBOR for these tenors will be published for another ten years.²

2. **With the imminent exit of LIBOR, financial markets should be transitioning to newer and more robust benchmark rates.** Although most of the US dollar-denominated bonds issued in the ASEAN+3 region are fixed coupon bonds, there remains a non-negligible share of floating rate bonds in the market, in the form of US dollar Floating Rate Notes (hereafter “FRNs”)—the latter represents 16 percent of the total amount outstanding (Figure 1) and 19.5 percent by number of issues.³ A breakdown by economy reveals that the share of FRNs is much larger in Japan, Korea, Singapore, Thailand, and Hong Kong, China (hereafter “Hong Kong”). In these markets, banks and other financial institutions, which typically issue a higher share of FRNs for risk management purposes, are the dominant issuers (Figure 2). A deeper dive reveals that LIBOR and US Treasury (UST) -indexed bonds dominate FRNs in the region (Figure 3). The other benchmarks are US Interest Rate

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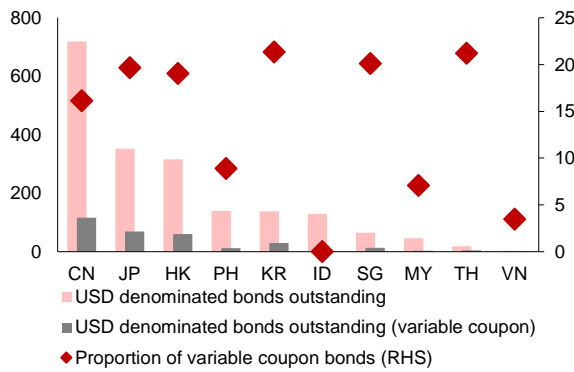
² See PWC, <https://www.pwc.com/sg/en/financial-services/reference-rate-reform-singapore/libor-cessation.html>.

³ All data used in this note are as of June 30, 2021.

Swaps (hereafter “US Swaps”), the Secured Overnight Financing Rate (SOFR) and the Effective Fed Fund Rate (EFFR).

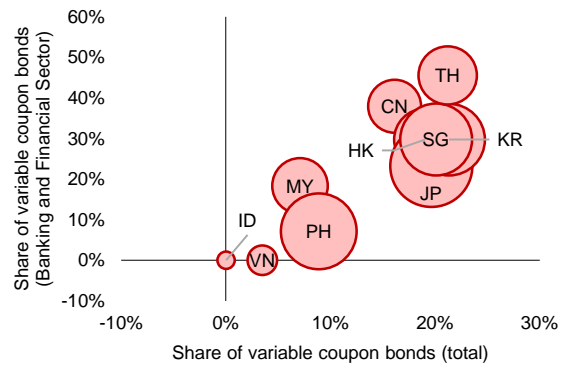
3. **This note analyzes developments in the US dollar-denominated variable coupon bond markets in the ASEAN+3 region to gauge the progress in LIBOR transition.** It considers the alternatives that have been used by regional bond issuers to index their floating rate bonds, and analyzes the factors that make for an appropriate LIBOR replacement, to assess possible viable options going forward. The LIBOR transition also carries other implications for regional markets through reference rates derived from USD LIBOR (e.g. Thai baht Interest Rate Fixing, Singapore Swap Offer Rate) and other Interbank Offered Rates in the region that are calculated by a methodology similar to USD LIBOR (e.g., HIBOR, TIBOR, SIBOR). However, this note will focus specifically on the transition of US dollar denominated FRNs issued by regional entities from USD LIBOR.

Figure 1. Selected ASEAN+3: Size of US Dollar-Denominated FRN Market
(Billions of US dollars; percent)



Sources: Cbonds; and author’s calculations.

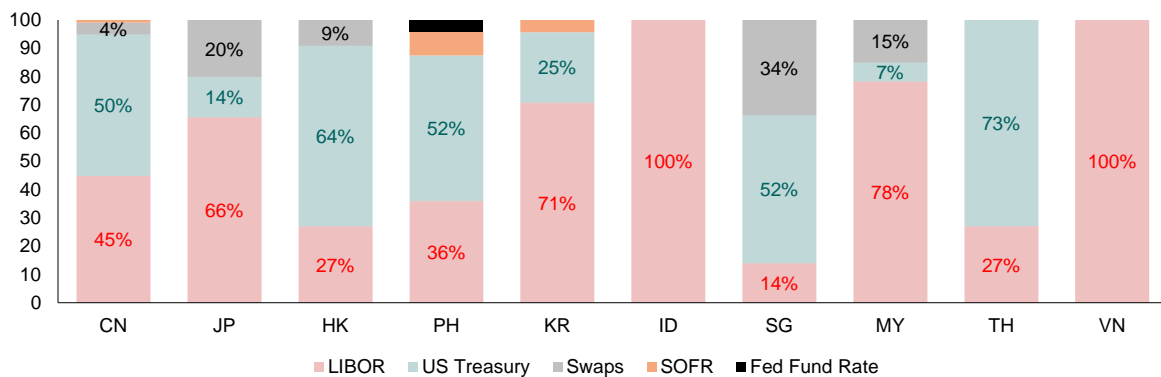
Figure 2. Selected ASEAN+3: Dominance of Financial Sector in US Dollar-Denominated FRN Market
(Percent)



Sources: Cbonds; and author’s calculations.

Note: Size of the bubble denotes the financial sector bonds (both fixed and floating) as a percentage of total bonds outstanding.

Figure 3. Selected ASEAN+3: Share of Benchmarks in FRN Markets
(Percent)



Sources: Cbonds; and author’s calculations.

Note: CN = China; JP = Japan; HK = Hong Kong; PH = Philippines; KR = Korea; ID = Indonesia; SG = Singapore; MY = Malaysia; TH = Thailand; VN = Vietnam.

II. Benchmark Options

4. **USD LIBOR is the most widely used benchmark among the region’s US dollar-denominated variable coupon bonds, and there are few signs of transitioning at this point.** Indeed, the evidence suggests strong reluctance among issuers to move away from the LIBOR “standard”:

- Over the past two years, 42 percent of US dollar-denominated variable coupon bonds issued in the region have continued to be indexed to LIBOR, second only to US treasury yields (54 percent). On the other hand, only 2.7 percent of bonds have been indexed to a potential LIBOR replacement, the SOFR (overnight).
- Almost 39 percent of LIBOR-benchmarked bonds mature after June 30, 2023—the date after which the rate will no longer be a “representative rate.” The proportion increases to 81 percent if the original targeted date of LIBOR discontinuation of December 31, 2021—which was revised to June 30, 2023 on March 5, 2021—is the deadline.

5. **Although a popular benchmark, the use of UST yields for US dollar-denominated FRNs is generally limited to very specific types of bonds.** Bonds indexed to this instrument are the second most common US dollar-denominated FRNs in the region. However, most of these bonds (82 percent) are perpetual (Table 1). The weighted average (by amount outstanding) of residual maturities for the remaining FRNs is almost 12-years compared to the average residual maturity of LIBOR-indexed FRNs of just 2-years. This evidence suggests that UST yields are largely used as benchmarks for ultra-long tenor bonds. In addition, most of these bonds are fix-to-float coupon bonds—they initially pay fixed coupons but after a pre-determined term, start paying coupons based on UST yields. It is, in a way, an approximate method to align the coupon payments in the distant future to the then existing market conditions.

Table 1. ASEAN+3: Key Statistics of Variable Coupon Bonds

Instrument	Amount Outstanding		Issues outstanding		Amount lissued since July 1, 2019		Amount Maturing after June 30, 2023		Amount of Perpetual Bonds		Average Maturity of Non-Perpetual Years
	Billions of US dollars (a)	Percent of total	Number of issues	Percent of total	Billions of US dollars	Percent of total	Billions of US dollars	Percent of (a)	Billions of US dollars	Percent of (a)	
LIBOR	144.6	47.0	545.0	68.1	52.9	42.3	56.0	38.7	6.2	4.3	2.2
US Treasury	130.2	42.3	196.0	24.5	67.6	54.1	130.0	99.9	106.8	82.0	11.8
US Swaps	29.3	9.5	46.0	5.8	1.1	0.9	29.3	100.0	18.3	62.6	12.4
SOFR	3.4	1.1	12.0	1.5	3.4	2.7	1.5	44.3	0.0	0.0	1.9
Fed Funds Rate	0.5	0.2	1.0	0.1	0.0	0.0	0.5	100.0	0.0	0.0	2.9
Total	307.9	100.0	800.0	100.0	125.0	100.0	217.3	70.6	131.3	42.7	

Sources: Cbonds; and author’s calculations.

Note: The total refers to the amount of US dollar-denominated variable coupon bonds outstanding issued by entities domiciled in the ASEAN+3 region.

6. **US Swaps are the third most common benchmark, but similar to UST yields, find application with longer tenor bonds.** The former are derivatives based on 3-month LIBOR. A majority of US Swaps-indexed FRNs (63 percent) are perpetual and the weighted average maturity of the non-perpetual bonds is more than 12-years. Most of these bonds also offer fix-to-float coupons. However, the risk of these rates being deemed “not

representative” is low as the Alternate Reference Rates Committee (ARRC) and International Swaps and Derivatives Association (ISDA) are working on the Fallback Formula for US Swaps to transition from LIBOR to SOFR (ARRC 2021a).

7. **Few corporate bonds in the region are benchmarked to SOFR.** The ARRC has recommended that SOFR (overnight) be used as the fallback but regional firms have been slow to adopt it as a benchmark rate. Only 1 percent of outstanding variable coupon bonds are benchmarked to SOFR and all of these were issued in past two years, representing a meagre 2.7 percent of the variable coupon bonds issued during this period. The transition is in sharp contrast to the corporates in United States, where SOFR-benchmarked corporate bonds make up 44 percent of all variable coupon US dollar bonds issued during the past couple of years. The US authorities have discouraged market participants from using LIBOR-based contracts going forward and have suggested using the period up to June 2023 to smooth the transition away from LIBOR.

III. Rationale for Selecting SOFR

8. **The ARRC has provided comprehensive guidelines for LIBOR replacements.** Considerations should include: (1) benchmark quality—the integrity and continuity of the rate based on various parameters (such as liquidity, transaction volumes) of the underlying market; (2) methodological quality—compliance with IOSCO Principles for soundness and robustness (such as standardization, transparency and availability of historical data); (3) Accountability—evidence of a process to ensure compliance with International Organization of Securities Commissions (IOSCO) principles; (4) governance—a government structure that promotes integrity of the benchmark; and (5) ease of implementation—ease of transitioning to the new rate from LIBOR (ARRC 2018).

9. **Based on the ARRC’s proposed criteria, it has identified SOFR (overnight) as the most appropriate rate to use in US dollar derivative and other financial contracts, and rejected other alternatives:**

- The SOFR (overnight) performs well in most of the criteria laid out by the ARRC. However, the Committee acknowledges that the transition to SOFR for cash products (such as bonds) could be difficult to implement given its backward looking nature, leading to the development of the term SOFR to facilitate transition (ARRC 2021c).
- The ARRC finds that even though UST yields score highly against several of its criteria, they are less representative of measures of private-sector financial and non-financial corporate borrowing rates. The inference is that the US dollar funding stresses experienced in international markets may not be well captured by UST yields, likely because of the safe-haven characteristics of the instrument.
- While the ARRC does not consider US Swaps (indexed to 3-month LIBOR rates), it does acknowledge that SOFR could be easily incorporated into US Swaps and other derivative instruments. That said, the fallback methodology for US Swaps is under consideration.⁴

⁴ See ICE, <https://www.theice.com/iba/ice-swap-rate>.

- Meanwhile, transactions in the EFFR are mostly arbitrage trades over the US Federal Reserve's Interest Over Excess Reserves (IOER) and hence deemed unsuitable by the ARRC.

10. **Beyond the ARRC criteria, certain quantitative metrics are considered in evaluating the potential benchmarks.** These factors include the volatility and safe haven characteristics of potential benchmark rates. An interest rate that is highly volatile is undesirable, given its implications for the coupon on the reset date, which could be of major concern on days when the US Federal Reserve adjusts its policy rates or when liquidity fluctuates (for example, month-, quarter-, or year-end). Separately, the safe haven characteristics of a benchmark bond could lead to a lower coupon payment when risk sentiment is poor, which would be counter-intuitive, given that it would translate to a discount on days when the risk premia are otherwise high.

11. **The aforementioned metrics are calculated for a range of existing and potential benchmark rates by comparing the behavior of their 3- and 6-month tenors.** These tenors are widely applied in indexing global variable coupon bonds, and the use of identical tenors across possible benchmarks would facilitate comparison. Apart from the outgoing LIBOR and other existing benchmarks used in regional markets (UST; SOFR–compounded; US Swaps; EFFR–compounded), those adopted in US corporate bond markets (Prime Rate–compounded) and a potential LIBOR replacement (SOFR OIS, which represents a *de facto* proxy for term SOFR that is currently not officially published) are included in the sample.

12. **The comparisons suggest that the overnight rates, compounded over 3- and 6-months, are less volatile and also uncorrelated with risk proxies.** Daily volatility is lowest for rates that are retrospective, that is, those that use daily compounding for the period under consideration. They include the SOFR (overnight), Prime Rate, and EFFR (Table 2). These rates also are fairly independent of risk sentiment on any particular day. However, despite these advantages and the ARRC guidelines, the move from LIBOR to SOFR has been limited in ASEAN+3 bond markets.

IV. Understanding the Inertia

13. **The resistance to moving away from LIBOR may be attributed to long-held familiarity with the benchmark.** Issuers and investors, along with the systems they use, are accustomed to using LIBOR, and any shift to new benchmarks would require thorough research into the associated products and risks, as well as changes to existing systems.⁵ Characteristics of LIBOR that appeal to issuers and investors include availability of forward-looking term rates (that is, the rate is known at start of the tenor), a selection of multiple tenors, and the ability of the rate to take into account credit and liquidity risks.

14. **The market is still adjusting to SOFR, which has a mechanism that is different to LIBOR.** The former is an overnight rate. The effective rate for SOFR is only known retrospectively—that is, after the period in consideration has ended—and necessitates

⁵ See Linklaters, <https://www.linklaters.com/en/insights/publications/asia-news/asia-capital-markets/2020/interest-rate-benchmark-reform-in-the-asia-bond-market>.

additional calculations.⁶ It has introduced confusion among issuers with regard to the calculation methodology. Similarly, approaches in determining the observation period and payment dates have differed across issuers. Consequently, the Federal Reserve Bank of New York and other authorities are working toward standardizing the calculations and conventions.

Table 2. ASEAN+3: Characteristics of Variable Coupon Bonds

Metric		Benchmark Rates						
		LIBOR	UST	US Swaps	SOFR (OIS)	SOFR (Daily Compound)	EFFR (Daily Compound)	Prime Rate (Daily Compound)
3-month Tenor								
Measures of volatility*	Realised volatility (percentage point)	0.199	0.295	0.209	0.199	0.085	0.076	0.047
	Maximum 1-day rise (percentage point)	0.163	0.140	0.166	0.129	0.031	0.016	0.006
	Maximum 1-day fall (percentage point)	-0.314	-0.230	-0.322	-0.291	-0.068	-0.051	-0.017
Safe Haven characteristics*	Correlation with risk proxy (percent)	0.039	-0.130	-0.026	-0.179	-0.050	0.006	0.016
	Sensitivity to risk proxy	0.011	-0.057	-0.008	-0.053	-0.006	0.001	0.001
6-month Tenor								
Measures of volatility*	Realised volatility (percentage point)	0.183	0.273	0.243	0.220	0.063	0.059	0.036
	Maximum 1-day rise (percentage point)	0.086	0.160	0.157	0.115	0.016	0.010	0.003
	Maximum 1-day fall (percentage point)	-0.263	-0.220	-0.192	-0.300	-0.033	-0.034	-0.011
Safe Haven characteristics*	Correlation with risk proxy (percent)	0.015	-0.144	-0.016	-0.249	-0.019	-0.004	0.009
	Sensitivity to risk proxy	0.004	-0.060	-0.006	-0.084	-0.002	0.000	0.000

Sources: Cbonds; and author's estimates.

Note: All statistics are calculated over a period of ten years. The risk proxy used for the calculation of correlation and sensitivity is the Citi Macro Risk Index.

15. Issuers are taking a wait-and-see approach and expect the relevant authorities to come up with comprehensive procedures and guidelines for fallback benchmark rates. Most of the US dollar-denominated FRNs in the ASEAN+3 region do not yet have a clearly defined fallback mechanism. However, issuers may wait for guidelines from relevant authorities to transition their LIBOR-indexed debt to the new benchmark rate instead of proactively formalizing these fallback procedures. And, even if guidelines are made available soon, issuers may choose to delay the transition until the benchmark event (that is, when the cessation of benchmark publication or the benchmark is rendered “not representative”) is triggered.

⁶ Given the backward-looking nature of SOFR (overnight), investors believe that term SOFR would be a better replacement for the LIBOR (<https://www.investmentbank.barclays.com/our-insights/libor-transition-survey.html>). However, unlike LIBOR, term SOFR may exhibit safe haven characteristics, given that it is a risk-free rate, and the term rates will depend solely on market expectations of the future path of SOFR (overnight). Hence, a risk-negative event may lead to markets pricing in a monetary easing and cause the term SOFR to fall.

V. What Next?

16. **There are a few possible benchmarks for corporates who have LIBOR-denominated FRNs maturing after June 30, 2023.** The most likely outcome is that the issuers (in agreement with major bond investors) use the ARRC framework for transitioning from LIBOR to a new benchmark interest rate, such as the SOFR (overnight) (ARRC 2021b). On July 29, 2021, the ARRC announced its support for term SOFR as a fallback rate for areas where adoption of SOFR (overnight) has proven to be difficult (ARRC 2021c). This decision should facilitate the transition of corporate bonds indexed to LIBOR to term SOFR, and hence a smooth shift to a new benchmark rate by June 2023 seems to be the most likely outcome. As a side note, although the ARRC's support for term SOFR is for legacy contracts, it may also encourage bond issuers to use the instrument as a benchmark for new bond issuances. The term rate helps address concerns about the retrospective nature of SOFR, which has been one of the reasons for slow adoption of SOFR (overnight).

17. **However, there is a small probability that a consensus on fallback options/procedures may not be reached in time if either party—issuer or investor—has concerns.** Issuers would still have the option of swapping LIBOR-indexed FRNs with either fixed rate bonds or FRNs indexed to a new benchmark. In the least likely scenario, the FRNs may be stuck with the legacy of LIBOR and, depending on any agreement between issuers and investors, may either apply the “not representative” LIBOR or just the last reading of “representative” LIBOR—the latter effectively making it a fixed coupon bond. This outcome would impact the technical characteristics of the affected bonds, such as their duration and risk profiles, which could trigger portfolio calibrations by investors and lead to some price adjustments to reflect the change in future cashflows.

18. **Corporates may also consider non-recommended rates for issuing FRNs.** In the United States, corporates have started using rates compiled by private enterprises, such as the AMERIBOR, Bloomberg Short Term Bank Yield Index, and ICE Bank Yield Index (Alloway 2021). It is likely that issuers in the ASEAN+3 region may also be tempted to use some of these rates as benchmarks if there is insufficient clarity on the transition to SOFR (or any other benchmark). The resulting fragmentation of markets could create liquidity risks for FRNs indexed to the less common benchmarks. However, it may not be a major cause for concern as prices would likely adjust in order to account for these risks. That said, ARRC's support for term SOFR has also significantly reduced the probability of this scenario playing out.

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