

Financial Benchmarks India Private Ltd.

Market Consultation Note

August 25, 2025

As part of its ongoing initiative to enhance the range of benchmarks published by FBIL, FBIL has developed draft computation methodologies for the following benchmarks:

1. [Reference Rates for AED/INR and IDR/INR](#), and
2. [Net Overnight Open Position \(NOOP\)](#)

With a view to expand the bouquet of reference rates published by FBIL, FBIL is devising computation methodology for reference rates of AED/INR and IDR/INR. This initiative follows a preliminary analysis of market data to understand trading dynamics and liquidity conditions in these currency pairs.

Further, the NOOP benchmark, currently published daily by FEDAI, serves as a reference rate for USD/INR to ascertain the net foreign exchange exposure of the user. FBIL has developed a methodology for administering this rate, with a view to ensuring continuity and transparency in its computation and publication.

The detailed methodologies are linked for your kind perusal. You are invited to share your feedback and suggestions on the proposed methodologies by **September 10, 2025**, at [**research@fbil.org.in**](mailto:research@fbil.org.in) and [**fbilresearch@fbil.org.in**](mailto:fbilresearch@fbil.org.in)

We look forward to your valuable inputs.

MD & CEO

1. Computation of Reference Rate – INR with UAE Dirham (AED) and Indonesian Rupiah (IDR)

With a view to expand the bouquet of reference rates published by FBIL, FBIL is devising a computation methodology for the following reference rates - AED/INR and IDR/INR.

About the Currencies

United Arab Emirates Dirham (AED)

The UAE Dirham has been pegged to the US Dollar since 1997 at a fixed exchange rate of 1 USD = 3.6725 AED.

Table-1: UAE Market hours

United Arab Emirates Dirham (AED)				
Market Timings	GST		IST	
	Start	End	Start	End
		10:00:00	14:45:00	11:30:00

Note: GST refers to Gulf Standard Time (GMT +4)

Indonesian Rupiah (IDR)

Rupiah is a freely convertible currency.

Table-2: Indonesian Market hours

Indonesian Rupiah (IDR)					
Market Timings	Session 1		Break	Session 2	
	Start	End		Start	End
WIB	09:00:00	12:00:00		13:30:00	15:50:00
IST	07:30:00	10:30:00		12:00:00	14:20:00

Note: WIB refers to Western Indonesian Time (GMT +7)

Proposed Methodology for Computation of AED/INR and IDR/INR Reference Rates-

FBIL analysed the feasibility of computing these rates in a manner similar to that of the existing cross currency rates published by FBIL- EURO/INR, GBP/INR and JPY/INR. Hence, for the calculation of AED/INR and IDR/INR Reference Rates, the ruling spot cross currency rates for USD/AED and USD/IDR has been obtained from Refinitiv electronic platform. For the purpose of deriving the cross rate, the FBIL published USD/INR Rate has been used.

For the purpose of developing a computation methodology for the AED/INR and IDR/INR reference rates, analyses were carried out across the following key dimensions -

1. Identification of optimal time window
2. Determination of threshold limits
3. Computation methodology
4. Development of a fallback mechanism

1. Identification of optimal time window

In order to enable the use of FBIL published USD/INR reference rate, FBIL gave preference to the existing one hour window of 11:30 AM to 12:30 PM used for sourcing the cross currency rates from the Refinitiv electronic platform. However, to ensure data sufficiency, the adjacent windows were also analysed.

Review Period: June 25, 2024, to June 23, 2025, i.e. 265 working days

Table 3: Distribution of Daily Rate availability across the Time Windows

AED	09:30 to 10:30	10:30 to 11:30	11:30 to 12:30	12:30 to 13:30	13:30 to 14:30	09:00 to 12:30
Minimum	0	0	0	0	0	1
Maximum	118	120	118	120	120	298
Average	18	18	23	37	44	43
Median	4	4	8	30	60	8
No Quotes	25	9	11	20	20	0

IDR	09:30 to 10:30	10:30 to 11:30	11:30 to 12:30	12:30 to 13:30	13:30 to 14:30	09:00 to 12:30
Minimum	1	0	0	0	0	5
Maximum	38	28	50	46	2	86
Average	13	6	16	19	0	30
Median	13	5	16	18	0	29
No Quotes	0	9	2	1	231	0

Source: Refinitiv

As Jakarta is 1½ hours ahead of India, IDR market has good number of rates available in the existing one hour window of 11:30 AM to 12:30 PM. On the other hand, even though Dirham market is 1½ hours behind India, as seen from the table above, it still has adequate number of rates available in the preferred window.

2. Determination of threshold limits

Given the low liquidity in these currency markets, following the existing norm of having no threshold for the cross currency will not be prudent. Hence, FBIL analysed three options for threshold setting, viz. a minimum of 2, 3 or 5 rates of the cross currencies. The threshold has been analysed for two time windows:

- a) 1 hour window between 11:30 AM to 12:30 PM IST
- b) A longer 3.5 hours window from 09:00 AM to 12:30 PM IST

Table 4.1: Number of Days Meeting the Minimum Threshold in AED

Threshold options	11:30 AM to 12:30 PM	09:00 AM to 12:30 PM
Minimum 2 rates	227	262
Minimum 3 rates	204	259
Minimum 5 rates	164	250
Total Working Days: 264		

For a threshold of minimum 2 rates, there are two days in the span of 264 working days when rates could not be obtained even in the longer time window starting at 09:00 AM. These days are June 25, 2024, and Dec 13, 2024.

Table 4.2: Number of Days Meeting the Minimum Threshold in IDR

Threshold options	11:30 AM to 12:30 PM	09:00 AM to 12:30 PM
Minimum 2 rates	244	247
Minimum 3 rates	243	247
Minimum 5 rates	237	247
Total Working Days: 247		

It was observed that the IDR market has a minimum of 6 rates available in the longer time window starting at 09:00 AM on a daily basis, during the review period. Hence, it could easily meet the threshold criteria in all the given scenarios.

3. Computation methodology

- For calculation of AED/INR and IDR/INR Reference Rates, the ruling spot cross currency rates for AED/USD and USD/IDR will be obtained from the Refinitiv electronic platform.
- All the cross-currency rates will be taken from 11.30 AM to 12.30 PM time window. This will be done by obtaining the closing prices of each cross-currency pair as given in the one-minute charts over the 1-hour time period, from Refinitiv platform.
- The mean of the closing prices, so obtained, will be crossed with the FBIL USD/INR Reference Rate, of the day, to calculate the AED/INR and IDR/INR Reference Rates.
- In case of non-availability of cross-currency rates in the above-mentioned 1 hour window, for each currency pair, the average of the rates available in the 1-minute chart of the 09:00 AM to 12:30 PM time window shall be considered.

The following table outlines the percentage of days on which rates were sourced from the respective time windows, based on the sequence mentioned above.

Table 5: Rate Availability Across Time Windows (threshold - Min 2 rates)

AED	(% of Days)
Quotes sourced from 11:30 to 12:30 window	86.31%
Quotes sourced from 09:00 to 12:30 window	99.62%

No Quotes available	0.38%
Total working Days	264
IDR	
Quotes sourced from 11:30 to 12:30 window	98.79%
Quotes sourced from 09:00 to 12:30 window	100.00%
No Quotes available	0.00%
Total working Days	247

4. Development of a fallback mechanism

In case no USD cross-currency rates for AED and IDR are available across all specified time windows, and the corresponding INR cross-currency rates are not possible to be computed using the foregoing steps, the following fallback procedure will be applied to determine the respective reference rates.

In case of unavailability of the ruling spot cross currency rates for AED/USD or USD/IDR in the Refinitiv platform, the spot rate of the cross currency, used in the previous day's computation, will be used. This rate will be crossed with the FBIL USD/INR Reference Rate of the current day. This will ensure that any impact of the USD movement in the market, from the previous day to the current day, is reflected in the AED/INR and IDR/INR rate vide the USD/INR rate of the current day.

Table 6A: Dirham Market - Working Days and Holidays

AED	
AED Working Days (From June 25, 2024, to July 23, 2025)	264
AED Holidays (Only when no rates were available on Refinitiv)	1
Total FBIL Working Days (Mumbai Business Days)	265

On certain days when the AED market was closed, the USD cross rates were still available and were hence used in the computation.

Table 6B: Rupiah Market - Working Days and Holidays

IDR	
IDR Working Days (Between June 25, 2024, to July 23, 2025)	247
IDR Holiday (Apart from Mumbai holidays, Saturday and Sunday)	18
Total FBIL Working Days (Mumbai Business Days)	265

Table 7: Distribution of Days When Threshold was met within each time Window

Final summary of days on which rates could be computed, following the methodology sequence and fallback provisions.

Dirham		
Methodology sequence	Number of Days	% of 265 working days
1 hour	227	85.66%
3.5 hours	35	98.87%
Fallback	3	100.00%
Rupiah		
Methodology sequence	Number of Days	% of 265 working days
1 hour	244	92.08%
3.5 hours	3	93.21%
Fallback	18	100.00%

Concluding Remarks:

- The Reference Rates in respect of AED will be published for 1 unit of AED and the Reference Rate in respect of IDR will be published for 10,000 units of IDR.
- AED/INR and IDR/INR Reference Rates will be published up to 4 decimal places.
- The FBIL Reference Rates will be published at around 1 PM on all business days, i.e. excluding Saturday, Sunday and bank holidays in Mumbai.

Proposed Methodology:

Keeping the above in view, it is proposed that FBIL may publish the AED/INR and IDR/INR Reference Rates using the following methodology-

- The ruling spot cross currency rates for AED/USD and USD/IDR will be taken between the 11.30 AM to 12.30 PM time window, from Refinitiv platform. This will be done by obtaining the closing prices of each cross-currency pair as given in the one-minute charts over the 1-hour time period.
- A simple mean of the closing prices so obtained, will be crossed with the FBIL USD/INR Reference Rate of the same day.
- In case of non-availability of cross-currency rates in the above-mentioned 1 hour window, for each currency pair, the average of the rates available in the 1-minute chart between the 09:00 AM to 12:30 PM time window shall be considered.

- The Threshold will be a minimum of 2 rates each of AED/USD and IDR/USD.
- **Outlier Criteria:** Given the illiquidity in the market, no outlier detection mechanism is proposed. This approach aligns with the existing methodology adopted for the FBIL's cross-currency rates.
- **Fallback:** In the absence of the USD cross-currency rates for AED or IDR during the specified time windows, the cross-currency rate used in the previous day's computation will be used. And for the purpose of crossing, the FBIL USD/INR Reference Rate published on the current day will be used.
- **Local Market Holidays** On days when local currency markets observe holidays, the standard methodology will be applied if sufficient rates are available. Only in case of non-availability of data, the fallback mechanism will be applied.
- **Publication:** The AED/INR Reference Rate (for 1 unit of AED) and IDR/INR Reference Rate (for 10,000 units of IDR) will be published up to four decimal places, by 1 PM on all business days, i.e. excluding Saturday, Sunday and bank holidays in Mumbai.

2. Proposed Methodology for USD/INR Spot Rates for Net Overnight Open Position (NOOP)

The Net Overnight Open Position (NOOP) benchmark, published daily by the Foreign Exchange Dealers Association of India (FEDAI) serves as the standard reference rate for USD/INR used by banks to calculate their net foreign exchange exposure, at the close of each trading day.

Currently the USD/INR Spot rate for NOOP is sourced from Refinitiv at market closing time, i.e. 3.30 PM (IST). The average (Mid-rate) of last Bid and Ask quotes is obtained from Refinitiv and the NOOP computed up to the 4th decimal place and published 15-20 minutes after market closing time.

FBIL has now developed a methodology for computation of NOOP, as under.

The following aspects were looked into for designing the methodology:

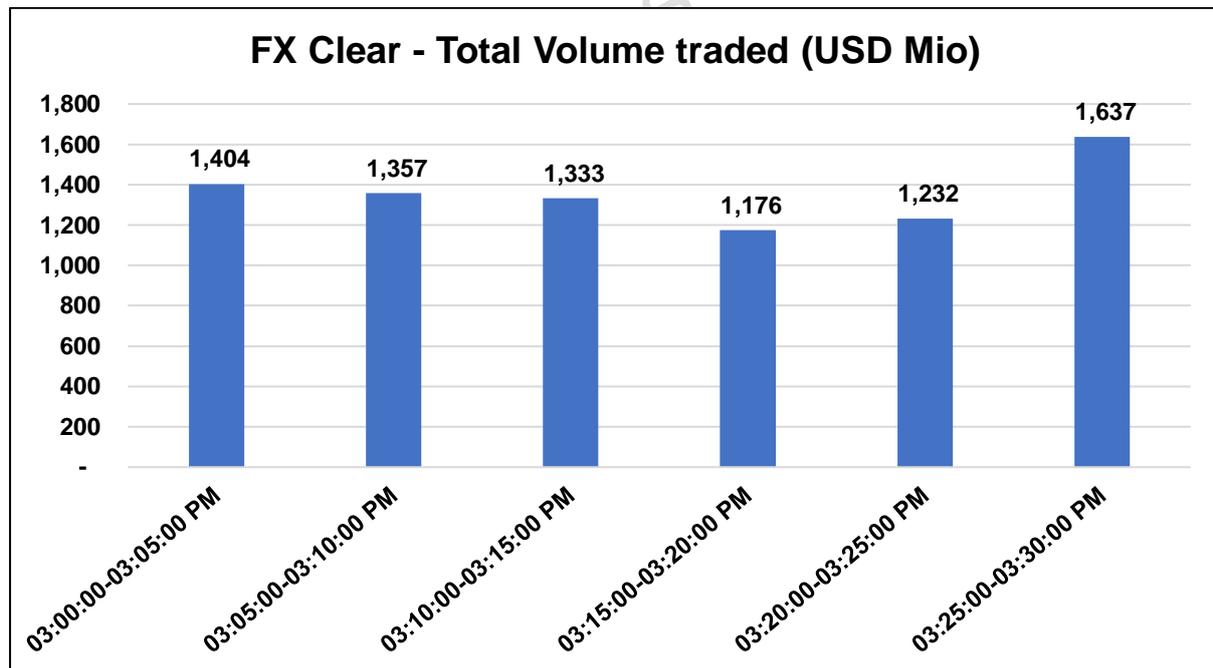
- A. Data collection time.
- B. Data sufficiency, in FX Clear and Refinitiv platforms, in order to ascertain if it would be possible to Compute the rates using traded data instead of quotes.
- C. NOOP Computation Methodology – Volume weighted average with +/-2 SD outlier detection criteria.
- D. Fallback mechanism.

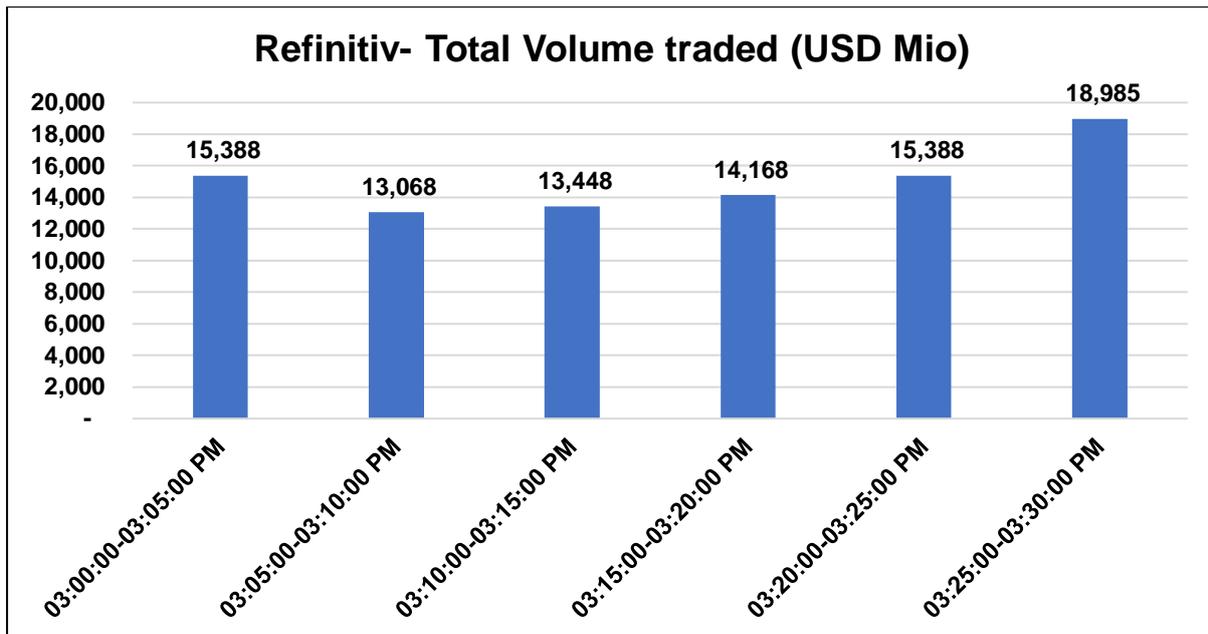
Data analysis

Data Coverage: March 05, 2025 - July 23, 2025 (Tick - wise traded data)

A. Data Collection Time

As may be observed from the figures 1 and 2 below, the highest concentration of trade volume was observed between 3:25 PM and 3:30 PM across both Refinitiv and FX-clear platforms. It was thus felt that since there is good volume and number of trades in the 3.25 PM to 3.30 PM time slot, this timeslot may be used as the ideal data collection time.





B. Traded Data Sufficiency and Threshold analysis

Table 1: Comparative analysis of trades and volumes in both platforms between 3:25 PM to 3:30 PM (Period of Data- March 05, 2025, to July 23, 2025).

	No. of trades - Refinitiv	No. of trades - FX Clear	Volume of trades - Refinitiv (USD Mio)	Volume of trades- FX Clear (USD Mio)
Minimum	70	2	97.00	1.00
Maximum	1,048	181	1,222.00	160.00
Sum	13,443	1,716	18,131.00	1,393.00
Average	153	18	206.03	14.98

As may be observed, there is more than adequate traded data during the market closing time to compute NOOP. To ensure that maximum amount of traded data is incorporated for NOOP calculation, we propose to combine both data sources, as is being done for calculation of FBIL Reference rate, to get a benchmark rate that is an accurate representation of the USD/INR spot market rate. Moreover, it is felt that rather than taking one last quote or traded figure, it would be prudent to take 5 minutes traded data, nearer the closing time, to ensure that the arrived rate is representative of the actual market sentiment at that point in time.

Threshold analysis:

Table 2: Threshold number of trades (Period: March 05, 2025 - July 23, 2025, i.e., 93 days)

Sr. No.	No. of Trades	No. of days threshold was met- FX clear	Percentage days- FX clear	No. of days threshold was met- Refinitiv	Percentage days- Refinitiv	No. of days threshold was met- Combined Data	Percentage days- Combined Data
Threshold 1	3	91	98%	93	100%	93	100%
Threshold 2	5	87	94%	93	100%	93	100%
Threshold 3	10	69	74%	93	100%	93	100%
Threshold 4	15	46	49%	93	100%	93	100%
Threshold 5	20	28	30%	93	100%	93	100%

Table 3: Threshold Volume (Period: March 05, 2025 - July 23, 2025, i.e., 93 days)

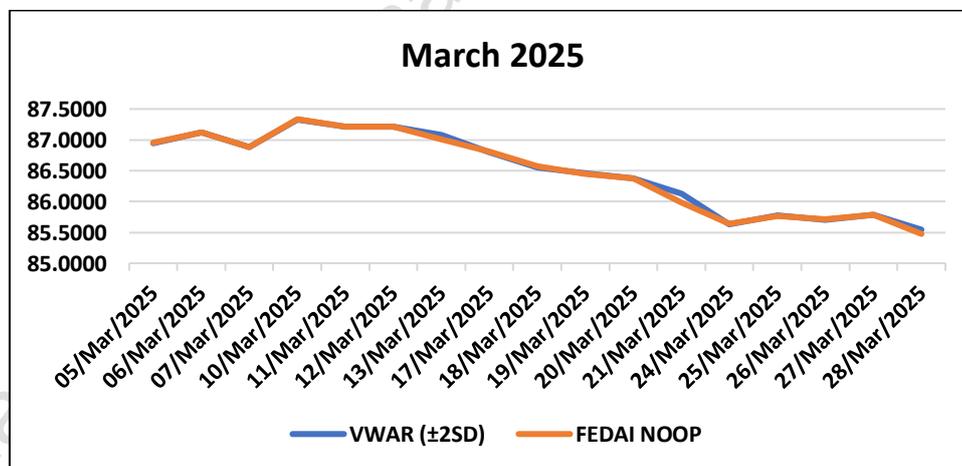
Sr. No.	Amt (USD Mio)	No. Of days threshold was met- FX clear	Percentage days- FX clear	No. Of days threshold was met- Refinitiv	Percentage days- Refinitiv	No. of days threshold was met- Combined Data	Percentage days- Combined Data
Threshold 1	2	91	98%	93	100%	93	100%
Threshold 2	5	78	84%	93	100%	93	100%
Threshold 3	10	47	51%	93	100%	93	100%
Threshold 4	15	31	33%	93	100%	93	100%
Threshold 5	20	20	22%	93	100%	93	100%

From Tables 2 and 3 above, it may be observed that although the trades of Refinitiv may individually fulfil all the threshold options on 100% of the days, it will be prudent to combine the data with FX clear data to have more traded data for computation of NOOP. It is also observed that the minimum individual FX-Clear trade size was USD 0.5 million and that of Refinitiv between the period was USD 1 million. Therefore, based on the data, the minimum threshold criteria of trades can be set to 5 trades and volume of USD 5 Mio. Both the criteria have to be met for the rate to be computed.

Additionally, in case of unavailability of trades on one platform, the rates may be calculated using the data available on the other platform.

C. NOOP Computation Methodology:

Volume Weighted Average Rate (VWAR) was computed using the transaction amounts and traded prices after consolidating FX Clear and Refinitiv trade data between 3:25 PM and 3:30 PM. Outliers were identified using the initial VWAR and a ± 2 Standard Deviation threshold, after which the VWAR was recalculated using the remaining trades to derive the final rate. The results derived from this method did not differ greatly from the current NOOP rates that are published by FEDAI, on the respective dates, as shown in the comparative graphs below. Prior to adopting this computation method, alternative approaches (Simple Average and Volume weighted average without outlier criteria) were also evaluated for having a check on its robustness. However, it was felt that, as part of the methodology, it would be prudent to have an outlier criterion, to take care of any possible off-market trade(s) that may be executed during the said timeslot.



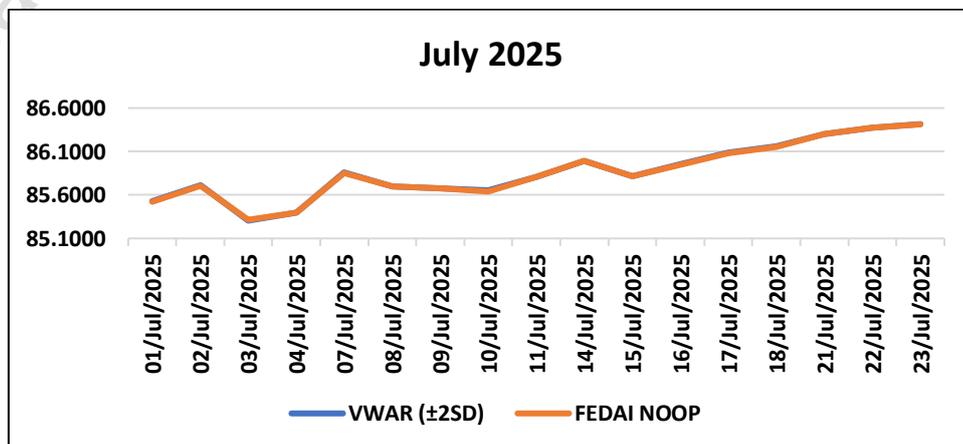
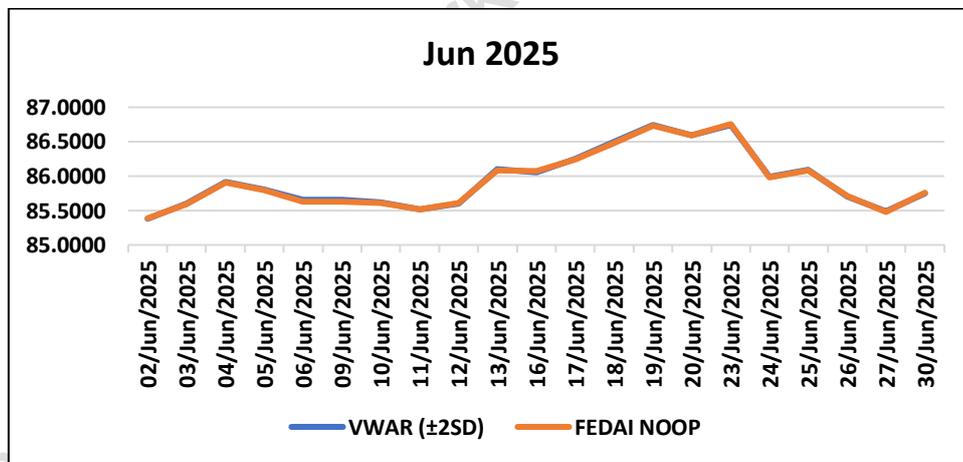
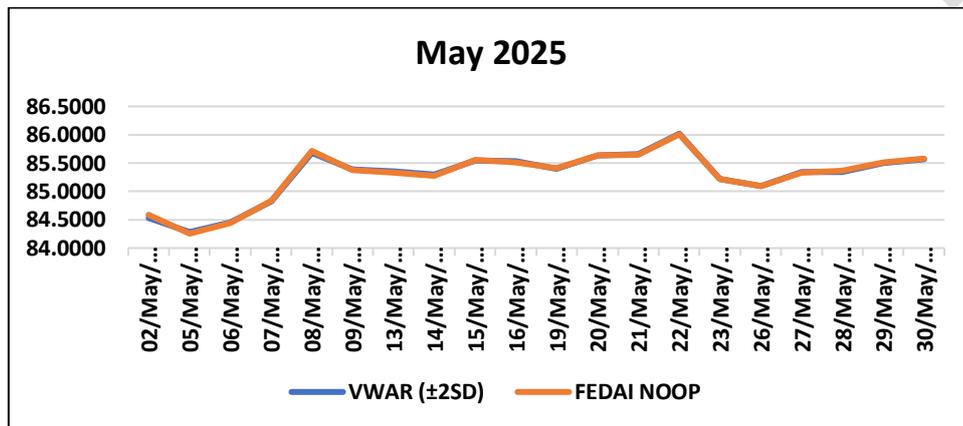
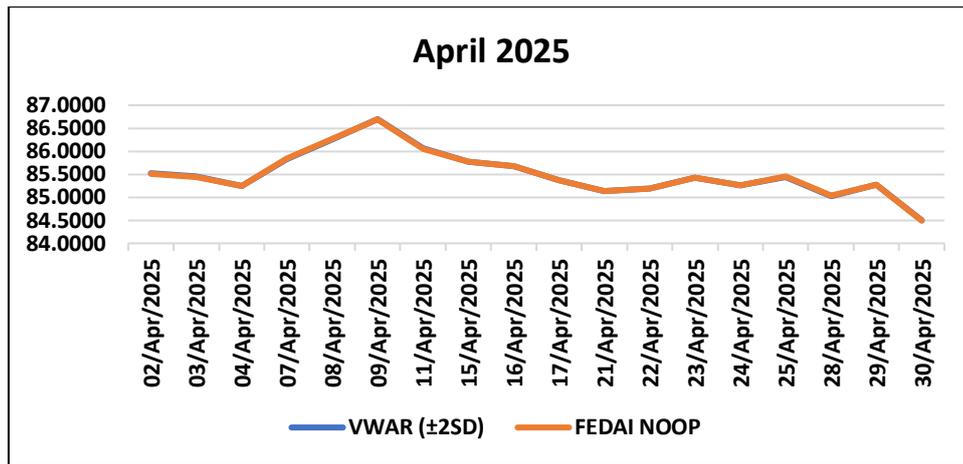


Table 4: Descriptive Statistics of rates by various computation methods and FEDAI NOOP rates

	VWAR (2SD outliers)	FEDAI NOOP
Mean	85.8044	85.7998
Standard Error	0.0642	0.0640
Median	85.6848	85.7000
Standard Deviation	0.6192	0.6174
Sample Variance	0.3834	0.3812
Kurtosis	0.3632	0.3925
Skewness	0.3590	0.3645
Range	3.0455	3.0800
Minimum	84.2822	84.2550
Maximum	87.3277	87.3350
Confidence Level (95.0%)	0.1275	0.1272

Table 5: Number of outlier Trades in each Month

Month	Total
Mar-25	71
Apr-25	53
May-25	145
Jun-25	120
Jul-25	67
Total	456

D. Fallback

In case the threshold criteria of 5 trades and USD 5 Mio volume are not met during 3.25 PM and 3.30 PM, then the following fallback criterion may be used to compute the rate:

- (a) Take data from 3.15 PM to 3.30 PM.
- (b) If the threshold is still not met, then data from 3:00 to 3:30 PM may be taken for computation.
- (c) If the Threshold is not met using (a) and (b) above, the Bid-Ask Quotes may be obtained from 6 large, empanelled banks (list to be pre-determined and reviewed every year) and a +/- 2SD rule will be applied to the submitted rates for removing the outliers. The mean of the surviving polled rates, after the removal of the outliers, will be the NOOP rate.

(d) If one platform is unavailable due to some unforeseen circumstances, then rates may be computed using the trades available on the other platform.

Keeping the above analysis in view, it is proposed that:

- The traded data of last 5 minutes of FX market time, i.e. 3:25 PM - 3:30 PM may be used for computation of Spot Rate for daily NOOP rate.
- Both, FX clear and Refinitiv traded data, may be taken as the combined input for computation. In case one of the two platforms is not available (FX Clear or Refinitiv), the other platform trades may be used to compute the NOOP rate.
- **Threshold Criteria:** A Minimum threshold criterion of 5 trades with a volume of USD 5 Mio has to be met for the computation to take place. Both the criteria must be met. A single trade should be a minimum trade size of USD 0.5 Mio for it to be used in the traded data for NOOP computation.
- Spot Rate for NOOP is to be computed using VWAR of the trades and +/- 2SD criteria to be used for outlier detection. The VWAR computed, using the surviving trades, is to be considered as the NOOP rate of the day.
- The rate will be published up to 4 decimal places.
- **Fallback Criteria:** In case of unavailability of data during the specified time, we may take the last 15 minutes of traded data instead of 5 minutes, i.e. 3:15 to 3:30 PM followed by another tranche which takes the data of 3:00 PM to 3:30 PM i.e., 30 minutes, in case the threshold is not met in the 15 minutes time window. In case the threshold criteria are still not met, then polling to be done by 6 pre-determined banks empanelled for the purpose
- The rate may be published by 4:00 PM.

Annex:

AED/INR & IDR/INR Reference Rates Computed Using the Proposed Methodology

Colours codes used for classification of the rates

Yellow	Rate Computed in the 11:30 AM to 12:30 PM window
Orange	Rate Computed in the 09:00 AM to 12:30 PM window
Blue	Computed using fallback mechanism

(Note: For the purpose of computation of these INR cross currency reference rates, a threshold of minimum two rates have been considered)

Date	AED/INR	No. of Rates used in the Computation	Date	IDR/INR	No. of Rates used in the Computation
24-06-2024	22.7372	31	24-06-2024	50.8410	33
25-06-2024	22.7134		25-06-2024	50.9239	19
26-06-2024	22.7442	7	26-06-2024	50.8667	16
27-06-2024	22.7300	22	27-06-2024	50.8692	19
28-06-2024	22.7208	60	28-06-2024	50.9147	24
01-07-2024	22.7074	31	01-07-2024	51.0139	16
02-07-2024	22.7375	60	02-07-2024	50.9769	16
03-07-2024	22.7426	60	03-07-2024	50.9528	14
04-07-2024	22.7339	60	04-07-2024	51.0987	30
05-07-2024	22.7335	60	05-07-2024	51.2385	32
08-07-2024	22.7268	29	08-07-2024	51.3303	17
09-07-2024	22.7292	60	09-07-2024	51.2768	25
10-07-2024	22.7314	60	10-07-2024	51.3812	19
11-07-2024	22.7428	60	11-07-2024	51.5428	18
12-07-2024	22.7439	60	12-07-2024	51.7095	27
15-07-2024	22.7514	30	15-07-2024	51.6417	23
16-07-2024	22.7547	60	16-07-2024	51.5921	20
18-07-2024	22.7714	51	18-07-2024	51.7561	22
19-07-2024	22.7717	54	19-07-2024	51.6530	36
22-07-2024	22.7785	29	22-07-2024	51.5653	17
23-07-2024	22.7777	60	23-07-2024	51.6198	17
24-07-2024	22.7887	59	24-07-2024	51.5947	20
25-07-2024	22.7900	60	25-07-2024	51.4571	14
26-07-2024	22.7953	60	26-07-2024	51.3758	9
29-07-2024	22.7980	34	29-07-2024	51.4063	24
30-07-2024	22.7968	60	30-07-2024	51.3221	30
31-07-2024	22.7999	60	31-07-2024	51.4016	14
01-08-2024	22.7947	60	01-08-2024	51.5525	10
02-08-2024	22.7981	60	02-08-2024	51.6652	27
05-08-2024	22.8258	37	05-08-2024	51.8028	24
06-08-2024	22.8445	60	06-08-2024	51.8360	13
07-08-2024	22.8565	60	07-08-2024	52.2000	17
08-08-2024	22.8583	60	08-08-2024	52.6769	14
09-08-2024	22.8424	60	09-08-2024	52.6814	20

12-08-2024	22.8612	27
13-08-2024	22.8613	58
14-08-2024	22.8529	60
16-08-2024	22.8576	2
19-08-2024	22.8478	4
20-08-2024	22.8104	60
21-08-2024	22.8480	59
22-08-2024	22.8585	30
23-08-2024	22.8361	32
26-08-2024	22.8295	4
27-08-2024	22.8545	35
28-08-2024	22.8613	54
29-08-2024	22.8402	29
30-08-2024	22.8351	60
02-09-2024	22.8364	31
03-09-2024	22.8573	52
04-09-2024	22.8616	32
05-09-2024	22.8654	59
06-09-2024	22.8514	60
09-09-2024	22.8546	30
10-09-2024	22.8634	60
11-09-2024	22.8562	60
12-09-2024	22.8659	59
13-09-2024	22.8479	60
16-09-2024	22.8413	32
17-09-2024	22.8240	60
19-09-2024	22.7654	60
20-09-2024	22.7313	60
23-09-2024	22.7369	34
24-09-2024	22.7694	60
25-09-2024	22.7463	60
26-09-2024	22.7882	60
27-09-2024	22.7794	60
30-09-2024	22.8121	58
01-10-2024	22.8192	60
03-10-2024	22.8558	60
04-10-2024	22.8603	28
07-10-2024	22.8607	28
08-10-2024	22.8526	8
09-10-2024	22.8586	59
10-10-2024	22.8611	8
11-10-2024	22.8849	2
14-10-2024	22.8875	29
15-10-2024	22.8890	60
16-10-2024	22.8885	60
17-10-2024	22.8779	60
18-10-2024	22.8889	59
21-10-2024	22.8898	29
22-10-2024	22.8891	60
23-10-2024	22.8900	60
24-10-2024	22.8897	59
25-10-2024	22.8906	59

12-08-2024	52.5540	20
13-08-2024	52.9590	25
14-08-2024	53.5481	10
16-08-2024	53.5279	9
19-08-2024	53.8582	17
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