



PDS Group

Philippine Dealing System Holdings Corp. & Subsidiaries

Philippine Floating Rate Bond Pricing Convention

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1. Background

A **floating-rate bond** (or **FRB**) is a debt instrument with a variable interest rate that is tied to a benchmark reference rate plus an additional credit spread. Unlike a plain-vanilla bond that pays a fixed rate of interest, a floating rate bond's variable rate resets periodically.

The formalization of this FRB pricing convention is in support of prospective issuers intending to use of this type of bond issuance structure for listing and trading on the Philippine Dealing & Exchange Corp. (PDEX).

PDEX's technology provider, Bloomberg, has on its Yield Analytics System an existing global algorithm for floaters that follows the International Capital Market Association (ICMA) Global Standards for Floating Rate Notes. This general algorithm can be customized for the Philippine Market's specific requirements (e.g. adjustments due to tax) and then ported over to the FIQ Trading System.

This document shall serve as the guide on the convention for pricing floating rate bonds in the Philippine Market.

2. Rationale

- 2.1. To establish the basis for pricing and trading of Floating Rate Bonds within the PDEX FI Market
- 2.2. To establish the algorithm for the Philippine FRB calculation model
- 2.3. To formally adopt the ICMA Global Standards for Floating Rate Notes as documented in the "Bond Market Structures and Yield Calculations" by Patrick J. Brown (the "Proposed Pricing Convention") as the basis of customization into the PDEX Bloomberg FIQ Trading System

3. Standard Terms Required for a Floating Rate Bond Issue

Following are the standard terms required for Floating Rate Bonds:

- 3.1. **Day Count** : Actual / 360
- 3.2. **Coupon Resetting Date** : Three (3) business days prior to the coupon payment date
- 3.3. **Business Convention**: Same as current convention for regular corporate bonds; if any Interest Payment Date would otherwise fall on a day which is not a Business Day, the Interest Payment Date shall be deemed the next succeeding Business Day; Provided, further, that if such succeeding Business Day falls into the next calendar month, the Interest Payment Date shall be the immediately preceding Business Day, in either case, without adjustment to the amount of interest to be paid.
- 3.4. **Tax Treatment** : Same as that for fixed rate notes (i.e., Impute 20% FWT on future coupon cash flows and discount accordingly using adjusted YTM) ; *refer to Section 5 of this document*
- 3.5. **Benchmark Reference Rate**: PHP BVAL Reference Rates - Benchmark Tenor
- 3.6. **Credit Spread** : As indicated by the Issuer on the Prospectus
- 3.7. **Margin Calculation** : Use the discounted margin; adopt the ICMA Global Standard for Floaters

4. Floating Rate Bond Convention

This Global Standard Formula determines an implied “discount margin” from a traded price, as follows:

Notation for Floating Rate Bond Calculation:

$$P \cdot \left(1 + \frac{(I + DM)}{100} \cdot f1 \right) = k + \sum_{i=1}^{n-1} \frac{(I2 + QM)}{h} \cdot v^i + C \cdot v^{n-1}$$

where:	<i>DM</i>	=	required discounted margin %
	<i>P</i>	=	gross price (i.e. clean price plus accrued interest)
	<i>I</i>	=	current market indicator rate from the value date to the first coupon date %
	<i>I2</i>	=	assumed market indicator rate for subsequent coupon payments %
	<i>f1</i>	=	fraction of a year from the value date to the first/next coupon date (actual days divided by 360, 365 or 365/366 days according to the issue)
	<i>k</i>	=	first/next coupon payment %
	<i>n</i>	=	number of future coupon payments
	<i>QM</i>	=	quoted margin %
	<i>h</i>	=	number of coupon payments per year adjusted if not Euro-sterling for the assumed number of days in the year (e.g. for a US dollar FRB with two coupon payments per year, <i>h</i> will be 2 x 360/365.25)
	<i>C</i>	=	redemption value
	<i>v</i>	=	discounting factor (i.e. $v = 1 / (1 + (I2 + DM) / 100h)$)

Source:

https://www.icmagroup.org/assets/documents/Media/Bondmarketsbook/Bond%20markets_structures%20and%20yield%20calculations.pdf

- 4.1. The “discount margin” is the credit spread implied by the price at which Trading Participants are trading the floating bonds.
- 4.2. The Accrued Interest portion is based on the current coupon that has already been set declared and made effective from the last coupon date up to the settlement date.
- 4.3. The future coupons to be paid are all assumed to be the same. On any given trading date, these future coupons shall be based on the PHP BVAL Benchmark Tenor Reference Rate of the re-pricing tenor from the business day prior to the trade date plus the Contracted Spread (or the Quoted Margin referred to in the above equation).

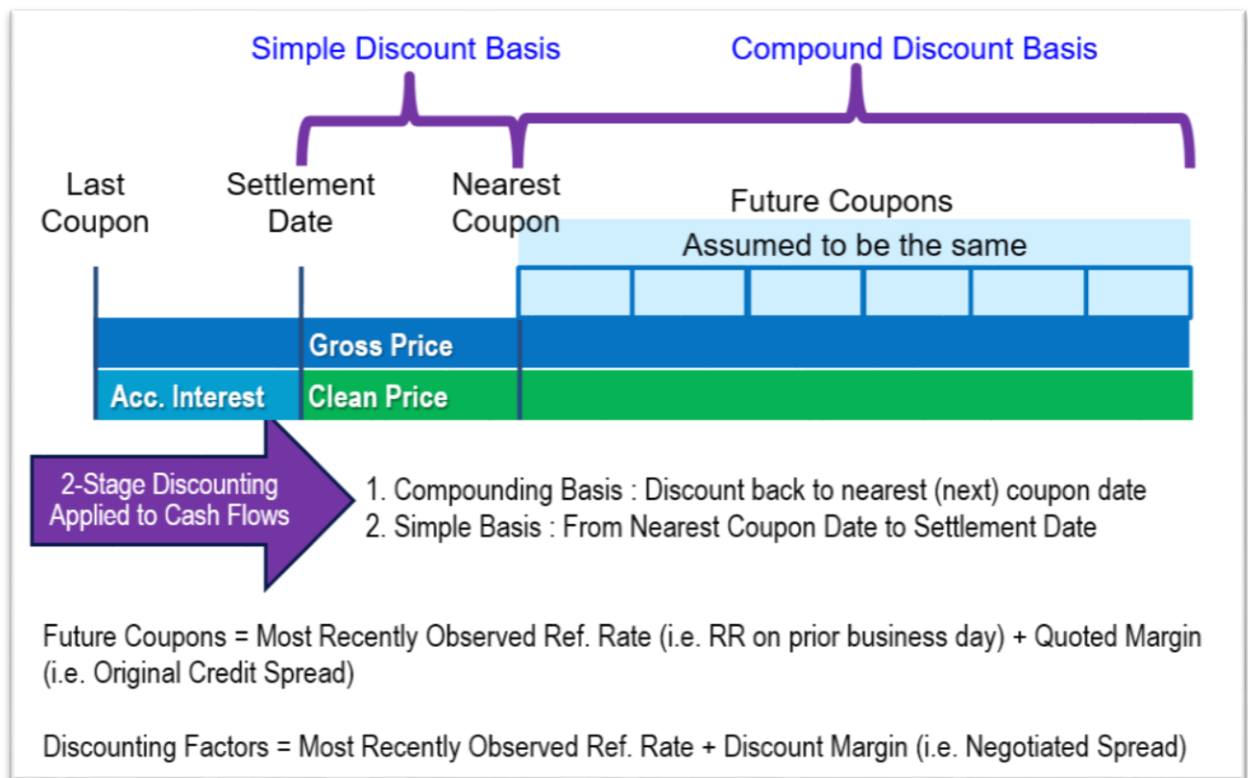
For example, for an FRB re-pricing every 3 months trading on 29 January 2019, the assumed future coupons shall be the based on the sum of the PHP BVAL 3-Month Benchmark Tenor Reference Rate as of 28 January 2019 plus the Contracted Spread as applied to the Face Amount of the bond to be traded.

- 4.4. The Unadjusted Discounting Factor (yield to maturity without adjustment for future tax impact) shall be the sum of the PHP BVAL Benchmark Tenor Reference Rate of the previous

- trading day plus the market-based Credit Spread (i.e. the Discounting Margin negotiated by the trading parties reflecting their assessment of the firm specific risk of the Issuer).
- 4.5. For the Philippine bond convention, the Discounting Factor will be multiplied by (1- Final Withholding Tax) to reflect an adjustment due to the effect of final withholding taxes on future cash flows.
 - 4.6. To calculate the Dirty Price (Gross Settlement Amount), the proposed approach applies a two-stage discounting process with the first stage involving discounting the principal at maturity and all future coupons (i.e. excluding the current coupon) on a compound basis back to the nearest coupon date, and then discounting the sum of these said values at the nearest coupon date plus the next coupon amount on a simple discounting basis back to present value on the settlement date.

5. Steps to the Calculation

5.1. Diagram of ICMA Floating Rate Bond Calculation



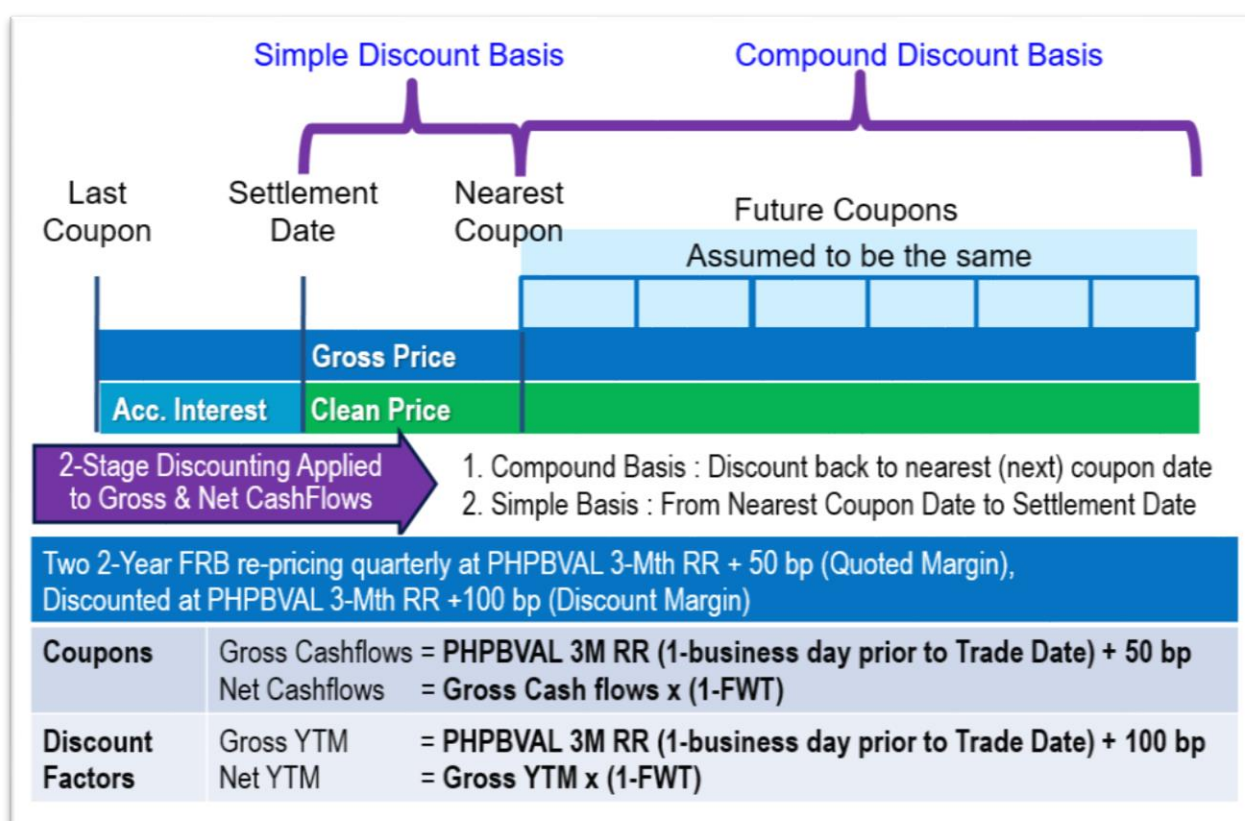
5.2. The known Input Factors for an FRB are :

- 5.2.1. Settlement Date
- 5.2.2. PHP BVAL Benchmark Reference Rate
- 5.2.3. Original Credit Spread (aka Quoted Margin)
- 5.2.4. Previous Coupon Date
- 5.2.5. Next Coupon Date
- 5.2.6. Final Withholding Tax Rate

- 5.3. Required Yield Input Factors for Pricing Floating Rate Bond :
 - 5.3.1. Previous Day's PHP BVAL Benchmark Tenor Reference Rate on Re-pricing Tenor (e.g. 3-month, 6-month)
 - 5.3.2. Discounting Margin, or credit spread to be negotiated with trade counterpart
- 5.4. For the current coupon, the Net Accrued Interest is calculated as Accrued Interest x (1-FWT) based on last coupon date up to settlement date.
- 5.5. The Floating Rate Bond Pricing Convention from ICMA is adopted as follows:
 - 5.5.1. Under the convention all future coupon cash flows (i.e. Philippine Gross Coupons) shall be the same, and each one based on the sum of the PHP BVAL Reference Rate-Benchmark Tenor plus the Quoted Margin (Original Credit Spread over the reference as set in the Prospectus).
 - 5.5.2. The Discounting Factor or Yield to Maturity for the Philippine Gross Clean Price is the sum of the PHP BVAL Reference Rates-Benchmark Tenor plus the Discount Margin.
 - 5.5.3. In the first stage, the Discounting Factor is applied on a compounding basis to each Projected Gross Cash flow to discount back to the nearest (next) coupon date, and those values are summed.
 - 5.5.4. In the second stage, the same Discounting Factor is applied to the sum of the values at the nearest coupon on a simple basis back to present value at the settlement date to get the Dirty Price (Gross Settlement Amount). The Dirty Price less the Accrued Interest is the Gross Clean Price.
- 5.6. The adjustments for tax under the current Philippine bond price convention are incorporated in the calculations to get a Net Clean Price as follows:
 - 5.6.1. Gross Coupon cash flows are reduced by the final withholding tax rate, i.e. Net Coupon = Gross Coupon x (1-FWT)
 - 5.6.2. The Discounting Factor is also adjusted for the FWT, i.e. [(PHP BVAL Reference Rate Benchmark Tenor + Discounted Margin) x (1-FWT)]
 - 5.6.3. In the first stage, the adjusted (net) Discounting Factor is applied on a compounding basis to each Projected Net Cash flow to discount back to the nearest (next) coupon date, and those values are summed.
 - 5.6.4. In the second stage, the same Discounting Factor is applied to the sum of the values at the nearest coupon on a simple basis back to present value at the settlement date to get the Net Dirty Price (Net Settlement Amount). The Net Dirty Price less the Net Accrued Interest is the Net Clean Price.
- 5.7. The Price Adjustment to reflect for the effect of taxes on future coupons is the difference between Gross Clean Price less the Net Clean Price.
- 5.8. For the Floating Rate Bond convention, the equation and resulting worksheet contains an adjustment factor as applied to the discounting formula to accommodate different day count conventions (e.g. Actual/360 and Actual/365).

6. **Sample Floating Rate Bond Calculation and Cash flow Worksheet.** Following is a sample diagram and worksheet that shows the calculation process within the Bloomberg FIQ Trading System customized with Philippine final withholding tax parameters, as used to price a 2-Year Floating Rate Bond re-pricing quarterly using a **PHPBVAL 3-Month Reference Rate plus 50 basis points** as Original Credit Spread (or Quoted Margin), and discounted at the same **PHPBVAL 3-Month Reference Rate plus 100 basis points** (Discount Margin):

6.1 Diagram of Floating Rate Bond Price Calculation as customized for Philippine FI Market



6.2 Philippine Floating Rate Bond Calculator Input

2-Year FRB 3M Repricing

PHPBVAL 3M+ 50bp

Issue:	20 Dec 2018
Maturity Date:	20 Dec 2020
Settlement Date:	20 Feb 2019
Next Coupon Date:	20 Mar 2019
Current Coupon:	6.0000%
Yesterday's RR:	5.58023%
Quoted Margin:	50 bp
Assumed Coupon:	6.08023%
Discount Margin:	100 bp
Gross YTM:	6.58023%
Net YTM:	5.26418%

6.3 Settlement Monies reflected in Bloomberg “Yield and Spread Analysis” (YAS) Screen

MISTAK 0 12/20/20 Corp		Settings ▾	Yield and Spread Analysis	
			95) Buy	96) Sell
1) Yield & Spread		2) Graphs	3) Pricing	4) Description
MISTAK Float 12/20/20 (A04030695)		M/M Equiv to Next Fix		Floater Cpn History
Price	99.122732	Settle	02/20/19	ACT/360
DM (bp)	100	to Mty		ACT/365
Yield	6.580230			Price at Refix 100.00240!
Workout	12/20/2020 @ 100.00			on 03/20/2019 28 Days
SFL	98.286			Mmkt 17.283106
Floater Information		Risk		
Benchmark	BV3MRPTB	Assumed Rate	5.58023	To 03/20/19
Quoted Margin	50.00	Coupon	6.00	Mod Duration
Next Pay	03/20/2019	Coupon Freq	Quarterly	Risk
		Refix Freq	Quarterly	Convexity
Index to	03/20/2019		5.58023	DV 01 on 1MM
OAS	Floater Analysis YASN >			
OAS Not Available		Invoice		Net
		Face		1,000 M
		Principal		991,227.32
		Tax On Disc/Prem		1,669.42
		Accrued (62 Days)		10,333.33
		Tax On Accrued		20 % -2,066.67
		Total (PHP)		1,001,163.40

Figures on the “Settlement Monies” display area:

- Face - quantity traded for specified security
- Principal - amount of a bond excluding any interest that has accrued since issue or the most recent coupon payment.
- Tax on Disc/Premium - price adjustment because of the effect of tax for future coupons
- Accrued Interest - Interest of the nearest future coupon accrued from the last coupon payment date up to the Settlement Date
- Tax on Accrued Interest - component of the settlement value computation, calculated as the Accrued Interest multiplied by the applicable withholding tax rate
- Total (PHP) - Net Proceeds or Settlement Amount

6.4 Sample Philippine FRB Cash Flow on Bloomberg

MISTAK Float 12/20/20 Corp		1) Export		97) Settings		Cash Flow Analysis	
Not Priced				95) Buy		96) Sell	
				BBID		A04030695	
2) Cash Flows		3) Present Values		4) Distressed Analysis			
Price	99.122732	Settlement	02/20/19	Prv Cpn	12/20/2018	Maturity	12/20/2020
DM (bp)	100.000012	to Maturity	12/20/20	@	100.000000	Face Amt	1000M
Assumed Index	5.580230	Quoted Margin	50.00				
Indx to Next Pay	5.580230	Next Pay Dt	03/20/2019				
	Payment Date	Interest		Principal	Total		
	03/20/2019	15,000.00		0.00	15,000.00		
*	06/20/2019	15,200.58		0.00	15,200.58		
*	09/20/2019	15,200.58		0.00	15,200.58		
*	12/20/2019	15,200.58		0.00	15,200.58		
*	03/20/2020	15,200.58		0.00	15,200.58		
*	06/20/2020	15,200.58		0.00	15,200.58		
*	09/20/2020	15,200.58		0.00	15,200.58		
*	12/20/2020	15,200.58		1,000,000.00	1,015,200.58		

Following are the column descriptions:

- Payment Date (Column A) - Specified date for interest payment
- Interest (Column B) - Future gross coupons based on the PHP BVAL Reference Rate (e.g., 3-Month Benchmark) plus the Quoted Spread
- Principal (Column C) - Principal amount due to bondholder at maturity.
- Total (Column D) - refers to the Gross Cash flow

Note: Above cash flow only shows the Gross Values; adjustments for tax under the current Philippine bond price convention are incorporated in the calculations of settlement amount.