









HACKING FLOATING RATE NOTES WITH SHARIAH VALUES

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INTRODUCTION

A debt security is a financial instrument which contains a promise by the issuer, normally a company, to pay the holder of the instrument a defined amount on or by a specified date usually with interest. Eurobonds, medium term notes and euro commercial paper are all examples of debt securities. Bonds and notes payable are two types of debt that companies can access to raise capital. Technically speaking, both are written agreements between the company and the lender defining how much will be borrowed, when and how it will be repaid, and how much interest will be paid. The exact structure used to decide when and how much principal and interest is repaid can vary widely from one bond to another and from one note payable to another. Bonds and notes both appear on the liabilities side of a company's balance sheet, and the interest paid on each appears as an interest expense on the income statement. In financial terms, bonds and notes are mostly indistinguishable. For example, most bonds are structured so that the company pays back the entire balance of the debt at one point in the future - that is, on its maturity date. The company will pay its interest expense periodically over time, typically monthly. A note payable could be structured identically, but neither necessarily has to be structured in this way or any other way. If they both happened to be identically structured, both would have the same impact on the balance sheet and the income statement. Structurally and practically, the two instruments are identical¹. This paper looks at a particular type of note known as floating rate note (FRN). The paper begins with an introduction to FRNs, followed by the characteristics of FRNs, its structure and the benefits and risks. Thereafter, a Shariah analysis of the Notes is presented, leading to a discussion on the potential of hacking FRN's with Shariah compliant values of investments and capital raising mechanisms.

¹ The Motley Fool, What is the difference between a bond vs note payable?, Available from: https://www.fool.com/knowledge-center/bond-vs-notepayable.aspx

UNDERSTANDING FLOATING RATE NOTES

A floating-rate security, also known as a "floater", is an investment with interest payments that float or adjusts periodically based upon a predetermined benchmark. While floaters may be linked to almost any benchmark and pay interest based on a variety of formulas, the most basic type pays a coupon equal to some widely followed interest rate or a change in a given index over a defined time period². Floating rate securities have a coupon rate or interest rate that varies based on a short-term rate index. While this is more complex than fixed coupons, floating rates are generally advantageous for lenders when interest rates are rising.

Floating rate securities assume that the investor's return is a coupon linked to an index which will change during the life of the security. The index could be quarterly or semi-annual such as three-month LIBOR (London Interbank Offer Rate). This rate is the most widely used benchmark or reference rate for short-term interest rates and is the rate of interest at which banks borrow funds from other banks, in marketable size, in the London interbank market. Other interbank rates include Euro LIBOR, US Dollar LIBOR, GBP LIBOR and Japanese Yen LIBOR. Typically, FRNs have maturities of about five years.



For FRNs, the coupon rate is usually reset each time interest is paid. A typical arrangement might be to pay interest at the end of each quarter based on the value of three-month LIBOR at the start of the quarter. The coupon rate is calculated as the reference rate plus a fixed spread, which depends upon the issuer's credit quality and specifics of how the instrument is structured. One feature that can affect the spread is a provision that places a cap or floor on the floating coupon rate. For example, an FRN might be issued with a cap of 7.5 per cent and a floor of 1.5 per cent³. An FRN's interest rate can change as often or as frequently as the issuer chooses, from once a day to once a year. The reset period tells the investor how often the rate adjusts. The issuer may pay interest monthly, quarterly, semiannually or annually. FRNs may be issued with or without a call option⁴.

Thus, unlike a plain-vanilla bond, which pays a fixed rate of interest, a floating rate bond has a variable rate that resets periodically. Compared to fixed-rate debt instruments, floaters protect investors against a rise in interest rates. This is because interest rates have an inverse relationship with bond prices, and the market price of a fixed-rate note will drop if interest rates increase. For this reason, however, FRNs carry lower yields than fixed notes of the same maturity⁵.

Just like fixed-rate notes, floating-rate notes can be callable or non-callable, which means that the issuer may have the option to repay the principal before the maturity date is reached. Floating-rate notes may also have what's known as a "cap" or "floor." A cap is a maximum interest rate the note can pay, regardless of how high the benchmark rate climbs, and a floor is the lowest allowable payment.

2 Raymond Hames, A Guide to Understanding Floating Rate Securities, Available from: https://www.raymondjames.com/wealth-management/adviceproducts-and-services/investment-solutions/fixed-income/fixed-incomestrategies/a-guide-to-understanding-floating-rate-securities

- 3 Investopedia, What is a Floating rate note?, Available from: https://www. investopedia.com/terms/f/frn.asp
- 4 Kenny, T. (2018), The Pros and Cons of Floating Rate Bonds, The Balance, Available from: https://www.thebalance.com/what-is-a-floating-ratebond-416911

CHARACTERISTICS OF INTEREST RATE SECURITIES

Like other interest rate securities, floating rate notes share similar characteristics and features. The following are common features of FRNs⁶:

The Issuer

An organisation which issues a bond is referred to as 'the issuer' or 'the borrower'. The most active issuers of bonds today are governments and government agencies (government bonds), banks and corporations (corporate bonds).

Face value

Face value is the amount that is to be paid to an investor at the maturity date of a bond. Bonds can be issued at different face values; however, floating rate securities typically have a unit face value of 100.

Yield

The yield is the return an investor receives on a bond. The yield is based on the price paid by an investor for a bond and the payments (coupons) received if the bond is held to maturity. The most important types of yield are the nominal yield and the yield to maturity.

Maturity date

The final coupon and the face value of a bond are repaid to the investor on its maturity date. The time to maturity can vary greatly, although it is typically between two and twenty years.

Interest coupon

A coupon refers to the interest rate payable to the holder of a bond. Coupons can be fixed, floating or payable at maturity. Bonds traditionally have a coupon rate that is fixed until maturity, is a percentage of the face (principal) amount, and typically pay interest semi-annually. For example, a \$100 bond with a 5% p.a. coupon will pay investors \$5 a year, in payments of \$2.50 every six months. When the bond matures, investors receive the full-face amount of the bond (in this example, \$100) and the final coupon (\$2.50). Some issuers and investors prefer having a coupon that periodically adjusts, and more closely tracks prevailing market rates. The coupon on a floatingrate bond is reset periodically in line with changes in a base interest-rate index, such as the rate on 90-day Bank Bills. These types of securities are generally described

as Floating Rate Notes or Floating Rate Bonds.

Coupon frequency

Coupon payments are made at regular intervals throughout the life of the security and are usually quarterly or semi-annually. Floating rate notes normally pay interest quarterly.

6 ASX, Characteristics, Available from: https://www.asx.com.au/products/ bonds/characteristics.htm



Purchase price

The price of a bond is stated as a percentage of its face value. For example, a price of 100 means 100 per cent of face value; a price of 99.80 is 99.8 per cent of face value; a price of 102.5 is 102.5 per cent of face value. The purchase price (also known as the gross price) is the total amount that an investor pays for a bond. The total purchase price comprises the number of bonds that an investor buys times the price paid for a bond. The purchase price includes two components:

- Capital price which is the price of the bond as estimated by the market based on a number of variables including interest rates, maturity date, ranking and credit quality.
- Accrued interest on the bond which is the amount of interest accumulated on a bond since the last coupon payment. Because interest is paid at regular intervals the bond price increases daily by the amount of interest accruing. On a 6.50 per cent annual coupon, interest accrues at 1.78 per 100 per day. Immediately following the coupon payment the price should fall by the amount of that coupon payment.



THE DISTINGUISHING FACTORS OF FLOATING RATE NOTES

Interest rate terms⁷

Traditional bonds characteristically have a fixed coupon rate that is determined upon issuance. This rate stays the same through the life of the bond, giving investors periodic, static interest payments known as coupons. As interest rate levels change, the prices of such fixed-coupon bonds adjust so that their overall yield is in line with the market. Interest payments of floatingrate bonds, however, are determined by a floating reference rate-such as the LIBOR (the London Interbank Offered Rate) or the federal funds rate—plus a fixed spread, or additional yield. Depending on the loan agreement, the rate is adjusted periodically, typically at intervals of 30, 60, or 90 days. As a result, the coupon payments on these loans vary, or "float," in accordance with prevailing market interest rates. Because the coupon rate mirrors the market rate, floating-rate bonds exhibit minimal price sensitivity to changes in interest rate levels.

Capital-structure seniority⁸

Floating-rate loans, as opposed to typical debt offerings, are not issued by a firm directly to the public. Instead, banks and similar financial institutions extend loans to firms in need of raising capital. These loans, much like mortgages or other private loans, are then repackaged for sale to investors.

Floating-rate loans are considered "senior" in a firm's capital structure, meaning they typically have among the highest claims to a borrower's assets in the event of default. This trait, combined with loan agreements that require firms to secure their assets with collateral, has led to higher recovery rates than for less-senior debt. Although recovery rates are a useful measure in the event of a firm's default, they do not indicate a firm's likelihood of defaulting and thus do not reflect an investment's quality.



Borrower credit quality⁹

Floating-rate loans most commonly serve as an alternative source of financing for companies whose credit quality is rated below-investmentgrade, or "junk." These companies may find it comparatively more difficult or costly to access credit in the capital markets, such as fixed interest rate bonds. According to Morningstar, credit qualities of floating-rate funds range from BB (predominantly speculative) to B (speculative low-investment-grade), with a category average of B. For perspective, this is the same average as that of high-yield bond funds.



Low interest rate risk

When investing in a bond, investors are primarily compensated for taking on two types of risk: interest rate risk and credit risk. Floating-rate funds, by design, curtail the effects of the former, as such, prices of these bonds are not expected to significantly respond to interest rate fluctuations. With interest rate risk nearly eliminated, credit risk is the primary driver of returns. While an owner of a fixed-rate bond can suffer if prevailing interest rates rise, floating rate notes will pay higher yields if prevailing rates go up. As a result, they will tend to perform better than traditional bonds when interest rates are rising¹⁰.

High credit risk¹¹

Floating-rate funds' minimal interest rate risk has understandably led some investors to assume that the funds can be used as an alternative to other short-duration funds, including money market and short-term bond funds. However, the magnitude of the credit risk incurred with floating-rate funds is much greater than that for money market and short-term bond funds. This is because floating-rate funds invest in belowinvestment-grade loans, whereas money market and short-term bond funds invest in high-quality securities. Thus, the returns of floating rate funds are inherently tied to the considerable credit risk associated with "junk"-rated loans.

Above-average liquidity risk¹²

Another risk factor of particular importance for floating-rate funds is liquidity risk. In 2000, the U.S. Securities and Exchange Commission mandated the use of mark-to-market loan pricing for active floating rate managers. This increase in price transparency reduced loan-mispricing fears and consequently led to substantial growth in the floating-rate loan industry. The industry, though, is still roughly half the size of the high-yield bond market and is vulnerable to liquidity shocks in unfavourable loan markets.

9 ibid

10 Kenny, T. (2018), The Pros and Cons of Floating Rate Bonds, The Balance, Available from: https://www.thebalance.com/what-is-a-floating-ratebond-416911

11 Vanguard (2013), A primer on floating rate bond funds, Available from: https://pressroom.vanguard.com/content/nonindexed/9.2013_Floating_rate_ bond_funds.pdf

THE ADVANTAGES AND DISADVANTAGES OF FLOATING RATE SECURITIES

In a nutshell, the reason investors would prefer floating-rate notes is to minimise their interest rate risk. As an example, if we compare two securities - a two-year Treasury note with a 0.7% interest rate, or a two-year floating-rate Treasury note that currently pays 0.5% but is based on the 13-week Treasury bill rate plus 0.2% - if interest rates spike later in the year, the fixed-rate Treasury note will still be paying 0.7%. However, if the 13-week Treasury rate rises to 1%, then the floating-rate note would pay 1.2%. In other words, investors may be willing to accept a lower initial rate in exchange for the possibility of a higher rate if market rates rise. This is a particularly appealing benefit in low-interest environment, as investors may not want to lock in a low interest rate¹³.

Thus, the floating rate note list of benefits to investors include:

(1) protection against interest rate hikes and (2) having higher yields than fixed bonds. The price of floating rate notes is the risk. This risk is highly associated with the maturity rate and issuer credit quality. Therefore, interest rate increases are more beneficial to the note holder than interest rate decreases¹⁴.



13 Motley Fool, What is a floating rate note?, Available from: https://www.fool.com/knowledge-center/what-is-a-floating-rate-note.aspx

¹⁴ Beverly, A. (2017), Floating Rate Notes, Available from: https://www.business. com/articles/floating-rate-notes/

SHARIAH ANALYSIS OF FLOATING RATE NOTES

Floating rate notes and bonds are debt instruments which pay interest to investors. The Shariah Standard No. 21 of AAOIFI expounds on the rulings of bonds and notes issuance:

"The issuance of all kinds of bonds is prohibited when these bonds include stipulations for the return of the amount of loan and excess in any form, whether such excess is paid at the time of the satisfaction of the principal amount of loan, is paid in monthly or yearly instalments or in another manner and whether this excess represents a percentage of the value of the bond, as in the case with most types of bonds, or a part of it, as is the case with zero-coupon bonds. Likewise, prize bonds are also prohibited. This applies irrespective of the bonds being private, public or governmental."

These financial debt instruments are premised on the exchange of two monetary payments; the investors pay upon purchasing a floating rate note and receives periodical payments from the FRN issuer. Unequal payments in homogenous currencies is tantamount to *Riba al-Fadhl* (interest due to surplus and excess) and originates when an interest (*Riba*) item is exchanged for the same item in an unequal amount.

The exchange of cash payments at different periods results in another type of *Riba* known as *Riba* al-Nasi'ah. This refers to the deferral in an exchange of two homogenous *Riba* items.

The Prophet Muhammad (peace be upon him) said:

"(When) gold is exchanged in lieu of gold, silver is exchanged for silver, wheat is exchanged for wheat, barley is exchanged for barley, dates are exchanged for dates and salt is exchanged for salt; it must be exchanged in equal measure and settled immediately; and if the counter exchanges differ, sell (whichever quantity) as you wish as long as settlement is immediate."

(Sahih Muslim)



Riba is categorically prohibited in the Qur'an.

The Quran says,

O you who believe! Remain conscious of Allah, and give up all outstanding gains from usury, if you are [truly] believers; for if you do it not, then know that you are at war with Allah and His Messenger. But if you repent, then you shall be entitled to [the return of] your principal. You will do no wrong, and neither will you be wronged.

[Surat Al-Baqarah, 278-279]

Prophet Muhammad (peace be upon him) said:

Cursed is the one who takes interest, and the one who pays it, the one who records it, and the two who (accept to be the) witnesses for signing it.

[Muslim]

Therefore, FRNs are subject to Riba and not Shariah compliant.

In addition to the above, the AAOIFI Shariah Standard No.21 on Financial Paper, article 5 mentions: "Trading in bonds, both sale and purchase, is prohibited and so is their pledging and endorsement and so on."

This is another issue with FRNs. These debt instruments are traded in a number of ways; where the sale price is different to the face value. Thus, this again fails Shariah compliance as it results in *Riba* and the trading of prohibited debt.



SHARIAH COMPLIANT ALTERNATIVE

The AAOIFI Shariah Standard No.21 on Financial Paper article 6 proposes an alternative to bonds by stating: "The Shari'ah substitute for bonds are investment Sukuk." The overall risk profile and economic return for a Sukuk investor has some similarities albeit differences to a conventional bond where the bondholder is a debtor of the issuer.

The AAOIFI Shariah Standard No.17 on Investment Sukuk defines Sukuk as being: "Certificates of equal value representing undivided shares in the ownership of tangible assets, usufructs and services or (in the ownership of) the assets of particular projects or special investment activities." Unlike a conventional bond (secured or unsecured), which represents the debt obligation of the issuer, a Sukuk technically represents an interest in an underlying funding arrangement structured according to Shariah, entitling the holder to a proportionate share of the returns generated by such arrangement and, at a defined future date, the return of the capital.

Sukuk is a financial instrument that shares characteristics with bond and stock which are issued to finance trade or the production of tangible assets. Similar to a bond, Sukuk has a maturity date and in some of them the holder will receive a regular income over the period and a final payment at the maturity date. While the conventional bonds price is determined only by the creditworthiness of the issuer, Sukuk price is determined by the creditworthiness of the issuer and the value of the asset. Although Sukuk is also similar to stocks in the sense that it represents ownership and no guarantee of a fixed return (at least theoretically and in the standard model of Sukuk) but stocks have no maturity date. Sukuk also have to relate to a specific asset, project or service.

Among the benefits of Sukuk are that most Sukuk are a tradable capital market product providing medium to long-term fixed or variable rates of return. It is assessed and rated by international rating agencies, which investors use as a guideline to assess risk/return parameters of a Sukuk issue. It has regular periodic income streams during the investment period with easy and efficient settlement and a possibility of capital appreciation of the Sukuk. Finally, most Sukuk are liquid instruments and tradable in secondary market.



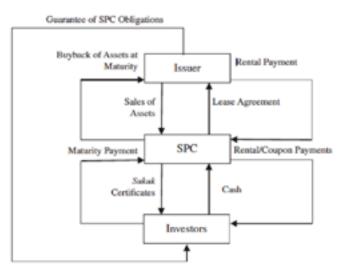
FLOATING RATE IJARAH SUKUK

An alternative to floating rate notes is the floating rate Ijarah Sukuk. Ijarah sukuk is based on the lease (Ijarah) contract. In order to issue Ijarah sukuk, the originator, who primarily owns the assets, sells the assets to an SPV (Special Purpose Vehicle), which is typically a company in an offshore tax free site. The SPV leases the assets back to the issuer at a specific predetermined rental fee, and then the SPV securitises the ownership in the assets by issuing Sukuk certificates to the public investors. These Sukuk certificates represent an undividable share in the ownership of the assets, which entitles the Sukuk holders to distribution of the rental payments on the underlying assets. However, the rental payment could be fixed or floating for the whole period, depending on the leasing contract between the SPV and the originator. Since these Sukuk certificates represent ownership in real assets, they can be traded in a secondary market. The Sukuk certificate holder owns part of the underlying asset or usufructs and earns floating rent indexed to a market benchmark such as LIBOR.

The role of the SPV in conducting Ijarah Sukuk is the management of the Sukuk cash flow, particularly receiving periodical rentals and instalments from the originator and disbursing them to the Sukuk holders. After maturation of the Sukuk, the SPV no longer has a role.

Ijarah sukuk is typically issued for periods longer than five years and can be considered as long-term debt certificates. This may raise the issue of the SPV's default risk, so the investors typically receive a direct guarantee from the issuer of the SPV obligations. This guarantee includes the obligation by the issuer to repurchase the asset from the SPV at the end of the ijarah contract at the original sale price. Because of its nature, the SPV does not have any of the risks associated with banks—that is, it is bankruptcy remote. If the issuer faces bankruptcy, the creditors to the issuer cannot claim the assets held by the SPV or otherwise interfere with the rights of the Sukuk holders on the assets in the SPV.

Because of the fixed and predetermined nature of rental cash flow, Ijarah Sukuk holders receive steady income that is even more risk averse than common stocks. General market conditions, price movements of real assets, the ability of the lessee to pay the rental or instalments, maintenance, and insurance cost are sources of risks to Ijarah Sukuk. Because of these risk factors, the expected return on some Ijarah Sukuk may not be precisely predetermined and fixed. Thus, the fixed rental may only represent a maximum that is subject to some possible deductions. The return is variable or floating in most cases. This variable rate is commonly benchmarked or pegged to an index such as the London Inter Bank Offered Rate (LIBOR)¹⁵.



15 Ariff (2014), Sukuk Securities, Singapore: Wiley Finance Series

CONTRASTING BENEFITS OF FRNS AND IJARAH SUKUK

Benefit from Rising Interest Rates

Investors are sometimes reluctant to "lock-in" a current fixed rate for the long term because they believe rates will rise in the future. However, rates available on short-term investments may be lower than the investor is willing to accept. FRNs offer an alternative which pays a spread above current short-term rates and also enjoys the benefit of future rate increases.

This is similar to Ijarah sukuk where the amount of each rental is equal to the Periodic Distribution Amount payable under the Sukuk at that time. This amount may be calculated by reference to a fixed rate or variable rate (e.g. LIBOR or EIBOR) depending on the denomination of Sukuk issued and subject to mutual agreement of the parties in advance. As such, the Sukuk pricing process adopts the same pricing mechanism as bonds, utilising the difference between bid and ask prices (generally called bidask spread), and is also determined by the trading volume. Technically, these leases, profits or sales are structured to deliver the equivalent of a fixed annual interest rate since they are not considered as the forbidden "interest" payments¹⁶.

Limited Price Sensitivity to Interest Rates

Fixed-rate bonds tend to decrease in value when interest rates rise and increase in value when rates fall. The bond's value changes to compensate for the difference between its fixed coupon rate and current interest rates. Because FRNs coupon rate changes when market rates change, its price will normally fluctuate less than fixed-rate bonds of similar maturity. However, there is no assurance that coupon changes will reflect the current level of interest rates.

In the Ijarah Sukuk, rental must be determined at the time of contract for the whole period of the lease. Although it is possible to split the term of the lease into smaller rental periods where different amounts of rent may be calculated for each such rental period, the amount of rent must be fixed at the start of each such rental period and Shari'a will consider each rental period as a separate lease. The AAOIFI Standard No.9 on Ijarah article 5/2/3 states:

"In case the rental is subject to changes (floating rental), it is necessary that the amount of the rental of the first period of the Ijarah contract be specified in lump sum. It is then permissible that the rentals for subsequent periods be determined according to a certain benchmark. Such benchmark must be based on a clear formula which is not subject to dispute, because it becomes the determining factor for the rentals of the remaining periods. This benchmark should be subject to a ceiling, on both maximum and minimum levels."



16 Ahmed, E.R et al. (2014), Islamic Sukuk: Pricing Mechanism and Rating in Journal of Asian Scientific Research 4(11): 640-648

Secondary Market

Despite FRNs being most suitable for purchasing and holding to maturity, investors may find it necessary to sell their floating-rate investment prior to maturity. FRNs may be traded in the secondary market, which provides an opportunity for investors to sell them at then prevailing market levels, which may be more or less than the purchase price.

Ijarah Sukuk certificates represent an undividable share in the ownership of the assets, which entitles the Sukuk holders to distribution of the rental payments on the underlying assets. However, the rental payment could be fixed or floating for the complete period, depending on the leasing contract between the SPV and the originator. Since these Sukuk certificates represent ownership in real assets, they can be traded in a secondary market.

Conclusion

A floating rate note is an instrument investment with interest payments that float or adjust periodically based upon a predetermined benchmark. Floating-rate loans are considered "senior" in a firm's capital structure, meaning they typically have among the highest claims to a borrower's assets in the event of default. Floatingrate loans most commonly serve as an alternative source of financing for companies whose credit quality is rated below-investment-grade, or "junk." By design, floating rate notes curtail the effects of interest rate risk, thus credit risk is the primary driver of returns. From a Shariah perspective, since FRNs are a type of bond and an interest-bearing investment, it is not Shariah compliant. These financial debt instruments are premised on the exchange of two monetary payment; the investor pays upon purchasing a floating rate note and receives periodical payments from the FRN issuer. A proposed alternative to bonds are Sukuk which are Shariah compliant financial instruments. Sukuk technically represents an interest in an underlying funding arrangement structured according to Shariah, entitling the holder to a proportionate share of the returns generated by such arrangement and, at a defined future date, the return of the capital. An interesting alternative to floating rate notes is the floating rate Ijarah Sukuk based on the Ijarah contract. Ijarah Sukuk can be designed and calculated by reference to a fixed rate or variable rate. Since these Sukuk certificates represent ownership in real assets, they can be traded in a secondary market.

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