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Premiums/Discounts, Tracking Errors and Performance of Saudi Arabian ETFs

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Abstract

The paper aims to investigate the performance of domestic Saudi Arabian ETFs. ETFs are investment vehicles in vogue. These instruments were the first levers for investors allowing them to enter some markets that have been highly protected or out of reach. Saudi Arabia, which has been promoted as an emerging country by MSCI, seeks to attract more foreign investors. The first ETFs were launched in the years 2010-2011. Even though their number has not increased since then, there is a desire to attract a large number of investors. We use premiums/discounts analysis, standard risk-return models, and tracking errors measurements to assess how closely their replicate the underlying benchmark based on monthly data. The results indicate that out of the three funds investigated two are slightly traded at premium, while the latter exhibit a price discount. However, tracking errors are at minimum for all funds suggesting that they track well the benchmark index. Further, the Jensen's model shows that alphas are negative or null, and betas capture largely the systematic risk which is consistent with index investing strategies. Finally, traditional risk-adjusted measures of performance are used to compare ETFs, and results exhibit negative ratios showing that portfolios achieve lower return than the risk-free rate.

Keywords: ETF, Premium, Tracking Error, Performance, Saudi Arabia.

JEL Classification Code: G10, G12, G14.

1. Introduction

ETFs are highly flexible funds seeking to track the performance of a benchmark of equities, bonds, commodities etc.). They are listed and traded on an exchange throughout the day like common stocks. As such, investors can sell short or buy at the margin. In the primary market, ETFs mechanism is based on unit creation (increasing the supply of ETFs shares) and redemption (decreasing the shares outstanding of the ETF) in exchange of securities or cash through Authorized Participants (APs). The architecture and the main features of these new types of funds are now well-known. APs regulate supply and demand in the secondary market either by buying or selling the basket of underlying securities.

Early studies mostly focused on comparing ETFs with open-end mutual funds or closed-end funds. ETF activity in both primary and secondary markets gives them additional liquidity compared to open-end mutual funds (Henderson & Buetow, 2014). ETFs provide the opportunity to outsource management costs (Lettau & Madhavan, 2018) and provide tax savings. Most studies explain ETFs outperformance over conventional funds by the difference in cost structure. However, Gastineau (2004) relativizes the outperformance of ETFs when we use popular indices such as Russell 2000 or Standard & Poor's 500 as underlying benchmarks. He attributes the underperformance to the lack of initiative of ETF managers. Harper, Madura, and Schnusenberg (2006) argue, on the basis of risk-adjusted returns, that ETFs are a viable substitute for CEFs.

Barnhart and Rosenstein (2010) note that average CEFs discounts increased significantly after the introduction of substitutable ETFs. In addition to comparative studies, other authors study the pricing efficiency of ETFs. Indeed, the market value of an ETF might deviate from the market value of the underlying assets. Engle and Sarkar (2006) examine the price differences of a sample of domestic and

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international ETFs taking into account price and NAV bias in modeling. They conclude that for domestic ETFs, deviations are small and transient, unlike international ETFs where they are higher and more persistent. Delcoure and Zhong (2007) also note that international iShares ETF trades with significant premiums and that pricing errors converge to zero in a short period of time. Exploring a broad range of ETFs, Hilliard (2014) concludes that domestic ETFs trade closely around their NAVs while arbitrage barriers result in higher premiums for international ETFs.

There is a consensus in the literature that price deviations are small and usually short-lived as the creation and redemption process favors the mechanism of arbitrage, which keeps the ETF price close to its NAV (Evans, 2011; Hughen & Mathew, 2009; Marshall, Nguyen, & Visaltanachoti, 2013). Petajisto (2017) studied the premiums of US-listed ETFs and found that ETFs with liquid securities are priced relatively efficiently whereas ETFs with illiquid or international holdings exhibit premiums. Using a sample of 224 iShares ETFs, Piccotti (2018) finds that ETFs tend to trade at premium. The author explains this phenomenon by the liquidity generated by ETFs which are more accessible than the underlying securities.

Studying the performance of two ETFs traded on the Hong Kong Stock Exchange, Chu (2017) also finds that price deviations are not null and that investors pay a premium. Jares and Lavin (2004) explain ETFs discounts and premiums by the information flow and the asynchronous trading of the ETFs and their underlying constituents. They suggest the existence of a relation between discounts and future ETFs returns. Osterhoff and Kaserer (2016) argue that the existence of tracking errors depends on the liquidity of the underlying securities. Comparing ETFs and index funds in South Africa, Strydom, Charteris, and McCullough (2015) find both types underperform the benchmark, but ETFs track more closely the underlying index. However, price deviations from NAV are not necessarily due to mispricing, particularly when we study the volatility of the ETF relative to the underlying assets, and they do not always report arbitrage opportunities (Madhavan & Sobczyk, 2016). Malamud (2015) argues that investors require time-varying premiums due to liquidity shocks in the ETF market. Ben-David, Franzoni, and Moussawi (2018) highlight the shorter time horizon of institutions holding ETFs compared to those holding underlying securities. They argue that stocks largely owned by ETFs exhibit positive alphas. In the context of Saudi Arabia, studies investigating ETFs are scarce.

The purpose of this paper is to presents the characteristics of Saudi domestic ETFs listed on the Tadawul Stock Exchange and to track their performance. After the stock market crash in 2008, Islamic finance products gained some traction. As part of the diversification of financial instruments and the opening of the Saudi market to a wide range of investors, Falcom Saudi Equity ETF was launched in 2010. It seeks to replicate the performance of a portfolio comprised of the 30 biggest Shariah compliant companies. The same year saw the launch of Falcom Petrochemical ETF which started to track an index formed by firms in the petrochemical sector. The two ETFs are managed by Falcom Financial Services which also accounts in its portfolio 3 mutual funds investing in domestic assets. The third fund, HSBC Amanah Saudi 20 ETF was also launched in 2011. It intends to replicate an index constituted by the 20 largest shariah compliant firms. The fund is managed by HSBC Saudi Arabia, a very active player in the Saudi market and which also has in its portfolio 7 mutual funds investing locally.

According to the CMA Annual Report (2017), the three funds together manage SR 36 million of assets (55% for Falcom Saudi Equity ETF and the rest divided equally between the two other ETFs). At the end of 2017, the number of subscribers was 292. Falcom Saudi Equity ETF holds 61% of subscribers. Activity in this segment of the market is still far from the potential of the economy, which has just been promoted as an emerging country by MSCI. The study proceeds as follows. Section 2 describes the data and their statistical properties. Section 3 examines the performance and risk of ETFs through traditional pricing models and metrics. Section 4 discusses the results and their limitations. Section 5 concludes.

2. Data and Descriptive Statistics

Data are obtained from Bloomberg, DataStream and Tadawul Stock Exchange. These data are completed by those obtained directly from the fund issuers. Data used in this paper consist in monthly prices and official net asset values. Falcom Saudi Equity ETF tracks an index constituted by 30 shariah compliant shares of big companies. Falcom Petrochemical ETF reproduces a benchmark representing all companies of the petrochemical sector that are shariah compliant. HSBC Amanah ETF replicates the HSBC Amanah Saudi 20 Equity Index.

The benchmark is constituted by the 20 largest shariah compliant companies listed in the market and is provided by Standard & Poor's. We carried comparisons using several Islamic benchmarks and found that S&P Saudi Arabia Shariah Index is the most relevant. So, it used as the benchmark for all three funds. The period of study spans from July 2010 to June 2018 for ETFs managed by Falcom Financial Services. Regarding HSBC Amanah Saudi 20 ETF, the period is comprised between November 2011 and June

2018 is investigated. The 3-month Saudi interbank offered rate, obtained from DataStream, is used as risk-free rate. Assuming that dividends are null, we calculate daily log-returns of index prices and funds NAVs. Table 1 gives average price premiums for each of the three ETFs.

Table 1: Descriptive Statistics of the Price Premiums

	Falcom 30 ETF	Falcom Petchem ETF	HSBC Amanah ETF
Mean	.00268	.00014	-.09310
Max	.09910	.25047	.20786
Min	-.07082	-.01979	-1
STD	.02532	.05833	.30755
Number of obs.	96 months	96 months	80 months

The results show that average price deviations are almost zero for the first two ETFs, Falcom 30 ETF and Falcom Petchem ETF which are slightly traded at premium (0.27% and 0.01% respectively). HSBC ETF is traded at discount (-9.31%). The first results suggest that investors in Falcom Financial Services ETFs are more likely to buy ETFs than the underlying securities contrary to HSBC ETF investors. However, HSBC ETF is more volatile (31%) followed by Falcom Petchem ETF (5.83%) and Falcom 30 ETF (2.53%). Following, Jares and Lavin (2004), we regressed ETF returns on the contemporaneous and lagged premiums/ discounts to investigate whether these price deviations are exploitable in arbitrage strategies, the results were similar. There is a negative relation between contemporaneous returns and price deviations, and a positive relation between contemporaneous returns and lagged price deviations. The results suggest the existence of potential arbitrage profits.

3. Performance

3.1. The Jensen's Model

The risk of the funds is investigated on the basis of traditional performance measures. Funds' betas and alphas are estimated using Jensen (1968) model derived from the capital asset pricing model. Regression of each fund's excess returns on the benchmark excess return is carried as follows:

$$R_{ETF,t} - r_{ft} = \alpha + \beta\left[I_t - r_{ft}\right] + \varepsilon \quad (1)$$

where: $R_{ETF,t}$ is the return of the fund; I_t the performance of the benchmark; rf_t the risk-free rate, and ε an error term. In the absence of abnormal return, coefficients alpha and beta are expected to be zero and one respectively.

Results are reported in Table 2. The negative alphas are logical and suggest that fund managers achieve relatively lower returns with respect to the benchmark. Except for Falcom Petchem ETF, the coefficients of alpha are statistically significant. Passively managed funds are not expected to beat their benchmark. HBSC ETF exhibits a statistically significant beta of .95 and thus tracked more closely the benchmark than did Falcom 30 and Falcom Petchem ETF with statistically significant betas of .89 and .77 respectively. On the other side, the explanatory power of the model is good for HSBC ETF (R^2=.92), above average for Falcom 30 ETF (R^2=.72) but poor to explain monthly returns variations for HSBC Amanah (R^2=.36). Jensen's index does not allow direct comparisons of portfolios of different risk. These results are consistent with those obtained by Kanuri and McLeod (2015) who highlight the existence of negative alphas for the majority of US and international ETFs.

Table 2: Estimations of Alphas and Betas

	Alpha	Beta	R^2
Falcom 30 ETF	-.005364***	.89267**	.72
Falcom Petchem ETF	-.007566*	.77780***	.36
HSBC Amanah ETF	-.003341**	.95452***	.92

Notes: Alphas and betas estimates from the equation

$R_{ETF,t} - r_{ft} = \alpha + \beta\left[I_t - r_{ft}\right] + \varepsilon$

*/**/*** significant at 10/5/1%.

3.2. Risk-adjusted Measures of Performance

Three ratios are examined: Sharpe, Treynor, and Sortino. These measures of performance differ only by their denominator. They are computed respectively as the expected fund excess return over the standard deviation (Sharpe), beta (Treynor), or the downside risk (Sortino). The downside risk represents the standard deviation of negative funds returns. Table 3 shows the results.

Table 3: Measures of Performance

	Sharpe	Treynor	Sortino
Falcom 30 ETF	-.51076	-.03177	-.78073
Falcom Petchem ETF	-.40588	-.03549	-.65534
HSBC Amanah ETF	-.50415	-.02937	-.82214

Notes : Sharpe = (RETF-rf)/σETF; Treynor =(RETF-rf)/βETF; Sortino= (RETF-rf)/ηETF where RETF, σETF, βETF, ηETF, and rf denote respectively the returns on the ETF, the standard deviation of ETF returns, the systematic risk of the ETF, the downside risk, and the risk-free rate.

Falcom Petchem ETF ranks first based on Sharpe and Sortino ratios. HSBC Amanah ETF outperforms the two other funds when Treynor measure is used. Falcom 30 ETF arrives at the second place with regard to Treynor and

Sortino criteria. The values of the three measures of risk-adjusted performance are negative for all ETFs. Therefore, the interpretation of negative values should be done with caution to take into account the risk-return framework within the assumptions of the financial theory. Overall, it appears that the three ETFs are close to each other within the same measure of performance.

3.3. The Tracking Errors

The aim of the ETF is to replicate the performance of an index. The difference in returns between the fund and the benchmark is called the tracking error (TE). The literature attempts to explain these differences by the creation/ redemption process, the ETF size, the liquidity of the securities in the underlying portfolio, the management fees, the dividends... Still, a good replication of the index seeks to minimize the TE. Several formulas are proposed to measure these deviations. Many professionals calculate the TE as positive or negative annual returns deviations. Frino and Gallagher (2001) propose three methods of calculating TE.

The mean absolute deviation (MAD) method is computed as the average absolute difference between the ETF and index returns.

$$TE = MAD = \frac{1}{n}\sum_{t=1}^{N}|R_{ETF} - I| \quad (2)$$

The second formula assimilates the TE with the residuals from the regression of the single-factor model.

$$TE = \varepsilon_{i,t} = R_{ETF_{i,t}} - \alpha_i - \beta_i I_{i,t} \quad (3)$$

The last method, expressed in terms of volatility, reflects the monthly return differences between the fund and the benchmark and can be calculated as follows:

$$TE = \frac{1}{N-1}\sqrt{\sum_{t=1}^{N}(R_{ETF_{i,t}} - I_{i,t})^2} \quad (4)$$

Table 4: Tracking Errors

	TE1	TE2	TE3	Average TE
Falcom 30 ETF	.0179915	.0023827	.0300143	.0167962
Falcom Petchem ETF	.0419304	.0025995	.0559136	.0334812
HSBC Amanah ETF	.0128771	.0025746	.0159536	.0104684

The tracking error reflects the ability of the fund to mimic accurately the underlying benchmark. Smaller is the tracking error, better is the replication strategy. Ideally, it should be zero. The results show that HSBC Amanah ETF has the lowest tracking error (1%) followed by Falcom 30 ETF (1.7%) and Falcom 30 ETF (3.3%). Results suggest that when the fund is trading at premium, it is more likely to display higher tracking errors than those trading at discount. This finding is consistent with Piccotti (2018) who argue that investors are interested by ETF diversification opportunities and thus are prone to pay premiums. However, based on all the previous results it appears that Saudi ETF prices are close to their NAVs. This evidence is also found in Engle and Sarkar (2006) for domestic ETFs, which are more actively traded than their international counterparts.

4. Discussion and Limitations

The purpose of this work was to highlight ETFs listed on the Saudi stock exchange by studying their price deviations from NAVs as well as their ability to accurately reproduce the performance of the underlying benchmark. The results corroborate those obtained in the international context that ETFs tend to trade at premium and exhibit low tracking errors, null or negative alphas. The three ETFs listed on the market seem comparable in every way in terms of their tracking performance.

The weight of ETFs underlying components is dominated by shariah-compliant banks and petrochemical companies. It is not excluded that the price of ETFs is influenced by the idiosyncratic risk of the leading companies in the portfolio. The ETF market segment suffers from a lack of liquidity, as reflected by the low volume of activity. Consistent with Jares and Lavin (2004), further investigation suggests the possibility to earn abnormal returns in a frictionless market, as it is not the case for the Saudi market. If investors are more familiar with international ETFs giving exposure to the MENA region in general and Saudi Arabia in particular, it should be noted that domestic ETFs occupy only a modest position on stock exchanges.

The present study, while highlighting the performance of domestic Saudi ETFs, has its limitations. The first is related to the lack of sufficient data to shed light on the motivations of investors. The second is that it is difficult to avoid a comparison with well-known and well established mutual funds. Third, it would be interesting to study the behavior of fund managers who manage multiple assets. Finally, a deeper analysis of the rules and regulations is necessary.

5. Conclusion

ETFs were listed for the first time on the Saudi stock exchange in mid-2010. The activity in this market segment, dominated by institutional investors, is still below

expectations if we refer to the low level of trading volumes. This article aimed to study the tracking ability of domestic Saudi ETFs and to compare their performance. Although the overall results show that ETFs closely replicate the underlying index, the fact remains that given the low liquidity of the market, the possibility of the existence of stale prices and NAVs cannot be ruled out. The launch of a real platform for trading ETFs would boost the liquidity at the time the country is admitted by MSCI Emerging Markets.

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