



## Premiums, discounts and feedback trading: Evidence from emerging markets' ETFs



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### ARTICLE INFO

#### Article history:

Received 15 December 2013

Received in revised form 15 June 2014

Accepted 28 July 2014

Available online 8 August 2014

#### JEL classification:

G02

G10

G15

G23

#### Keywords:

Feedback trading

Exchange-traded funds

Emerging markets

### ABSTRACT

This study investigates the extent to which ETFs' premiums and discounts motivate feedback trading in emerging markets' ETFs. Using a sample of the first-ever launched broad-index ETFs from four emerging markets (Brazil, India, South Africa and South Korea), we produce evidence denoting that feedback trading grows in significance in the presence of lagged premiums. The significance of feedback trading becomes more widespread across our sample's ETFs as the lagged premiums grow in magnitude, with evidence also suggesting that the effect of lagged premiums over feedback trading varies prior to and after the outbreak of the recent global financial crisis.

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## 1. Introduction

Research on the behaviour of investors in exchange-traded funds (ETFs, hereafter) has indicated that they are prone to pursuing feedback strategies, the latter having been linked to a variety of behavioural factors including overreaction (Madura & Richie, 2004), market sentiment (Chau, Deesomsak, & Lau, 2011) and herding (Chen, Ho, Lai, & Morales-Camargo, 2012). It is worth noting however, that the previous studies have focused on the US market and that little is known about investors' behaviour in emerging market ETFs. Another interesting issue here is whether ETFs' premiums/discounts (i.e. the observed deviations of ETF-prices from their underlying net asset values – NAV, hereafter) also bear an effect over the observed feedback trading in ETFs and whether this effect changes following the onset of the recent financial crisis. It is the above issues that our study aims at investigating.

To begin with, ETFs have evolved phenomenally as an innovation in international equity markets since the 1990s,<sup>1</sup> with the global ETF-industry totalling 8143 funds and a combined market value of almost \$12 trillion by year-end 2013.<sup>2</sup> The key feature of ETFs is that they combine elements of both open- and closed-end funds; they are both capable of tracking a benchmark-index (like open-end funds) as well as being traded in equity markets (like closed-end funds), thus allowing their investors the opportunity to trade an index<sup>3</sup> through a single tradable instrument. Aside from their trading in the secondary market, there also exists a primary market for them, whereby authorized participants (such as institutional investors or market makers) can perform in-kind

<sup>1</sup> The first ETF was launched in Canada under the name TIPs (Toronto Index Participation units) in 1989 with the purpose of tracking the Toronto 35 Index. However, it was in the US that ETFs gained in popularity through the American Stock Exchange (AMEX) which initially dominated their listings in the 1990s. The first ETF was launched in the US in 1993 with the purpose of tracking the S&P 500 index and came to be known as "Spiders" (SPDRs: Standard & Poor's 500 Depository Receipts; ticker symbol SPY).

<sup>2</sup> Source: World Federation of Exchanges Monthly Statistics (2013).

<sup>3</sup> The benchmark-index may relate to equities, bonds, currencies, commodities, or sectors, among others.

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creation or redemption of ETF-units<sup>4</sup>; furthermore, ETFs allow investors to engage in equity trading practices, including short-selling, margin trading and stop-loss orders. Owing to their unique features (including tax-efficiency, low management fees, dividend-treatment, transparency and risk-diversification; see Deville, 2008 for a detailed discussion), ETFs have traditionally enjoyed wide popularity with the institutional investment community as portfolio- and risk-management instruments (Hill & Teller, 2010; Ünal, 2009, Chap. 1) and have been attracting increasing numbers of retail investors as an alternative to mutual funds (Ellis, 2009; Flood, 2012; Nedeljkovic, 2011).

The popularity of ETFs has motivated research on investors' behaviour in this segment; although this area of research is still in its early stages, evidence suggests that ETFs are particularly susceptible to feedback trading. Feedback trading per se relates to investment strategies based on historical prices (De Long, Shleifer, Summers, & Waldmann, 1990), including momentum trading (Jegadeesh & Titman, 2001), contrarian trading (DeBondt & Thaler, 1985), technical analysis (Lo, Mamaysky, & Wang, 2000), stop-loss orders (Osler, 2005), portfolio insurance (Luskin, 1988) and margin trading (Hirose, Kato, & Bremer, 2009; Watanabe, 2002). In the context of ETFs, Madura and Richie (2004) showed that US ETFs during the dot com bubble were prone to intraday price-overreaction and -correction that could be profitably exploited by contrarian (negative feedback<sup>5</sup>) day-traders. Chau et al. (2011) reported evidence showing that positive feedback trading<sup>6</sup> in the three largest US ETFs (Spiders; Cubes<sup>7</sup>; Diamonds<sup>8</sup>) grew in significance during periods characterized by optimistic market sentiment and up-market trends. Chen et al. (2012) explored the trading patterns of institutional investors in the US ETF market and documented the presence of contrarian trading tendencies among them, alongside significant herding, the latter being mainly observed for ETFs of smaller size. The reasons why ETF-investors are susceptible to feedback trading vary, depending on the type of investor involved. Several feedback-style strategies, such as portfolio insurance, margin trading and stop-loss orders are typically performed by institutional investors using ETFs (Ünal, 2009, Chap. 1) for purposes, such as hedging (to protect against declines in the ETF's underlying index; see Curcio, Lipka, & Thornton, 2004), tactical portfolio allocation (to gain instant asset-class exposure or shift between asset-classes) and core-satellite strategies.<sup>9</sup> Regarding retail investors, the very design of ETFs can appeal to a series of behavioural forces (recognition heuristic; familiarity bias; ambiguity aversion; limited attention) which can lead them to feedback

trade by boosting their overconfidence.<sup>10</sup> Motivated by the foregoing discussion, we formally present the first hypothesis of this paper:

**Hypothesis 1.** *There exists significant feedback trading in emerging markets' ETFs.*

Another factor capable of giving rise to feedback-style strategies in ETFs is their observed premiums and discounts, reflected through the deviations between their price and their NAV. Since the value of the assets an ETF invests into comprises its fundamental value, the law of one price would suggest that for its pricing to be efficient, its price should largely be in line with its NAV; should deviations between the two exist, this would indicate the presence of an inefficiency largely similar to the closed-end fund puzzle (see e.g. Lee, Shleifer, & Thaler, 1991), where closed-end funds have been found to be trading at a discount relative to their NAV. Although Deville (2008) has argued that the in-unit creation/redemption would be expected to deter such deviations by allowing institutional investors to arbitrage the price discrepancy away, evidence on this issue is rather mixed, with some studies advocating ETFs' pricing efficiency (Ackert & Tian, 2000; Curcio et al., 2004; Elton, Gruber, Comer, & Li, 2002) and others documenting the presence of significant deviations (Blitz & Huij, 2012; Fujiwara, 2006; Harper, Madura, & Schnusenberg, 2006; Kayali, 2007; Rompotis, 2010; Shin & Soydemir, 2010; Simon & Sternberg, 2004). Similar to closed-end funds,<sup>11</sup> research (Cherry, 2004; Jares & Lavin, 2004) has confirmed that premiums and discounts in ETFs can be profitably exploited by ad hoc trading strategies. Given that these strategies are essentially feedback-style in nature (they aim at timing investment in an ETF by observing the deviations of its price from its NAV over time), it would

<sup>4</sup> Unit-creation involves creating ETF-shares by borrowing batches of shares (normally from investment trusts), deposit them with the ETF's management company (alongside an amount of cash) and obtain ETF-shares; unit-redemption involves authorized participants returning their in-kind created ETF-units and receiving the deposited batch of stocks (plus a cash-amount). The cash-amount mentioned here is necessary to cover any discrepancy between the ETF's NAV and the value of the basket of stocks necessary to form an ETF-unit. Cherry (2004) has estimated that a range of 25,000 to 600,000 shares are needed to be deposited by authorized participants to obtain a single creation-unit in an ETF in the US.

<sup>5</sup> Negative feedback (or "contrarian", as is more popularly known) trading involves investors buying (selling) when prices fall (rise), i.e. bucking the trend.

<sup>6</sup> Positive feedback (popularly known as "momentum") trading is the case whereby investors trend-chase by buying (selling) when prices rise (fall).

<sup>7</sup> The ETF linked to the NASDAQ100 index, launched in March 1999 (ticker symbol: QQQQ).

<sup>8</sup> The ETF linked to the Dow Jones Industrial Average index, launched in January 1998 (ticker symbol: DIA).

<sup>9</sup> A core-satellite strategy combines passive investment instruments (the "core", which may include benchmarked assets, such as ETFs, index futures etc.) with a portfolio of individual assets (the "satellite", including selected stocks, bonds etc.); the purpose of such a strategy is to build a portfolio (the "core-satellite" one) with desired risk-return features.

<sup>10</sup> The *recognition heuristic* (Boyd, 2001) posits that investors evaluate more positively assets that are easier for them to recognize compared to others which are not. An ETF, for example, linked to the S&P500 index (such as the SPDR mentioned in an earlier footnote) would, on average, be more "recognizable" to retail traders compared to a fund investing in any particular combination of S&P500-constituents (it is unlikely an investor can recognize all 500 names of the constituents of that index). However, if an asset is easier to recognize, it also generates a greater sense of familiarity. If the average US retail investor cannot recognize all 500 S&P500-constituents, it is doubtful he feels familiar with all of them either. What is more, it is highly unlikely that each and every one of these 500 stocks will receive equal daily coverage on the news; conversely, the S&P500-values would be reported on the news on a daily basis. Consequently, an S&P500-linked ETF would emit an enhanced sense of familiarity (Huberman, 2001) to retail investors, since it would invest not just in any basket (whose selection-criteria may be based on a strategy the investor may not fully comprehend) but in the specific basket of the market's main index. Another issue here is that the concept of portfolio-diversification entails ambiguity for retail investors who are less sophisticated, possess less investment experience and have fewer resources at their disposal than their institutional counterparts and this is reflected in the under-diversification often characterizing their portfolios (Barberis & Huang, 2001). An ETF can help remove this ambiguity by allowing them instant exposure to the portfolio of a sector or the market as a whole. What is more, an ETF removes the ambiguity in terms of performance, since it is bound, by design, to track the performance of its underlying index. Consequently, an investor who does not feel particular confidence in his portfolio-building skills and wishes to invest in a particular market or sector would view investing in an ETF linked to that market/sector more favourably as a means of *ambiguity aversion*. Following on from that, *limited attention* (Hirshleifer, Lim, & Teoh, 2011; Hirshleifer & Teoh, 2003) – which refers to the situation where individuals' attention is unable for some reason to capture all elements of a multifaceted issue – is relevant here. An investor holding a portfolio trying to replicate the performance of a market's index will have to regularly monitor the performance of his stocks, compare it to some pre-determined point in the past and rebalance his portfolio according to each stock's performance and the performance of the index itself. Conversely, holding an ETF linked to that index reduces the above procedure to the comparison of the index versus a single asset – the ETF. If ETFs enhance familiarity and simplification in the trading process, one would expect retail ETF-investors' *overconfidence* (Barber & Odean, 2000; Barber & Odean, 2008; Barber, Odean, & Zhu, 2009) to be boosted, as they would underestimate the probability of realizing losses (something further encouraged by the fact that less trading costs will be incurred when trading the ETF alone rather than the constituents of its underlying index) and render them more susceptible to trend-chasing.

<sup>11</sup> See e.g. Hughen, Mathew, and Ragan (2005).

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