U.S. Asset Managers and Exchanges

Non-Transparent ETFs Could Change the Mutual Fund Landscape, Helping Equity Volumes/Listings

Brokers, Asset Managers & Exchanges

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Precidian received a Notice of approval from the SEC on April 8 for its application for non-transparent ETFs. Precidian still awaits an SEC Order indicating final approval, but the Notice indicates SEC intent. We believe Precidian's non-transparent ETF is a potentially crucial structure in the evolution of the actively managed mutual fund industry, as it holds the potential to deliver greater tax efficiency and meaningfully lower costs to fund investors. We also think the structure levels the playing field somewhat between passive and active investing. We see retail investors as long-term beneficiaries, and exchanges and trading firms stocks as being helped. We expect asset managers will be enthusiastic to launch the new structures, and while we see certain distributors as hesitant, we see them coming on board too (should the structure live up to its potential.)

- **Precidian gets SEC Notice of approval for its non-transparent ETF.** Precidian received a Notice from the SEC regarding its non-transparent ETF application indicating an Order will forthcoming that grants exemptive relief for its non-transparent ETF structure. The SEC Order represents the final approval for Precidian's application. As of the publication of this research, the SEC hasn't issued this Order and it would appear that last minute Eaton Vance objections are being reviewed.

- **Non-Transparent ETF have tax and cost advantages over today's current 40-Act mutual fund structure.** Precidian's non-transparent ETF structure reduces fund expenses and improves tax efficiency relative to existing mutual fund structures. We also see the potential for more significant trading efficiencies, which combined could improve investor returns ~100bps annually. Furthermore, potential linkages of ETFs and mutual funds could enhance the tax profile of existing mutual funds, making the products 'must-haves' for mutual fund companies.

- **Trading firms leading beneficiaries.** We see retail investors as the leading beneficiary of the new structure. The asset management industry would benefit as the structure does neutralize some advantages held in passive ETFs today, although we see some fund costs eventually borne by asset managers. We see equity trading firms and exchanges as leading beneficiaries as they would be helped by higher equity trading volume (non-transparent ETFs could be 20% of US cash equity trading volumes is adopted widely) as well as higher listing fees. Brokers might be less supportive of the new structure given ETFs don't directly pay distribution costs.

See page 24 for analyst certification and important disclosures.

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Precidian and Non-Transparent ETFs

Precidian received an SEC Notice indicating intent to approve the non-transparent ETF structure called ActiveShares if no one intervened. We see this approval as a significant step forward in the evolution of the asset management business as these structures will allow for lower cost and greater tax-efficiency for actively managed investment products. We think this ETF structure is better than the existing 40-Act mutual fund wrapper that exists as the dominant structure for retail investment products today. We see the launch of this non-transparent ETF structure potentially putting investment dollars in motion, with winners likely the larger mutual fund managers with the resources to invest, together with products that have the best returns. While the lower costs should likely drive a meaningful improvement in fund returns, we don't estimate it will be enough to help active managers industrywide exceed the returns of their benchmarks. Thus we continue to see the best way to invest on the potential success of the non-transparent ETF as buying equity exchanges and trading platforms. We continue to recommend purchase of ICE and CBOE, both of which are likely beneficiaries of success that non-transparent ETFs may have.

Non-Transparent ETFs – The Basics

On April 8, the SEC issued a Notice indicating Precidian would receive an SEC Order representing final approval for its non-transparent ETF application. As of the publication of this research, no SEC Order has yet been published, but given the Notice final approval is expected. Precidian's non-transparent ETF gives the ***active*** equity mutual fund industry the ability to use an ETF structure, which allows meaningful cost and tax benefits relative to the existing 40-Act Mutual Fund structure that dominates the retail investing market today and reduces the advantage that passive ETFs hold over active managers. We also see the new structure helping to close the performance gap between active managers and their benchmark returns, although the benefits seem unlikely to push active performance beyond benchmark on a wide-scale basis.

Covered Securities – Listed Securities Traded in the US During US Hours
Precidian's application for non-transparent ETFs covers investments in exchange-traded US equities, ETFs, ADRs, US Futures and Treasuries. Here, the SEC focused on investments that trade within US trading hours, on US exchanges. These investments are broad enough to satisfy the investment needs of most US fund portfolios, with non-US and fixed income investment exposure available through ADRs, Futures and other ETFs.

Tax – Key Value Proposition, Especially After Two Years of Elevated Cap Gain Distribution from Mutual Funds
We see tax as a meaningful value propositions for the non-transparent ETFs. Here, the process of Creating/Redeeming ETFs allows for a pro-rata redemption-in-kind and ultimately we expect the tax-free exchange of low basis shares, minimizing the potential and magnitude of year-end capital gains distributions. Precidian's exemptive relieve does not allow for customized in-kind baskets. Thus while money added and withdrawn from the ETF portfolio is likely generate tax-deferrals for the portfolio, Portfolio Manager rebalancing is still likely to creates taxable gains.

Lower Costs – Non-Transparent ETFs Are a Lower Fee Structure

Fund costs should be lower, and likely meaningfully lower in an ETF than in a corresponding mutual fund. There are no distribution fees paid directly by an ETF (which generally saves the funds 25bps), there are no transfer agency fees (which can save another 10+bps), and even fund accounting/administration costs are lower in an ETF than a mutual fund (saving a few more bps.) Cash drag is also a factor, but is small and largely offset by the investment of excess cash into futures or ETFs.

Trading Spreads – Wider than Existing Market Cap Weighted ETFs.

Clearly an important consideration is how wide will bid/ask spreads be on the non-transparent ETFs? When polling potential market makers for the non-transparent ETFs as well as existing market makers for current transparent ETFs, expectations are for spreads to be wider in the non-transparent ETFs than they are for current exchange traded products. However, market makers are likely to become more comfortable trading a portfolio based on the VIIV over time, and as they get a sense of how materially and how often portfolio managers turnover their portfolios and change holdings. As such spreads should narrow and may not be all that much wider than market cap weighted ETFs should non-transparent ETFs get to scale. The comment we heard was that spreads on EM ETFs are meaningfully narrower than on the underlying, as one market maker expressed optimism for the non-transparent ETF structure.

Special Considerations – Lower Transaction Costs and Linkages to Funds

In addition to the advantages above, we want to highlight two other, what may be important factors that could/should drive incremental and potentially meaningful incremental advantage for non-transparent ETFs —lower transaction costs and the linkage of mutual funds with ETFs. Given the importance of these two – we will discuss them in further depth later in this research.

- Lower Transaction Costs – ETFs appear able to transact at much lower costs than what can be achieved by mutual funds, which depending on the size and activity levels of the mutual fund, could save investors an incremental 50bps-100bps annually –costs that are not recognized in the mutual fund expense ratio. This 50-100bps is directly additive to fund performance/returns. The driver of the benefit is that ETF transactions are done at the dealer -- through the create / redeem process. These costs are absorbed by the dealers rather than passed along to the funds. We note that this trading applies to cash coming in and going out of the ETFs -- any rebalancing by the portfolio manager and/or team would still be executed by the buyside traders and the cost would be borne by the fund investors.

- Linking ETFs to Mutual Fund -- Vanguard operates under exemptive relief from the SEC/IRS that allows it to link its Mutual Funds and ETFs. As such, Vanguard has been able to use so-called 'Heartbeat' trades to transfer the low basis securities underlying its mutual funds to the ETF share classes of the funds, using Redeem/Create in the ETFs to unload the low basis shares in a tax deferred manner. Vanguard has various patents on this process, some of which will expire in 2023. To the extent that others can leverage this linkage, under the right circumstances non-transparent ETFs could allow mutual funds to leverage the ETF and improve the tax efficiency of related mutual funds. Should this be achievable (as this would require the same SEC approval granted Vanguard), we'd see the launch of non-transparent ETFs that correspond to existing mutual funds as possibly a necessary offering for mutual fund companies.

Next Steps – Product Launches on Track for 4Q19.

We see a number of next steps needed prior to the actual launch of non-transparent ETFs. First and foremost, Precidian needs final SEC approval – an Order providing exemptive relief for its non-transparent ETFs. The exchanges/SROs will need to file 19b-4 for SEC approval. Precidian partners will then need to file their own applications referencing the Precidian structure for expedited SEC approval.

Precidian Application – from Notice to Order.

Precidian has received a Notice from the SEC, which signals its intent to approve its application if no other parties intervene. The market had until May 3 to request a hearing on the application. While no such hearing was requested, Eaton Vance did submit a letter indicating the Precidian ETFs would violate Section 10(b) and Rule 10b-5 the of SEC Act of 1934 for selective disclosure and the trading on material non-public information. Precidian indicated that these points were raised in 3/10/2016 and 5/24/2017 and have already been considered by the SEC. We thus await the SEC's Order, indicating final approval.

19b-4 – Exchanges / SRO Finalize Another Part of the Application

In conjunction with Precidian's approval for exemptive relief, SRO's will file a 19b-4 with the SEC. The SEC needs to approve the 19b-4, but with the SEC having already approved Precidian's application, we understand this to be a more administrative than a limiting factor that would prevent the non-transparent ETFs from launching.

Licensees Expedited Filing with SEC

Once Precidian receives an SEC Order, we'd expect other asset managers to file applications referencing the Precidian's approved application. Licensees would use a short form, which would have a limited review by the SEC. This expedited process might take just a few weeks. Our understanding is that a single filing by one of Precidian's asset manager partners will cover multiple funds within an existing trust.

Non-Transparent ETFs – Reviewing Precidian's Non-Transparent ETF Structure

It appears to us that the Precidian ETFs has advantages over other fund structures, including 40-Act mutual funds, Eaton Vance NextShares, other non-transparent ETFs. With other non-transparent ETF structures not approved by the SEC, Eaton Vance's NextShares having just $134mn (and off its peak), the big comparison for non-transparent ETFs are to traditional 40-Act mutual funds.

In Table 1 on the following page, we highlight major differences between Precidian's ETFs, traditional ETFs, mutual funds, and NextShares. We think the most important differences between Precidian's Non-Transparent ETFs and 40-Act Mutual Funds are the tax efficiency, the lower fund expenses and the lower transaction costs. The big difference between Precidian Non-Transparent ETFs and EV's ETMFs are that ETFs are traded intra-day, while ETMFs price at the close of business (as is the case with traditional mutual funds). With the non-transparent ETF a legitimate ETF, we see better acceptance of the structure than we have seen for Eaton Vance's ETMF.

Table 1: Product Comparison of Precidian ETFs, Traditional ETFs, Mutual Funds, and NextShares

Characteristic	Open-End Fund Funds	ETFs	Non-Transparent ETFs	NextShares
Transaction Pricing Time	End-of-day	Market hours	Market hours	Prices End-of-Day
Transaction Process	Asset manager sells/buys units of IC	Secondary and primary trading of IC	Secondary and primary trading of IC	Secondary and primary trading of IC
Cost to Transact	Commission	Commission and spread	Commission and spread	Commission and spread
Price to NAV	100% matching	Price and NAV generally inline	Price and NAV generally inline theoretically	Price and NAV generally inline theoretically
Tax Efficiency	Inefficient	Highly efficient	Efficient	Efficient
Active or Passive	Active and Passive	Passive with limited Fixed Income Active	Active	Active
Transparency	Quarterly holdings transparency on a lag	Daily holdings transparency	Quarterly holdings transparency on a lag	Quarterly holdings transparency on a lag
Creation/Redemption Methodology	In-cash	In-kind and in-cash	In-kind and in-cash	In-kind and in-cash
Cash drag	Yes	No	No	No
Distribution Costs	Can be included in expense ratio as 12b-1 fee and paid by investors as well as paid by asset manager	Paid by the asset manager	Paid by the asset manager	Paid by the asset manager

Source: J.P. Morgan.

Precidian vs. Traditional ETFs

Precidian's non-transparent ETFs are different from traditional ETFs principally in that the Precidian ETFs will not disclose the basket of securities to market makers, authorized participants and/or the general public each day. Instead, Precidian will use a Trustee called an Authorized Participant Representative which will know the portfolio and will be responsible for the create/redeem process. The AP Representative will disclose the a VIIV (the NAV of the portfolio) each second out to two decimal places to the market to better allow market makers to effectively make markets.

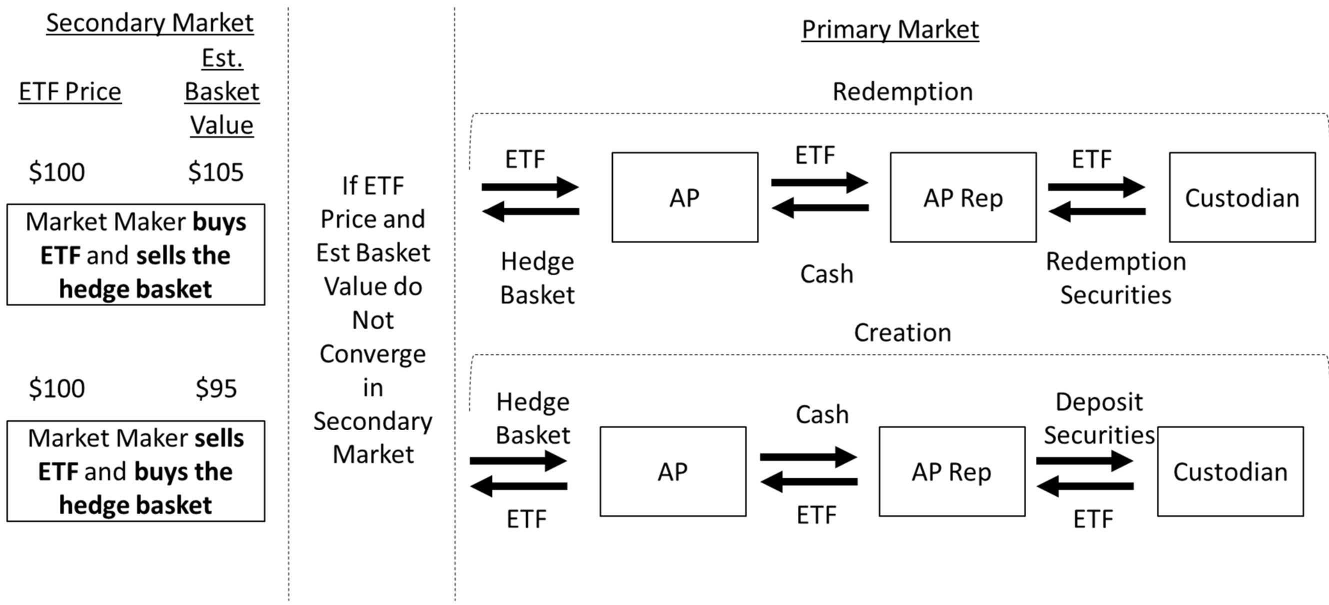
Secondary Trading Precidian ETFs

Market makers need signals to determine whether an ETF price is over- or undervalued relative to its NAV. For traditional ETFs, market makers know the component securities composing the NAV and can estimate/calculate the implied value of the ETF. Precidian will not be disclosing the component securities. Instead, Precidian will disclose a Verified Intraday Indicative Value (VIIV) representing the NAV of the ETF. Based on movements in VIIV, market makers can construct a synthetic ETF to go long or short the underlying NAV exposures even though they will not know the underlying securities in the portfolio.

Primary Trading Precidian ETFs

Precidian has a somewhat different structure for primary market making since the APs cannot directly exchange in-kind underlying baskets for ETFs. There will be a third party called an AP Representative (a broker-dealer) that will execute the primary market transactions. The AP Representative will know the underlying components of the ETF and will use cash provided by APs to buy the underlying basket of securities in a confidential manner.

Figure 1: Precidian Secondary and Primary Transactions



Source: J.P. Morgan.

Non-Transparent ETF Structure Will Help, but is Unlikely to Eliminate the Annual Tax Burden for Actively Managed Funds

Actively managed products (whether mutual funds or ETFs) are likely to have a higher tax burden than passive products due to the more regular rebalancing and trading of investments within the portfolio. Passively managed funds also generate taxable gains, but because rebalancing is often less frequent, there are typically lower taxable gains relative to active products (all else equal). We believe that non-transparent ETFs will be able to use Redeem/Create in primary market making to reduce or eliminate gains around buying and redeeming of ETF shares. However, we don't expect the process will offset gains generated from portfolio rebalancing by the Portfolio Manager, which are not executed by the Authorized Participant Representative.

Precidian ETF vs. Mutual Funds

The Precidian product has similar advantages to mutual funds as do ETFs. Like ETFs, the Precidian product has the following advantages compared to mutual funds:

- Improved tax efficiency
- Lower cash drag
- Lower administrative costs

The primary disadvantage for non-transparent ETFs vs. mutual funds is that the mutual funds transact (after the market's close) at NAV without a bid-ask spread. Precidian ETFs will have a bid-ask spread that will detract from returns, and will make liquidity a consideration in whether to utilize the non-transparent ETF structure.

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Precidian vs NextShares

Precidian's ActiveShares and Eaton Vance's NextShares are both open-end exchange-traded structures designed for active management. However, we see several advantages for the Precidian ActiveShares relative to the Eaton Vance NextShares. ActiveShares is truly an ETF unlike NextShares, which has characteristics of ETFs and Mutual Funds. Here, the pricing of NextShares is based on a premium or discount to its NAV, which can fluctuate throughout the day. However, the NAV isn't determined until end-of-day, which means like a mutual fund, pricing is determined post market close. Consequently, Nextshare investors transact in terms of shares bought or sold (like stocks) whereas mutual fund buyers and sellers transact in dollar terms (buying/selling $10k for example). Unlike ETFs, mutual funds or corporate stocks, one doesn't know the notional value of the transaction until after the market is closed. This can present problems if the value of underlying securities move intraday.

Precidian vs. Other Non-Transparent ETFs

The SEC Notice for Precidian's non-transparent ETF application has driven other asset managers, including T. Rowe Price and Fidelity, to reengaged with their non-transparent ETF applications. Both are looking to publishing a daily proxy that approximates the return profile of the underlying ETF holdings, rather than an exact portfolio. The thought is that the underlying portfolio and the proxy should correlate over time. The concern with this approach is the difference in returns between the proxy portfolio and underlying portfolio may vary and as a result, market makers will be hesitant to use the proxy portfolio for hedging. This would likely drive bid-ask spreads wider and could make these products less competitive than the Pecidian-based ETFs.

Fleshing Out Key Advantages – Non-Transparent ETF Tax Efficiency / Low Cost

Non-Transparent ETFs have characteristics that make the structure better than today's industry-dominant 40-Act Mutual Fund structure. We think key to the future success of non-transparent ETFs will be based on tax efficiency and low costs. However, we think the benefits go beyond the obvious and these benefits may be larger than expectations, driving what we see as a much better product for end customers. We think this could strongly encourage active managers to launch the non-transparent ETF products.

Lower Costs – The Obvious and the Less-So (but maybe more important)

We see Non-Transparent ETFs offering the same low cost benefits enjoyed by transparent ETFs, which dominate the market cap weighted passive market. However, in addition to lower fund costs including the elimination of transfer agency fees and lower administrative costs, we also see non-transparent ETFs having lower transaction costs. Transaction costs are meaningful for mutual funds and are not including in their expense ratios. Various studies we have read indicate transaction costs can cost investors 50-100bps of annual returns, depending on the size and turnover of the funds. Because ETFs invest and return investment dollars via the create and redeem structure, funds are not burdened with a lot of the transaction costs absorbed by traditional mutual funds. Below we review mutual fund costs that aren't present in ETFs.

Distribution Costs

Mutual funds can have a distribution expense within the expense ratio known as a 12b-1 fees, and/or can have load fees for buying or selling the fund. An ETF does not have loads nor 12b-1 fees. When included in a fund expense structure, a 12b-1 fee is typically 25bps. This 25bps would be eliminated from investor costs in an ETF. The 12b-1 fee is most common for retail brokerage distributed mutual funds. We see this cost as well known.

Were this fee to get eliminated with the success of non-transparent ETFs, we expect distributors would seek supplementary forms of compensation to partially/fully replace the loss of these 12b-1 fees. In this case, the asset manager can pay the distributor a fee directly – a platform fee for example. If asset managers maintain expense ratios with existing mutual funds, the added asset manager costs (costs formally borne by the mutual fund) could have a negative impact on asset manager operating margins.

Transfer Agency and Other Admin Fees

Mutual funds wrap the cost of fund administration into the expense ratio. Funds will label them differently in prospectuses but it generally falls into "Other Shareholder Servicing expenses". Fund administration expenses include transfer agency, fund accounting, legal expenses, etc. These are often a mix of fixed costs for fund operations and variable costs based on the number of accounts. For mutual funds with a low number of accounts to AUM (ie. Institutional share classes), the admin expenses can be relatively low (e.g. 1bps). For retail focused funds, the admin expenses can be much higher (e.g. 15bps).

Transfer agents track the ownership of mutual funds and distribute key fund info (e.g. tax info) to mutual fund owners. Transfer agency ('TA') fees can be a significant portion of administrative expenses. Compared to comparable services for equity securities and ETFs, mutual fund TA expenses are relatively more expensive. DTCC performs many of the transfer agency responsibilities for ETFs and it is both at scale and essentially a utility. But as with distribution costs, TA fees at DTCC get charged back to the asset manager.

Transaction Costs

Mutual funds have explicit and implicit trading costs. These costs are not reflected in a mutual fund expense ratio and instead show directly in fund returns. The explicit costs are commissions and bid-ask spreads. The implicit costs are market impact costs. Mutual funds report commissions annually but the other costs are very difficult to estimate. ETFs mitigate some of these explicit costs via the create/redeem processed managed by the AP.

Reduces Cash Drag

Mutual funds hold cash to meet redemption requests. ETFs don't have this need since the redemptions are facilitated through the authorized participants. Consequently, the fund itself doesn't have a need to hold operating cash. In an upmarket, this cash allocation detracts from returns.

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Non-Transparent ETFs More Tax Efficient than Mutual Funds

Non-Transparent ETFs utilize largely the same Create/Redeem structure as in traditional transparent ETFs to deliver far greater tax efficiency than is experienced in traditional 40-Act Mutual Funds. Here, ETFs (both non-transparent and transparent) utilize redemption-in-kind when investors buy and sell ETFs in the open market to dispose of low basis share and reload with high basis shares. These redemptions-in-kinds are done in a stock-for-stock transaction (rather than stock-for-cash), which increases the basis of the ETF investments, thus minimizes the capital gains distributions and ultimately defers tax to a later date.

Ensuring ETFs Track NAVs– Primary and Secondary Markets

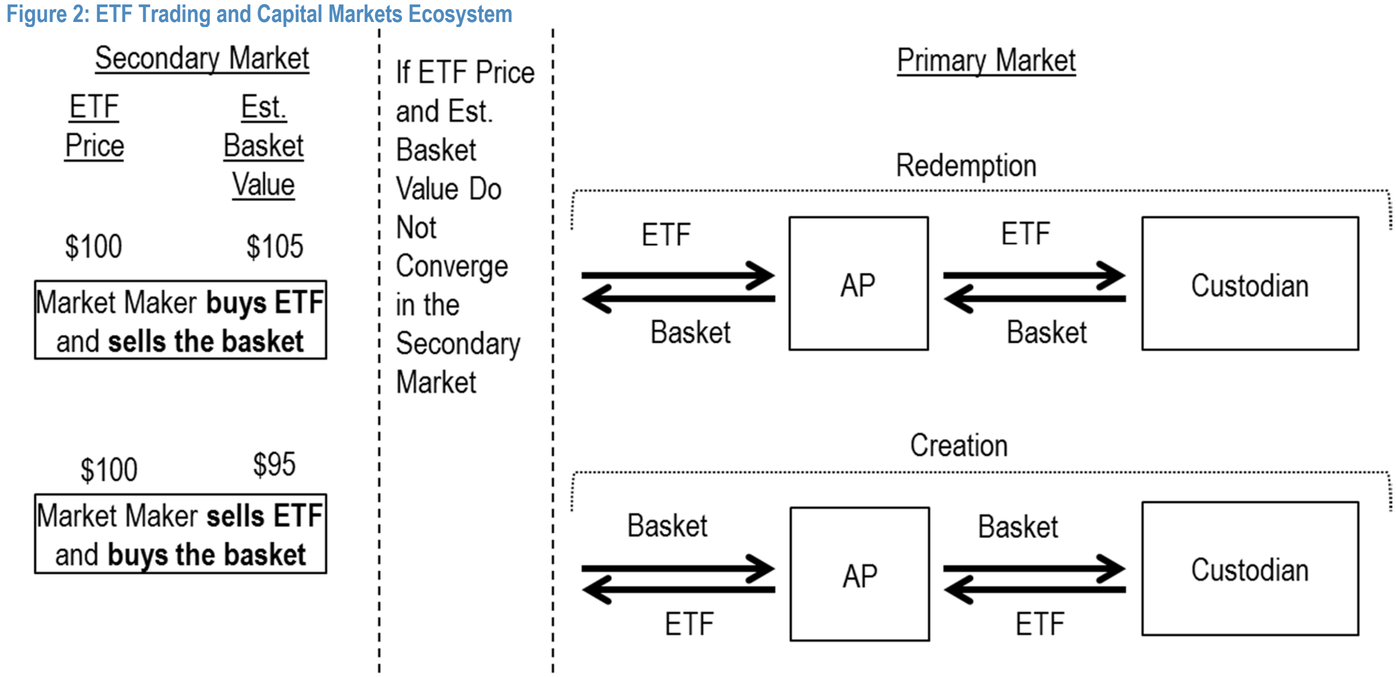
In order to better understand the tax-efficiency of an ETF, we review how transaction work in both the secondary and primary trading of ETFs. Here, traditional market cap weighted ETFs track an underlying index, often using an optimized portfolio. Since the ETF prices on exchange is distinct from the prices of the underlying securities or NAV, there are two arbitrage mechanisms utilized to maintain a narrow spread between the ETF price and the fund NAV. The two mechanisms take place through the secondary trading (market making) and the primary market (create / redeem) of the ETF shares.

1. Secondary Market- trading on exchange by market makers

2. Primary Market- creation/redemption of new ETF shares by an Authorized Participant (AP)

Below in Figure 2, we show a schematic of the secondary trading and primary create / redeem market for an ETF.

Figure 2: ETF Trading and Capital Markets Ecosystem



Source: J.P. Morgan. Dollar values are illustrative. AP is Authorized Participant. When the AP either creates or redeems an ETF, it will also pay the custodian a create/redeem fee.

Secondary Market - ETFs Trade On-Exchange

Market makers make markets in ETFs on exchange similar to how they making markets in any listed security. But when supply and demand drives the price of an ETF away from the underlying NAV and market making can no longer close the gap, new ETF shares are created or existing ETF shares are redeemed from the primary market by a designated Authorized Participant to drive the price of the ETF back to its NAV.

Trading in the secondary market takes place throughout the trading day and is the more common mechanism to limit the variance between the ETF price and the underlying. In the secondary market, ETFs are neither created nor redeemed, but only bought and sold. If the secondary market is unable to balance the ETF price with its NAV, then the Primary Market takes over with supply of ETF shares rising or falling until equilibrium is reached. The mismatch between the price of ETF and the value of the underlying holdings of the market makers and APs introduces hedging risk. It is not always economically feasible for liquidity providers to fully buy/sell the underlying securities (particularly in fixed income or foreign securities) when they sell/buy the ETF to generate profits from the spread. To replicate exposure, a liquidity provider will select securities or derivatives to approximate exposure to the underlying securities. This is an imprecise science and creates additional risk for the market makers, resulting in wider than typical spreads. We note, however, that Precidian's ETF application only allows various US exchange traded securities, and does not allow custom, in-kind baskets.

Primary Market – Create/Redeem

The create/redeem process is driven by the Authorized Participant, also known at the APs. APs are liquidity providers that have the exclusive right to increase or decrease the supply of ETF shares through the create/redeem mechanism. Here, APs will create and redeem ETF units in the primary market to arbitrage the gap between the ETF price and underlying asset prices. While APs have an exclusive right in the create/redeem process, they are under no obligation to act and do so only when the arbitrage opportunity provides them with sufficient profit potential.

The Create/Redeem Process

Market makers and APs (liquidity providers) utilize market prices, internal models and matrix pricing to estimate the value of the ETF's underlying holdings and determine if an arbitrage opportunity exists. When the ETF price and modelled price of the underlying diverge, the liquid providers will step in.

If the ETF is priced above the underlying, the liquidity provider will short the ETF and go long a portfolio of securities optimized to track the ETF underlying. If this imbalance between ETF price and offsetting portfolio continues, the AP will look to create/redeem units with the ETF custodian. Depending on the ETF, the AP can either give/receive securities or cash. A daily basket file is published with a standard set of securities.

If the AP does not find an arbitrage opportunity, it has no obligation to either create or redeem shares. In order to create/redeem, the AP will set a fee to create/redeem units. If the ETF is priced above the underlying, the liquidity provider will go long the ETF and short a portfolio optimized to replicate the underlying.

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Settling In-Kind – The Key to the Tax Efficiency of the ETF Structure

ETFs can settle in-cash or in-kind. If settling in-cash, the AP will provide cash to the asset manager and receive shares of the ETF. If settling in-kind, the AP provides a basket of securities to the asset manager. In-cash settlement can be preferable when the underlying basket is difficult to trade directly. The in-kind settlement is an equity for equity exchange, which thereby defers that taxes that would normally be accrued in a cash for equity exchange.

Sizing the Opportunity and Speed of Adoption

We see significant AUM eligible to adopt the new structure. Furthermore, we see the incentives for the asset management industry to launch and make the non-transparent ETF structures successful. Lastly, we see investor demand for the structures, given their lower cost and greater tax efficiency. As such, we would expect strong growth in the AUM and buy-in from distribution over time.

The Eligible Part of the $22tr Mutual Fund Market -- $3.4tr Initially

We estimate that of the $22tr mutual fund market, $3.4tr is active, domestic equity mutual funds that are ultimately eligible to adopt the non-transparent ETF structure. Should the initial launch of non-transparent ETFs go well and if they are free from negative unintended consequences, we believe that the non-transparent ETF structure could be approved for both less liquid securities – both international equity and fixed income funds. We estimate International Equity funds could add $1.5tr of active equity assets eligible for non-transparent ETFs and fixed income could at an incremental $2.2tr.

Table 2: We Estimate AUM Eligible for Non-Transparent ETFs

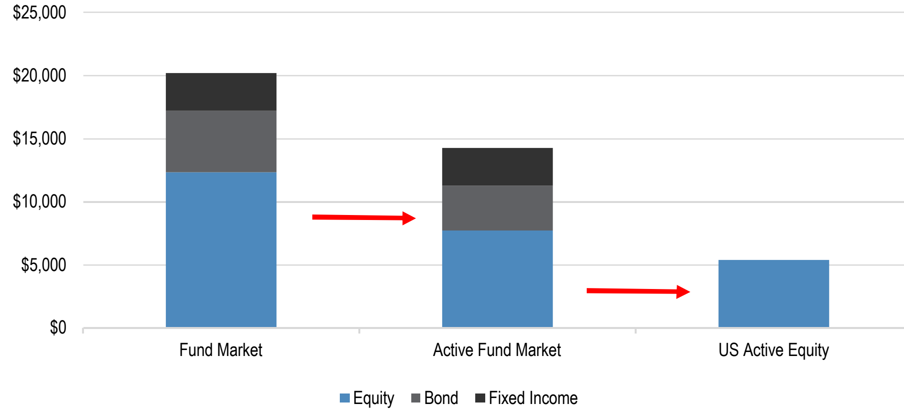
	Number of Funds	Size of Active Fund Market (bils)	Eligible for non-Transparent ETF (bils)
Active Domestic Equity	2,825	$5,400	$3,400
Active International Equity	2,850	$2,350	$1,500
Active Fixed Income	2,300	$3,550	$2,250

Source: J.P. Morgan estimates

Eligible Assets by Asset Class/Style

When looking at the eligibility of fund for non-transparent ETFs, we start by asset class. Based on the SEC's Notice regarding Precidian's non-transparent ETF application, of the $22tr of total industry mutual fund assets, we estimate that ~$5.4tr is active equity mutual funds. International and Fixed Income investments are non-yet approved for direct investment by non-transparent ETF structure. (Here we note that Treasuries, Futures, ADRs and other ETFs are approved and could replicate required international equity and fixed income exposure if needed).

Figure 3: Assets Eligible for Non-Transparent ETFs -- $5.4tr of US Active Equities by Asset Class ($ in bils)



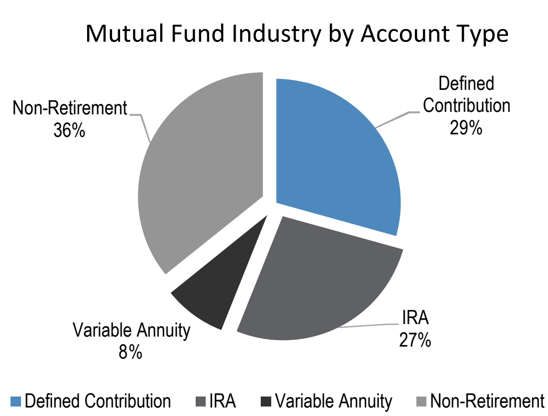
Source: Company reports and J.P. Morgan estimates.

Eligible Assets by Distribution Channel – Advisor a Yes, 401k/VA Is Not Ready

When thinking about interest in ETFs by distribution channel, we see the retirement channel as getting less value from the non-transparent ETFs because it can't utilize the tax advantage in non-taxable accounts. Here, 401k record keeping systems aren't designed for intraday price/trading required to incorporate ETFs in a 401k plan. Furthermore, 401k plans are increasingly served by low cost collective trusts and R6 share classes, further reducing the value offered by the non-transparent ETF structures. However, the fund portion of the IRA market is nearly as big as the 401k market, and where a fiduciary oversees an IRA, low cost seems likely to strongly encourage adoption of non-transparent ETF structure.

Where IRA's are managed by a fiduciary, we see the potential if not the likelihood that the advisor will inclined to swap out of a mutual fund into the non-transparent ETF if the structure can deliver on lower costs. With Variable Annuity and Defined Contribution accounts not eligible for ETFs, it's the non-retirement and the IRA areas that are eligible if not likely to utilize non-transparent ETFs. This suggests that of the $5.4tr of active domestic equity mutual fund assets, $3.4tr is in the self-directed and advised distribution channels eligible for non-transparent ETFs.

Figure 4: Fund Industry's Non-Retirement/IRA Sectors Most Likely to Utilize Non-ETF Structure



Source: ICI

Were non-US securities approved for non-transparent ETFs, we estimate active mutual fund AUM eligible for non-transparent ETFs would grow an incremental $1.5tr. Were fixed income securities approved for non-transparent ETFs, an incremental $2.2tr could find their way to no-transparent ETFs.

Pace of Adoption – Faster than One Might Think

We are excited about the non-transparent fee structure and expect it could be widely adopted over time. The pace could be faster or slower depending on a number of factors, such as whether the structure delivers on greater tax efficiency and lower costs, and if tax free exchanges between funds and ETFs is permitted. Nonetheless, the more we have learned about the benefits and potential for the ETFs, the faster we expect the pace of future adoption versus our initial expectation. Ultimately, we see the biggest winner from the new product as the end investor and as such we see both manufacturers and distributors supporting the structure over time. However, we see the Asset Managers being the bigger advocate relative to distribution, as we see the non-transparent ETF structure as narrowing the advantage gap that passive-ETFs today have over actively managed mutual funds. Interestingly, there is also the potential for non-transparent ETFs to be linked to an Asset Manager's existing mutual funds, possibly making their legacy mutual fund products more tax efficient. We think this would make non-transparent ETFs a necessary offering for mutual fund companies. If the product does better serve end clients, we see intermediaries getting on board, with fiduciaries at first, but likely spreading to non-fiduciaries over time. The challenges for adoption by some distribution channels is that the payment for distribution model (heavily utilizing 12b-1 fees) would have to adapt to a bigger ETF presence.

Asset Managers – Heavily Incentivized to Launch Non-Transparent ETFs

We think Asset Managers will be heavily encouraged to launch non-transparent ETFs and to make them work. First and foremost, an active manager's ability to utilize a non-transparent ETF structure narrows the tax, expense and performance advantage when compared with market cap weighted passive ETFs that dominate industrywide fund sales today. We also see non-transparent ETFs as a potentially necessary structure needed to sell into the RIA and Advisory distribution channels. Given those channels are the faster growing parts of distribution, we expect they will be hard for asset managers to ignore. Interestingly, we see the potential linking of ETFs to mutual funds as possibly providing a tax benefit to ***existing*** mutual funds which if successful could be too meaningful for the asset management industry to ignore.

- **Narrowing the gap between active and passive.** We think the ETF structure is a key factor benefitting passive products when compared with actively managed mutual funds. The ETF structure allows passive products to be more tax efficient than is already inherent in a low turnover strategy. The lower expenses in the ETF structure both from the fund perspective and in terms of transaction costs give passive ETFs a substantial advantage over active funds. By being able to utilize a non-transparent ETF structure, active managers narrow (but won't eliminate) many of the advantaged enjoyed by index funds offered through ETFs.

- **To Pursue the RIA Channel, Asset Managers May Need Non-Transparent ETFs**. As fiduciaries, we see the RIA channel more likely to utilize non-transparent ETFs, attracted to the tax efficiency, lower costs and better performance than the mutual fund structure. Given RIAs are one if not the

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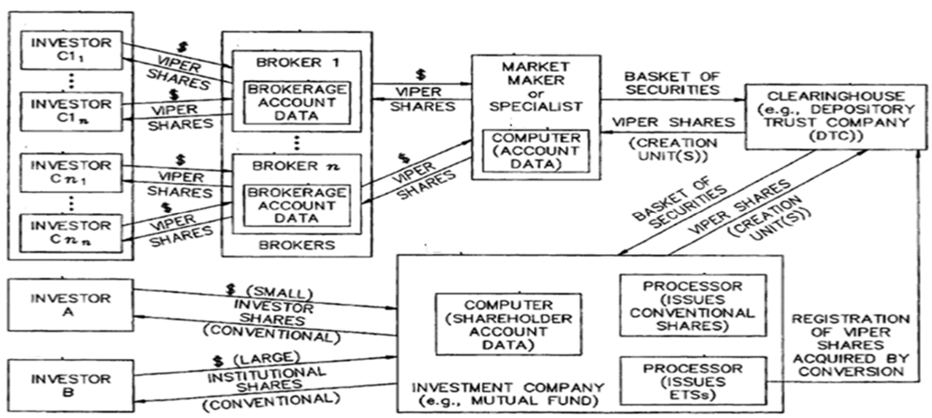
fastest growing distribution channels, mutual fund companies that want to target RIAs are likely going to feel pressure to launch funds with the non-transparent ETF structure.

- **Linking ETFs to Mutual Funds for Greater Mutual Fund Tax Efficiency**. Vanguard has linked its ETFs to its mutual fund offerings allowing it to generate greater tax efficiency in its mutual funds. Vanguard received exemptive relief from regulators/IRS, allowing it to link its ETFs to its mutual funds, the way an A-class mutual fund might be attached to a C-class or I-class share. This linking allows Vanguard's ETFs to absorb the Vanguard Mutual Funds lower basis securities without triggering a taxable event using 'heartbeat' trades. Vanguard has a number of patents on the process, with key parts of the design protected through 2023. However, Vanguard has been willing to rent out its structure and for those that can get SEC approval, the non-transparent ETF could represent a way to reduce the tax load in an asset manager's legacy mutual fund portfolios. As such, non-transparent ETFs could be a must-offer for the asset management industry. We note this linking of funds to ETFs is also allowed in Europe for both funds registered in London and Luxemburg so there is a precedent outside the US as well.

Below in Figure 5, we show the diagram part of Vanguard's patent on the linkage between its ETFs and mutual funds.

Figure 5: Vanguard's Description of its Linkage between ETFs and Funds Contained within its Patent



Source: US Patent Office

Some Distributors Will Support the ETFs, Others May Not Like Change

While we think asset managers will heavily support the non-transparent ETF structure, we see fund distribution as having more mixed incentives. Ultimately, however, we see the non-transparent ETF structure as good for end-investors and thus see distribution being won over.

- Fiduciaries a likely yes -- We see advisors and fiduciaries supporting the non-transparent ETF structure, assuming the product delivers as intended, including greater tax efficiency and lower costs, without unintended consequences such as wide trading spreads. With the end-investor as one of the biggest winners, we see the faster growing advisory channel as supporting the non-transparent ETF structure.

- Brokers may be less supportive -- Initially, however, a number of the wirehouses and independent/regional brokerage firms may not be as supportive as they look for ways to tax ETFs in order to get paid for access to their platforms. The existing system of payments from the mutual funds / asset managers to the brokers is largely through 12b-1 fees and other platform fees. However, ETFs don't pay such 12b-1 fees. Thus distribution of ETFs through a brokerage channel could force the reengineering of the distribution fee models in some cases, possibly requiring either greater platform fees from the asset managers or greater commissions from the end clients. Either way, not all distributors will be on board.

- Ebrokers like Schwab may make less money – we see the brokering of mutual funds as a more lucrative business than the brokering of ETFs, even for a discount broker such as Schwab. Here Mutual Fund OneSource changes more than ETF OneSource and Mutual Fund commissions are orders of magnitude higher than ETF commissions.

Tax Free Transfers – Accelerating the Adoption of Non-Transparent ETFs.
Should the mutual fund industry get SEC/IRS approval for tax free transfers between ETFs and Mutual Funds with identical holdings, we would expect a faster transition to the non-transparent ETF structure. The mutual fund industry has already begun to lobby the SEC and IRS for such tax-free transfers, and there are two precedents that could give the mutual fund industry some hope. First, the mutual fund industry has already been offering tax-free exchanges between different funds share classes – tax free exchanges from C-shares to A-shares (as the mutual fund industry moved away from more elevated level loads), and from A-shares to I-shares (as the fund industry moved from loads, to lower fee load waived share classes.) In addition, Vanguard has offered tax-free exchanges between its Mutual Funds and its ETFs, something we expect the mutual fund industry will highlight when it asks for tax-free exchanges between funds and non-transparent ETFs. Should the mutual fund industry not be permitted to make tax free exchanges between mutual funds and non-transparent ETFs, we see the transition taking place more gradually. Here, mutual fund gross redemption rates of 20% annually could extend a transition to non-transparent ETFs, possibly reaching an equilibrium over a five or so year period.

Case Study – Looking at the Pace of Adoption for Vanguard ETFs
Vanguard launched less than a handful of ETFs in 2001, with more added in 2004, 2006 and 2010. Today, Vanguard ETFs account for nearly 35% of Vanguard's fund AUM (where fund AUM has corresponding ETFs). The pace of adoption really took off following the Financial Crisis, as is consistent with the ETF landscape more broadly. Adoption rates were faster 2007-2013 and have slowed more recently. We note that Vanguard is a leader in the retirement and 401k markets. Given the 401k market does not invest in ETFs, Figure 6 on the following page may underestimate its penetration of ETFs.

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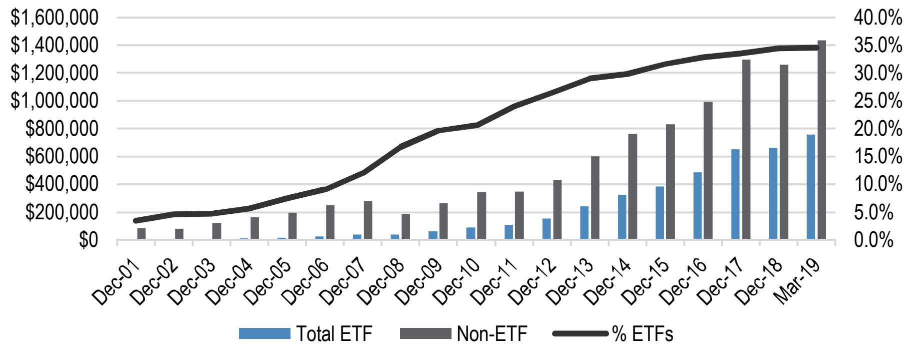
Figure 6: Vanguard Grows ETFs Quickly 2007-2013



Source: Strategic Insight

Beneficiaries of Non-Transparent ETFs

We see a number of beneficiaries of the new structure, and those that may be harmed should non-transparent ETFs be particularly successful. First and foremost we see retail investors as beneficiaries, helped by lower cost and greater tax efficiencies, as those benefits translate directly into higher returns for those investors. We also see trading firms and exchanges benefitting, as we think the non-transparent ETF represents a meaningful shift from OTC to listed trading. Exchanges would also be helped by listing revenue as thousands of ETFs list on exchange. We see the asset management industry helped at the margin, with the structure helping to give active managers cost and tax advantages approaching what passive ETFs can deliver currently. As mentioned above, some areas of distribution, particularly in brokerage may need to further adapt fee structures to the selling of products that don't directly pay 12b-1 fees. Greater reliance on platform fees from mutual fund companies could make up the difference for distribution, but could also negatively impact asset management margins.

Volumes Likely to Increase (Possibly Meaningfully) Should Non-Transparent ETFs Get Scale

Incremental volumes from the trading of non-transparent ETFs could be meaningful for the cash equity markets. When looking both at the size of the assets under management that could initially and eventually migrate to the non-transparent ETF structure, and then at the velocity at which ***active*** ETFs trade today, we see the potential for non-transparent ETFs to grow to ~20% of cash equity trading volumes. This is similar to passive ETFs which today account for ~20% of trading volumes. Here, we see the potential for non-transparent ETFs to again drive volume growth in the cash equity market, which has suffered stagnant volumes over the last decade.

Non-Transparent ETFs Could Account for 20% of US Equity Trading Volume

We estimate non-transparent ETFs could grow to 20% of cash equity trading volumes should the product gain popularity. Their volumes potential is a function of the AUM that migrates to non-transparent ETFs as well as the trading velocity of the ETFs.

In terms of assets, we see the potential for trillions of dollars to migrate to the non-transparent ETF structure over time. With the Precidian structure furthest along the

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approval process for ETFs that invest in domestic equities, we see AUM initially of $3.4tr eligible for non-transparent ETFs. But as other structures get SEC approval and as other asset classes become eligible, we see AUM eligible for non-transparent ETF growing to ~$7.2tr.

In terms of trading velocity – or how AUM/market cap converts into shares traded – we see the passive ETFs are very active (velocity of 10.2%), corporate stocks are less active (velocity of 3.1%), and the current active ETF segment is somewhere between (velocity of 5.2%). We expect non-transparent ETFs will trade similarly to this smaller segment of today's active ETFs. Here, once non-transparent ETFs gain a level of scale, we would expect the investment community to start to arbitrage non-transparent ETFs against other funds and indexes, and for the hedge fund community to develop trading strategies around the funds.

In Table 3 below, we show trade velocities (trading volume / market cap) of stocks and ETFs. It suggests that were fixed income and international equity funds eligible and if assets move to the non-transparent ETF structure, volumes could increase by more than 1.3 billion shares each day —a 20% lift to current trading volumes.

Table 3: Non-Transparent ETFs Have Could Drive a 20% Increase in US Cash Equity Volumes

	Avg. Daily Trading Volume	Market Cap (bils)	Annualized Velocity	Avg. Daily Trading Volume (bils)
Total US Equity Volumes	6.5	$34,926	4.7%	
Single stocks	3.9	$31,347	3.1%	
Total Active ETF Volumes	0.02	$79	5.2%	
Total Passive ETF Volumes	1.2	$2,999	10.2%	
% ETFs	*19.0%*			
		AUM		
Non-Trans ETFs US Equity		$3,400	5.2%	0.70
Non-Trans ETFs Int'l Equity		$1,500	5.0%	0.30
Non-Trans ETFs Fixed Income		$2,250	3.5%	0.31

Source: JPMorgan estimates

Listing Revenue –Incremental with Annual and Initial Listing Fees

We see exchanges generating incremental revenue from listing fees. Even with modest pricing schedules, we see ETF listing fees generating non-insignificant trading revenue -- $40-$50mn/year plus initial listing fees of another $30-$35mn. If/when international equities and fixed income get approved for non-transparent ETF listings, they could bring in an incremental $70mn-$90mn of annual fees, plus more in initial listing fees. While ICE's Arca division of the NYSE has an approximately 70% market share of ETF listings (as measured by number of ETFs listed) CBOE has made a big push and is growing listing market share. (We note that there are more mutual fund than there are listed companies. While the revenue per ETF listing is much lower than for corporates, the number of listings could be higher over time.)

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Table 4: Listing Fee Schedules for ETFs on Exchange

	NYSE ARCA	Nasdaq	Cboe Bats
Initial Listing Fee (per fund)	None for listing under generic listing standards, $7,500 for listing pursuant to a 19b-4 filing	$1,000 application fees plus entry fees of $4,000 for ETFs; $1,000 application fees plus $19,000 entry fees for first NextShares fund; $1,000 application fees plus tiered entry fees based on shares ranging from $5,000 to $45,000 for ETN and linked securities	$7,500 for listing pursuant to a 19b-4 filing capped at $22,500 per calendar year
Annual Listing Fee for Indexed ETFs/ ETVs	Tiered fees based on shares outstanding; $5,000 for less than 25 million shares that goes to $25,000 for 500 million shares and over	Tiered fees based on shares outstanding; For ETFs: $6,500 for less than 1 million shares that goes to $14,500 for 16 million shares and over; For ETN/ Linked Securities: $15,000 for less than 5 million shares that goes to $30,000 for 50 million shares and over	Annual base listing fees of $4,500 for new ETF listing and $10,000 for new ETN listing or base fees of $4,000 for previously-listed ETF/ETNs plus tiered fees based on consolidated average daily volume that ranges from $5,000 to $7,000 for ETFs and $12,000 to $15,000 for ETNs
Annual Listing Fee for Actively Managed ETFs/ ETVs	Tiered fees based on shares outstanding; $7,500 for less than 25 million shares that goes to $40,000 for 500 million shares and over	Tiered fees based on shares outstanding; For NextShares; $6,500 for less than 25 million shares that goes to $25,000 for $100 million shares and over	

Source: Company reports.

There are currently 2,825 active equity mutual funds. Annual listing fees range between $6,500 and $25,000, with higher costs for funds with a bigger share count. Based on Table 5 below, we see an annual revenue opportunity at $40mn-$50mn in addition to the initial listing fees of $30mn-$35mn.

Table 5: Annual Revenue Opportunity for the Exchanges, Based on # of Funds and Price/Listing.

	$5,000	$10,000	$15,000	$20,000	$25,000
500	$2,500,000	$5,000,000	$7,500,000	$10,000,000	$12,500,000
1000	$5,000,000	$10,000,000	$15,000,000	$20,000,000	$25,000,000
1500	$7,500,000	$15,000,000	$22,500,000	$30,000,000	$37,500,000
2000	$10,000,000	$20,000,000	$30,000,000	$40,000,000	$50,000,000
2500	$12,500,000	$25,000,000	$37,500,000	$50,000,000	$62,500,000
3000	$15,000,000	$30,000,000	$45,000,000	$60,000,000	$75,000,000

Source: J.P. Morgan estimates.

Below we show the initial listing fees charges for ETFs by the exchanges. It suggests $30mn-$40mn of initial listing fees in addition to the annual listings above.

Table 6: Initial Listing Fees from Active ETF Fund Launches

	500	1,000	1,500	2,000	2,500	3,000
$10,000	$5,000,000	$10,000,000	$15,000,000	$20,000,000	$25,000,000	$30,000,000
$15,000	$7,500,000	$15,000,000	$22,500,000	$30,000,000	$37,500,000	$45,000,000

Source: J.P. Morgan estimates.

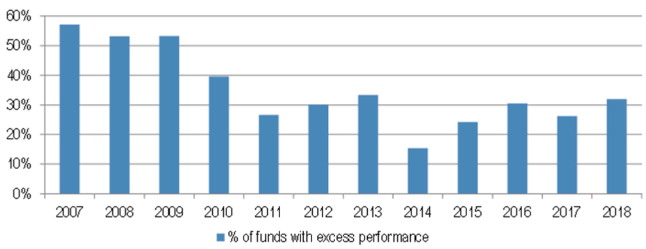
Next Step – International Equity and Fixed Income Funds

Eventually we expect the non-transparent ETF structure to come to less liquid securities. Once non-transparent ETFs based on US equity investments are up and running and assuming they prove themselves effective, we see the potential/likelihood that the non-transparent structure will get approved and used for non-US traded securities and less liquid asset classes. We estimate there are ~2,850 active international equity funds and ~2,300 fixed income funds. It suggests $70-$85mn of initial as well as $70-$85mn of annual list fees.

Non-Transparent ETFs Help, but Don't Resolve Key Active Asset Manager Issue – Underperformance!

Domestic active equity managers have persistently underperformed the S&P 500 as a group since 2009. The underperformance has driven domestic active equity outflows since 2013, but which started years prior. Non-transparent ETFs should provide some relief in terms of both relative performance and absolute returns given their lower expense ratios and lower trading costs. However, they don't solve the active manager performance problem, they just lessen it.

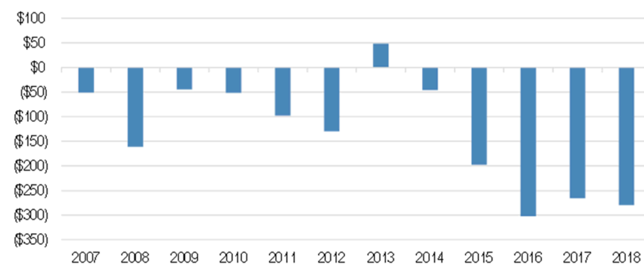
Figure 7: Active Domestic Managers Underperform the S&P 500



Source: Strategic Insight Simfund.

Figure 8: Domestic Equity Active Funds Have Outflowed Since 2013

$ in billions



Source: Strategic Insight Simfund.

Lower Costs Would Get More Active Managers to Outperform, but Not a Majority

Lower distribution costs, administrative fees, and transaction costs from the non-transparent ETF wrapper will improve active manager performance. Distribution costs and administrative fees are deducted directly from returns in a fund expense's ratio. Transaction costs are reflected in lower portfolio returns.

We estimate 25bps in return improvement would have gotten ~2.5% more active domestic equity funds to outperform in 2018. If the combination of lower distribution costs, administrative fees and transaction costs had reduced costs by 100bps, we would expect to see another 10% of active manager outperform the S&P 500. For 2018, that would suggest 42% of domestic equity managers would have outperformed – still well below the 50% barrier. Thus non-transparent ETFs could help the active management return narrative, but they seem unlike to change the ongoing issue of underperformance.

Table 7: Domestic Active Equity Managers Needed 180bps of Performance Improvement in 2018 for Half to Outperform

	Performance Improvement								
	0%	+0.25%	+0.50%	+0.75%	+1.00%	+1.25%	+1.50%	+1.75%	+2.00%
% of Domestic Equity Managers Outperforming	32%	34%	37%	40%	42%	45%	48%	50%	52%

Source: Strategic Insight Simfund. J.P. Morgan estimates.

In terms of a breakeven, we estimate that of half of domestic equity funds would have outperformed the S&P500 were their costs to fall 180bps. While transaction costs are difficult to quantify, the benefit from lower distribution fees and lower administrative fees would likely only get to 25bps-55bps improvement in performance, well below the 180bp needed to get half of funds to outperformance. Better transaction costs remain an unknown but could provide the remaining necessary uplift. The improvement in transaction costs will likely remain an unknown until the profit have become more seasoned and we can compare return differences between the ETF and mutual fund iterations of the same fund.

Largest Beneficiaries of Non-Transparent ETFs– Trading Firms and Exchanges

We see end-investors as leading beneficiaries initially and over time as the non-transparent structures continue to evolve, helped by lower costs and greater tax efficiencies. In terms of publicly traded companies, we see the equity exchanges and market makers as benefitting as what were largely mutual fund OTC transactions migrate on exchange. We see asset managers benefiting from a better structure, making actively managed funds more competitive with ETFs, but also see some costs previously borne by mutual funds paid for by asset managers in the future. We see non-transparent ETFs a non-event for Advisors, but could force change with Brokers that have historically been paid by funds for distribution.

Trading Venues – Large Beneficiary.

We see the exchanges and the market makers as the leading beneficiaries from the migration to non-transparent ETFs. Amongst the exchanges, we see ICE, CBOE and Nasdaq as beneficiaries in terms of revenue. But given its smaller size and higher concentration of revenue from cash equities and given some market share increases in ETF listings, we see CBOE as the biggest beneficiary. In addition, we see Virtu as a leading beneficiary as it should benefit both from greater volumes as well as greater profitability given some wider spreads and more interesting arbitrage opportunities. With the non-transparent ETFs initially a retail product, we see retail market makers benefitting from the higher retail trading volumes and also greater profitability from wider spreads.

Exchanges Helped by Greater Trading Volume

On the following page in Figure 9, we share ETF trading market share by exchange in 2019. Here we see that NYSE dominates with a 26.3% share, followed by CBOE at 18.8%. Nasdaq trails at 16.9%. However, when we exclude the auctions, which reflects where the ETF is listed, we see CBOE's market share rises to 19.5%. This still lags ICE, but gets closer.

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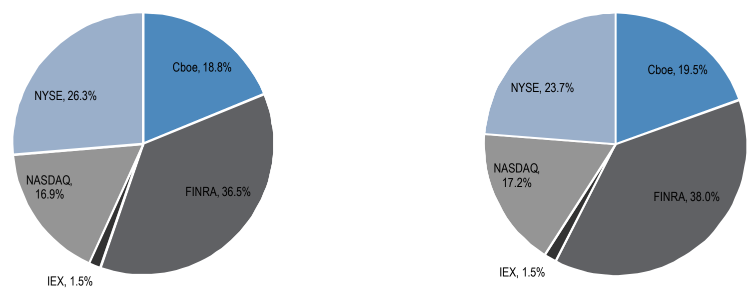
Figure 9: Trading Market Share Dominated by ICE, CBOE Is Next

ETF Trading Market Share -2019 | ETF Trading Share ex Auctions – 2019



Source: Bats Trading

ICE – the Biggest Exchange by ETF Volume and Listings.

Through NYSE and Arca, ICE is the biggest venue for ETF listing and trading. With the Barclays iPath shift 05/13/19, ICE's market share of ETF listings is 70% by number of ETFs and its market share of ETF trading is 36%. If there is a shift towards non-transparent ETF listing and trading for all asset classes and if 100% of eligible assets moved to non-transparent ETFs, we'd expect it to add an incremental $90 in annual listing revenue. NYSE also have a 26% share in ETF trading. Were NYSE to maintain share, we estimate that it would generate $50mn of trading revenue.

CBOE – Bats Acquisition Poised to Benefit from Non-Transparent ETFs

CBOE is the most concentrated of the exchange in terms of revenue from US cash equities. We estimate that CBOE has an 18.8% market share in ETF trading and a 14% share in listings (based on the number of ETFs listed.) Were CBOE to build its market share as we expect, we'd estimate $55mn of listing revenue and $22mn of annual trading revenue. We see potential for the listing revenue to rise and with it, trading to disproportionally benefit.

Nasdaq – Smallest of the Exchange Trading Venues, Larger in Listings

Nasdaq is the smallest of the major exchanges in terms of trading market share at 16.9%, but is bigger in listing share than is CBOE at 17%. Nasdaq worked very closely with Eaton Vance on the launch of ETMFs. While Precidian is working with all the exchanges, we think NYSE and Bats could get the majority of listings.

Virtu – Volume and Profitability Beneficiary.

We see Virtu being a potentially more meaningful beneficiary than the exchanges. While we expect all trading venue to benefit from higher trading volumes, we see Virtu as also benefitting from increased revenue margin as well. We initially see non-transparent ETFs as a retail product with wider spreads, particularly as market makers acclimate to making market without know what is in the portfolio. That spread should narrow over time, but we expect will still be wider than for transparent ETFs. With retail flow often uncorrelated and with spreads wider, we see the potential for both legacy Virtu and legacy KCG benefitting from more profitable trading flow.

Beneficiaries – Asset Managers

We think the asset management industry will benefit on the margin as an industry should there be success and growth in non-transparent ETFs. But there are some potential cross-currents and we do expect some managers to benefit more than others. We see the highest profile impact as the potential for active managers to leverage the ETF structure to neutralize some of the tax and cost advantages enjoyed by passive ETFs. Here, the lower expense ratio and the lower transaction costs in non-transparent ETFs will improve active management returns, narrowing the gap between active fund returns and the returns of the benchmarks. The better returns should slow active managed product outflows over time. However, there are some expenses that likely make their way back to the asset managers. Furthermore, we see the likelihood for managers to price non-transparent ETFs at the cheapest existing share class (or maybe below in hopes of picking up market share). As such, we think margins could come under some pressure, at least initially. We see asset managers as beneficiaries of non-transparent ETFs, but certain managers will outperform others.

Asset Managers with Better Performance, Bigger Retail Platforms Benefit Most.
We see some managers faring better than others in an environment where non-transparent ETFs. We think the asset managers with the best performance and broadest scale are the likely biggest winners. If investment dollars are shifting to take advantage of tax efficiency and lower costs, money goes to the products with the best performance. Larger firms are likely to have larger product development and marketing budgets and as such are likely further along in the development of non-transparent ETFs.

Amongst the asset managers we follow, T. Rowe is a large mutual fund manager and has amongst the best longer term fund performance of the managers we follow. We note that T. Rowe has applied on its own with the SEC. Given it non-transparent ETF structure is built around a portfolio proxy rather than an exact portfolio, it might not be able to get the same tax advantages for its traditional mutual funds as does Vanguard via Heartbeat trades. Nonetheless, we see T. Rowe as a winner as non-transparent ETFs become more mainstream.

Distribution Could Have to Adapt
We see many distributors having to adapt to a possible new compensation construct should non-transparent ETFs start to displace traditional mutual funds. Mutual funds have been around for decades and the funds have compensated brokers through various fees charged right to the mutual funds —including 12b-1 fees. Firms that heavily rely on brokerage and these fees might come under some pressure initially, especially if end clients are demanding the tax efficiency and lower fees that accompany the non-transparent ETFs. However, we think the power remains with distribution rather than with manufacturing and we thus expect distribution to charge asset managers for access to their platforms over time. So while initially distribution may have to adapt to lower fees should investors demand non-transparent ETFs, we think expect access to distribution is ultimately paid for by the asset managers.

Companies Discussed in This Report (all prices in this report as of market close on 15 May 2019)
Cboe Global Markets (CBOE/$103.88/Overweight), Nasdaq (NDAQ/$90.76/Neutral), The Intercontinental Exchange (ICE/$80.61/Overweight), Virtu Financial (VIRT/$23.68/Not Rated)

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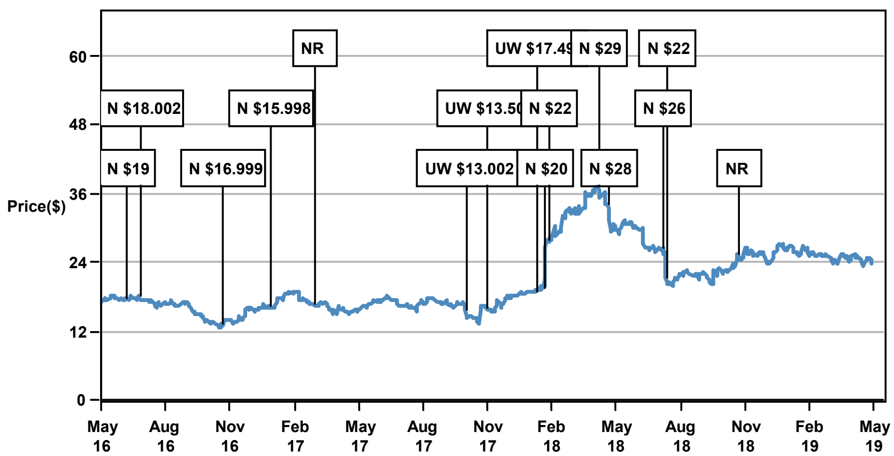
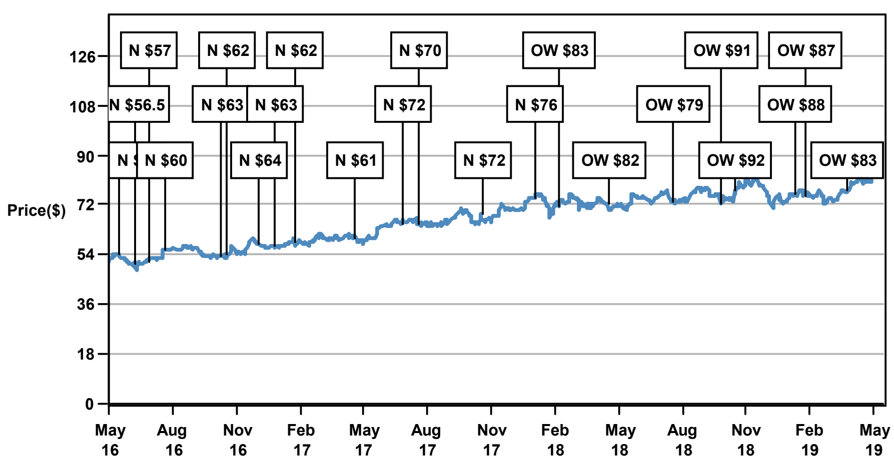
Virtu Financial (VIRT, VIRT US) Price Chart



Source: Bloomberg and J.P. Morgan; price data adjusted for stock splits and dividends.
Initiated coverage May 11, 2015. All share prices are as of market close on the previous business day.

Date	Rating	Share Price ($)	Price Target ($)
23-Jun-16	N	17.70	19.00
12-Jul-16	N	18.00	18.00
07-Nov-16	N	13.15	17.00
12-Jan-17	N	16.30	16.00
16-Mar-17	NR	16.75	--
18-Oct-17	UW	15.80	13.00
16-Nov-17	UW	16.20	13.50
24-Jan-18	UW	18.95	17.50
06-Feb-18	N	19.45	20.00
12-Feb-18	N	27.95	22.00
23-Apr-18	N	37.40	29.00
07-May-18	N	34.05	28.00
24-Jul-18	N	26.60	26.00
30-Jul-18	N	21.40	22.00
08-Nov-18	NR	25.59	--

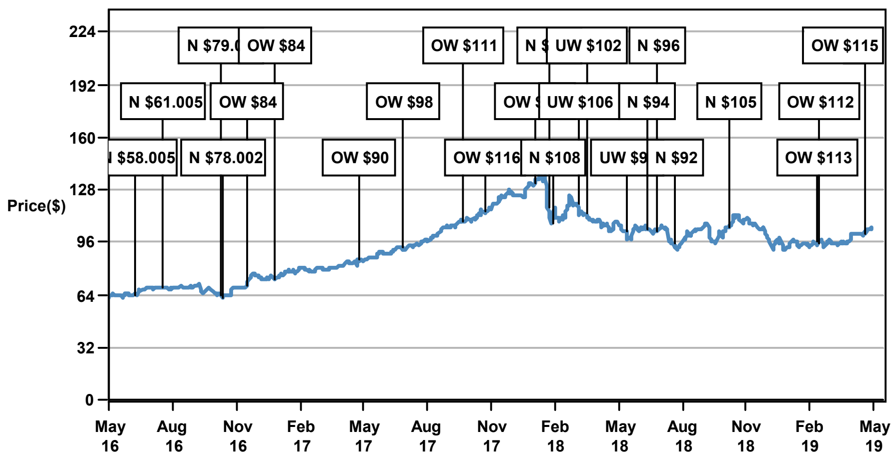
The Intercontinental Exchange (ICE, ICE US) Price Chart



Source: Bloomberg and J.P. Morgan; price data adjusted for stock splits and dividends.
Initiated coverage Jan 03, 2007. All share prices are as of market close on the previous business day.

Date	Rating	Share Price ($)	Price Target ($)
01-Jun-16	N	54.22	57.00
23-Jun-16	N	50.40	56.50
12-Jul-16	N	51.59	57.00
04-Aug-16	N	55.60	60.00
24-Oct-16	N	53.27	63.00
01-Nov-16	N	54.08	62.00
19-Dec-16	N	57.92	64.00
11-Jan-17	N	56.77	63.00
07-Feb-17	N	58.51	62.00
04-May-17	N	60.33	61.00
12-Jul-17	N	65.42	72.00
04-Aug-17	N	65.15	70.00
03-Nov-17	N	68.67	72.00
16-Jan-18	N	74.78	76.00
20-Feb-18	OW	71.73	83.00
03-May-18	OW	72.38	82.00
03-Aug-18	OW	72.89	79.00
12-Oct-18	OW	72.49	91.00
01-Nov-18	OW	77.04	92.00
24-Jan-19	OW	76.06	88.00
08-Feb-19	OW	75.55	87.00
08-Apr-19	OW	77.26	83.00

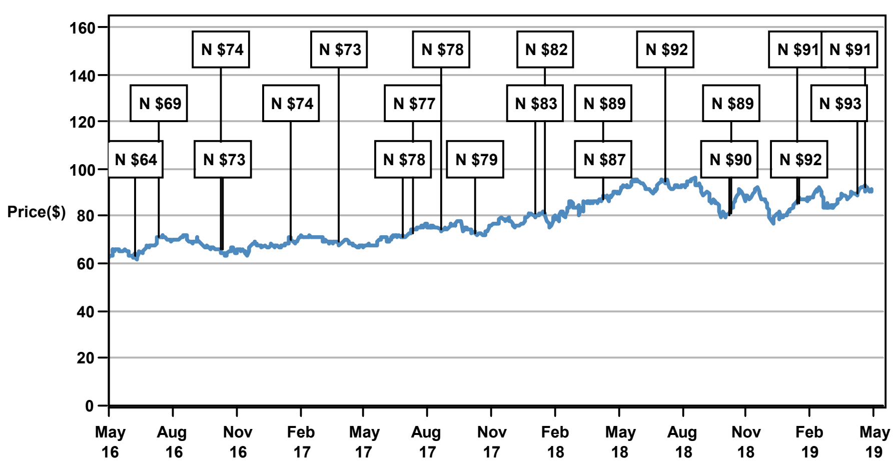
Cboe Global Markets (CBOE, CBOE US) Price Chart



Source: Bloomberg and J.P. Morgan; price data adjusted for stock splits and dividends.
Initiated coverage Jul 26, 2010. All share prices are as of market close on the previous business day.

Date	Rating	Share Price ($)	Price Target ($)
23-Jun-16	N	63.75	58.00
02-Aug-16	N	68.42	61.00
24-Oct-16	N	63.92	79.00
28-Oct-16	N	62.16	78.00
02-Dec-16	OW	69.48	84.00
11-Jan-17	OW	73.68	84.00
10-May-17	OW	84.99	90.00
12-Jul-17	OW	92.79	98.00
06-Oct-17	OW	108.43	111.00
07-Nov-17	OW	114.44	116.00
16-Jan-18	OW	131.51	131.00
07-Feb-18	N	116.94	110.00
12-Feb-18	N	107.11	108.00
21-Mar-18	UW	119.90	106.00
02-Apr-18	UW	114.10	102.00
30-May-18	UW	101.99	94.00
26-Jun-18	N	104.15	94.00
12-Jul-18	N	102.15	96.00
06-Aug-18	N	94.63	92.00
23-Oct-18	N	104.43	105.00
25-Feb-19	OW	96.60	113.00
27-Feb-19	OW	94.90	112.00
06-May-19	OW	100.98	115.00

Nasdaq (NDAQ, NDAQ US) Price Chart



Source: Bloomberg and J.P. Morgan; price data adjusted for stock splits and dividends.
Initiated coverage Jun 05, 2006. All share prices are as of market close on the previous business day.

Date	Rating	Share Price ($)	Price Target ($)
23-Jun-16	N	63.09	64.00
28-Jul-16	N	70.84	69.00
24-Oct-16	N	66.18	74.00
26-Oct-16	N	66.36	73.00
01-Feb-17	N	70.54	74.00
12-Apr-17	N	69.00	73.00
12-Jul-17	N	71.20	78.00
26-Jul-17	N	72.74	77.00
06-Sep-17	N	74.38	78.00
23-Oct-17	N	72.92	79.00
16-Jan-18	N	81.43	83.00
01-Feb-18	N	80.91	82.00
24-Apr-18	N	86.95	87.00
26-Apr-18	N	87.79	89.00
23-Jul-18	N	95.00	92.00
22-Oct-18	N	80.72	90.00
24-Oct-18	N	81.65	89.00
28-Jan-19	N	85.69	91.00
30-Jan-19	N	85.81	92.00
23-Apr-19	N	89.73	93.00
06-May-19	N	92.12	91.00

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