A publication of PwC's Financial Services Institute (FSI)

Spring Ahead or Fall Behind: Creating a Market-Ready ETF Operating Model

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Section 1

Point of view

Point of view—Growth of the ETF industry

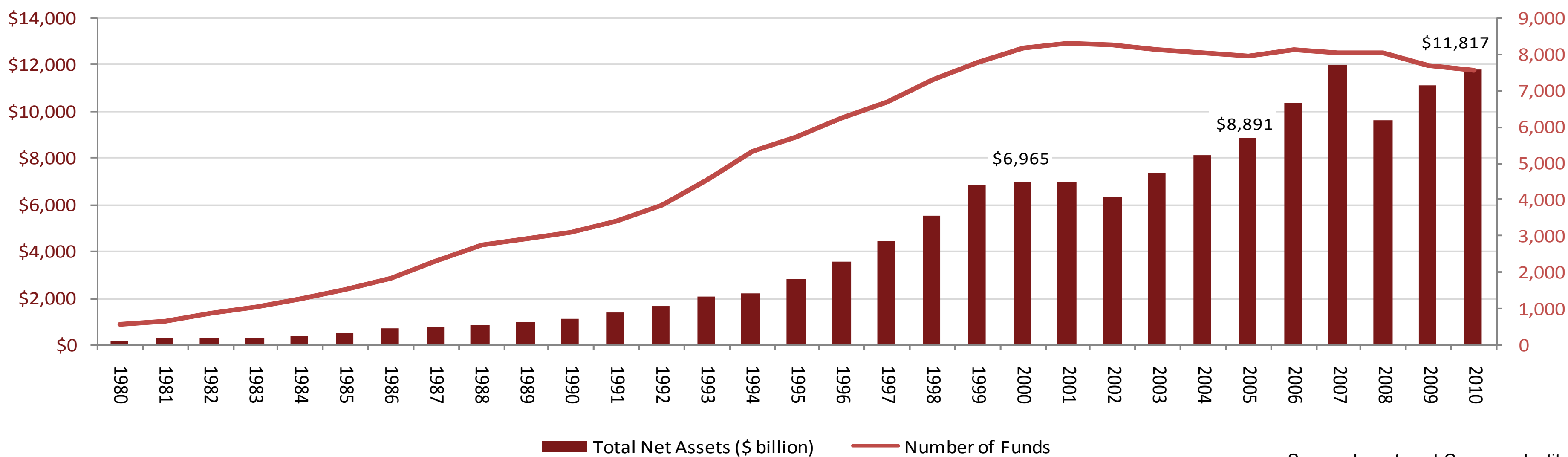
The United States has historically been the global trendsetter for the investment management industry. Lately, investor enthusiasm for mutual funds has begun to cool.

Mutual funds: no longer the only game in town domestically.

In the 1980s and 1990s, mutual funds reigned supreme. As the packaged investment product of choice, the once white-hot funds still number more than 7,500 with more than US$11.8 trillion in assets in 2010. Mutual funds assets are down 1.5% from their peak of US$12 trillion in 2007, despite their recovery from the low in 2008.[1]

The number of mutual funds has remained relatively flat over the past decade. Investors are increasingly seeking lower-cost investment products, which is making exchange traded funds (ETFs) more attractive, and causing traditional mutual fund sponsors to look toward ETFs to help them attract new assets.

US Mutual Fund Industry, 1980 - Present



Source: Investment Company Institute

[1] Investment Company Institute, Trends in Mutual Fund Investing, December 2010.

Point of view—Growth of the ETF industry

The growth of US-listed ETFs has outpaced that of traditional mutual funds in recent years; this growth is likely to continue.

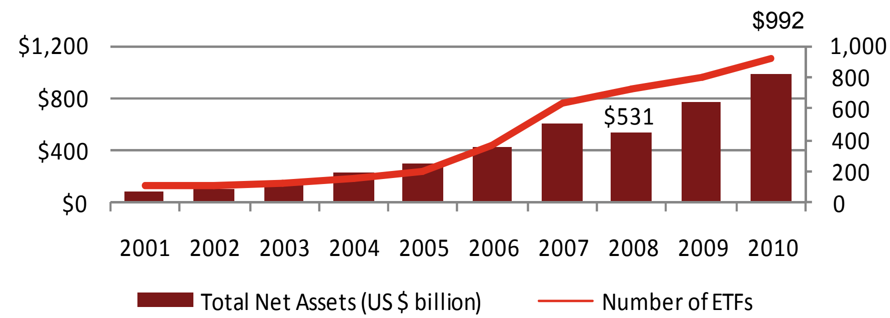
US ETFs: Growing by leaps and bounds – 25% compound annual growth rate the past 5 years

In just a decade, total US ETF assets grew from under US$100 billion to over US$891.0 billion (see chart). With more than 69 new US ETFs launched in 2009, US ETF growth continues to exceed even high expectations.

At the end of 2010, the US ETF industry had:

- 923 funds
- Assets under management (AUM) of US$992.0 billion.

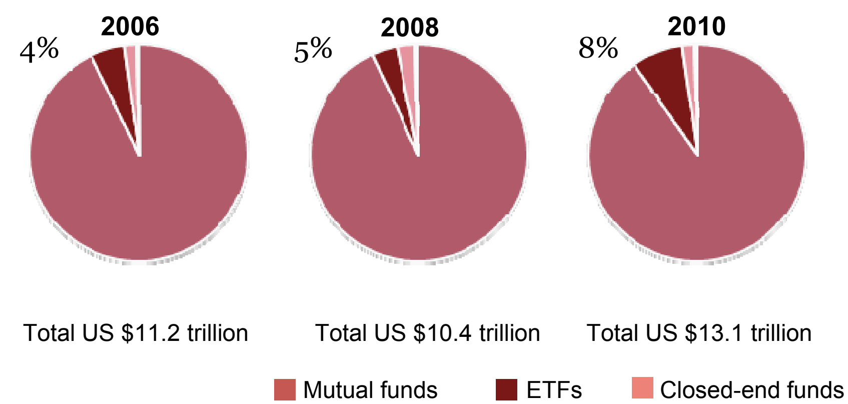
Total US Net Assets and Number of ETFs



Source: Investment Company Institute and Strategic Insight Simfund

If the US ETF market maintains recent growth rates, ETFs will continue to capture market share from mutual funds.

At the end of 2010, ETF AUM still only comprised about 8% of the total AUM of mutual funds in the United States. However, over the past several years, ETFs have accumulated assets at a faster rate than that of the traditional 40 Act market. And although the top five ETF sponsors enjoy "first mover advantage" and currently represent 90% of the assets, the majority of new ETFs in 2010 were initiated by new and smaller fund sponsors. If the ETF market continues to grow at the same rate it did over the past five years (almost 25% annual growth rate of AUM), it will have almost doubled by 2013 and will potentially more than triple by 2015.[1]



Source: Investment Company Institute

[1] PwC calculations based on ICI data.

Point of view—Growth of the ETF industry

International markets have also taken note of ETF products—European and Asia-Pacific ETFs have been growing rapidly in recent years.

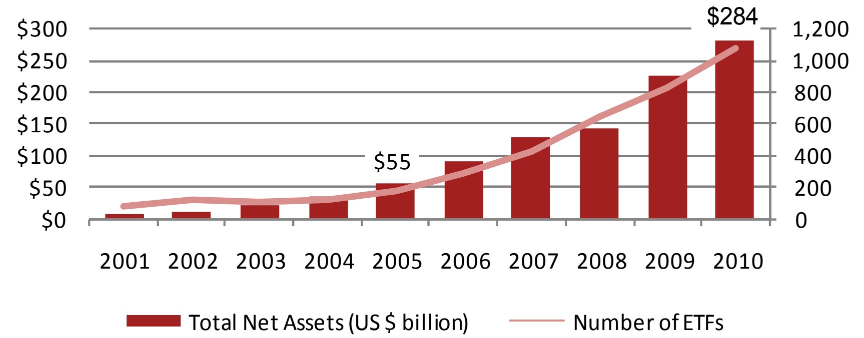
European ETFs: Less mature, but growing rapidly

Since 2005, European ETF assets grew from US$55 billion to almost US$284.0 billion (see chart). With more than 268 new European ETFs launched in 2010, the number of European ETF products now exceeds that in the US market.

At the end of 2010, the European ETF industry had:

- 1,071 funds with 3,699 listings
- AUM of US$284.0 billion
- 39 sponsors on 22 exchanges.[1]

Total European Net Assets and Number of ETFs (US$ billion)



Source: BlackRock International

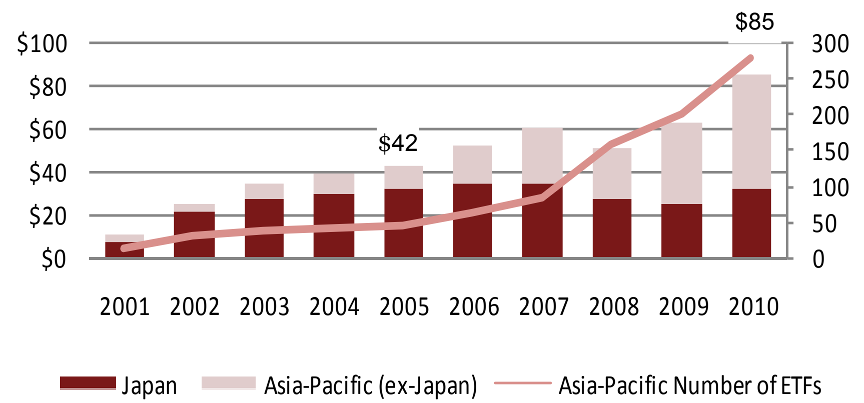
Asia-Pacific ETFs: Still a much smaller market but poised for significant growth

From 2005 to 2010, assets in Asia-Pacific ETF doubled by growing from US$42 billion to over US$85.5 billion (see chart). Market activity is now picking up considerably. ETF products grew by nearly 45% last year, with more than 86 new Asia-Pacific ETFs launched in 2010. Most of the early ETF activity in the Asia-Pacific market occurred in Japan, with the remainder of the region maturing after 2007.

At the end of 2010, the Asia-Pacific ETF industry had:

- 280 funds with 390 listings
- AUM of US$85.5 billion
- 66 sponsors on 15 exchanges.[2]

Total Asia-Pacific Net Assets and Number of ETFs (US$ billion)



Source: BlackRock International

[1] BlackRock International. ETF Landscape Industry Highlights, Year End 2010.
[2] Ibid.

Point of view—Growth of the ETF industry

Several factors have contributed to the attractiveness of ETFs for both investors and sponsors.

For investors, the following factors have made ETFs an appealing alternative to mutual funds:

- Lower management fees—ETF advisory fees may be 20 to 40 basis points (bps) compared to 75 bps and higher for traditional mutual funds.
- Increased investment transparency—Under current SEC rules, the entire portfolio of holdings must be published daily to the marketplace. Mutual funds typically release portfolio information quarterly or semi-annually.
- Ability of investors to make real-time trades—Trades occur throughout the day on the listed exchange. Mutual fund trades settle only at the end of day when they are priced.
- Enhanced index tracking and more predictable investment performance from passive ETF portfolios—ETFs monitor and publish performance relative to their index daily.
- Diversification of underlying securities—ETF portfolios hold large numbers of positions to replicate the performance of their index.
- Increased tax efficiency—ETFs generally do not have large capital gain distributions, as many portfolio transactions are in kind trades.
- Intraday trading allows for hedging, stop-loss trading, and arbitrage opportunities—hedge funds and pension funds are increasingly using ETFs instead of futures and over-the-counter derivatives such as swaps.

For asset managers, ETFs are becoming a strategic component of their investment product offerings

- Aggressive educational campaigns, led by leading sponsors and service providers, and aimed at retail investors, have helped sponsors garner new ETF assets.
- With investors seeking lower-cost options, asset managers that do not offer ETF products may lose assets to those asset managers who do offer ETF products.
- The 401(k) market may generate significant asset inflows to ETFs in the future.
- Passively managed ETFs, which are common today, do not require substantial front-office resources.
- Actively managed ETFs, which are growing in number, create new opportunities for experienced asset managers. These products also allow for leveraging existing operations and technology platforms typically used for mutual funds.
- Emerging changes to investment strategies such as target-date funds, ultra-short duration (alternative to money market funds), and commodity funds have broadened the appeal of ETFs.

Point of view—Growth of the ETF industry

Once focused primarily on broad-based domestic equity index funds, the US ETF product spectrum has now diversified into fixed income, international, and sector-specific offerings.

Many sponsors of ETFs registered in the United States are expanding from well-established market indices into custom indices to provide more asset class exposure.

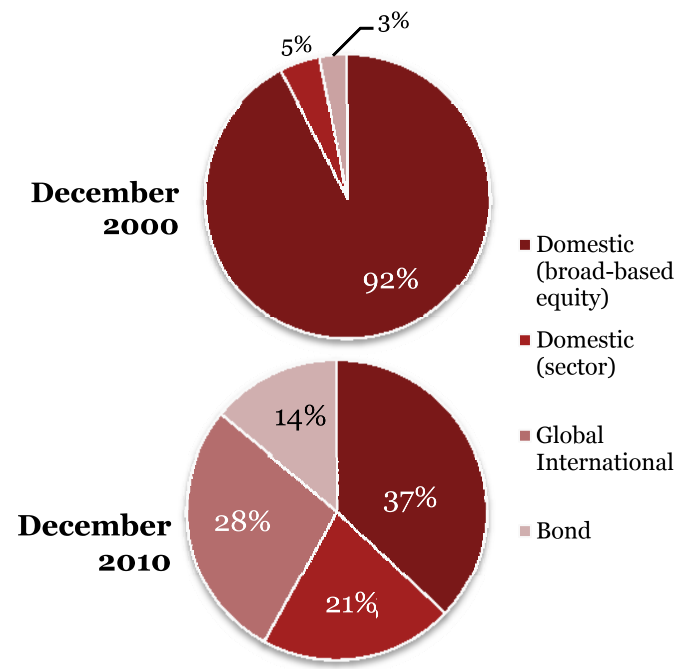
Emerging ETFs will likely focus on natural resources, bonds, individual emerging market countries, and targeted market capitalization strategies.[1]

In 2000, 92% of all US ETF assets were allocated to domestic, broad-based equity. As of December 2010, equity assets were divided between broad-based equity (37%) and sector-focused equity (21%).

Some fund sponsors are exploring more individual country offerings, and there are currently more than 60 single-country funds available, including 10 launches occurring between January and June 2010.[2] International assets accounted for 28% of all ETF assets as of December 2010, up from 5% in 2000 (see chart).

As of December 2010, over US$275.0 billion of assets were invested in global/international ETFs.[3]

ETF asset allocation



Source: Investment Company Institute

[1] "ETF trends to watch in 2010; A look at which of this year's winners could repeat," December 2009, Marketwatch.
[2] "ETF Weekly: The Pros and Cons of Single-Country ETFs," June 2010, http://research2.fidelity.com/fidelity/commentary/article.asp?dockey=1514-342104-2DAS4VSFFGATHBQ2BFD6VJ7A3S
[3] Investment Company Institute

Point of view—ETF basic facts

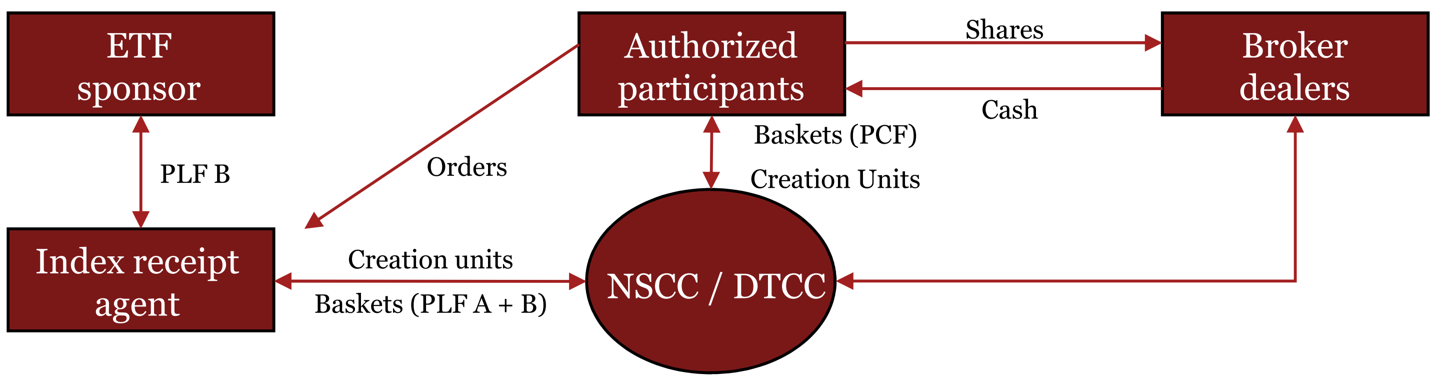
Though most US ETFs are registered under the Investment Company Act of 1940, key differences exist compared to traditional open-end mutual funds.

Operational characteristics	Mutual funds	Exchange traded funds
Technology	Standardized, both proprietary and vendor based applications	Non-standardized, proprietary processes
Back-office service providers	12 – 15	4
Controls	38 a-1, SAS 70, internal audit, 22 c-2	Limited, 38a-1
Participants	Investment manager, back office service provider, NSCC	Sponsor, exchange, authorized participants, index receipt agent, index provider, NSCC, DTC
Registration	40 Act	40 Act with exemptive relief, Securities Exchange Act of 1933 for Grantor trusts
Terminology	NAV, shares	PCF, cash component, tracking error, DWAC, bursted file, CNS, creation unit, baskets, IOPV, PLF
Distribution	Direct and broker dealer	Broker dealer
Key sponsor functions	Portfolio management, analytics and trading, service provider oversight, sales/distribution management	Index receipt agent interaction, rebalancing, daily portfolio composition, distributor order approval, monitor index tracking error
Trading size	Individual shares	Creation units (50,000 shares)
Purchase/redemption	Cash	In kind and cash

Point of view—ETF basic facts

The primary and secondary market components of the ETF marketplace create unique roles for financial services firms.

Key market players



Fund sponsor

- Completes SEC filings and apply for index license
- Defines ETF investment objectives
- Identifies optimal basket of securities to comprise fund (PCF)
- Collaborates with index licensor who will construct, calculate, and revise index and baskets and transmit information to fund sponsor/manager and custodian

Authorized participants

- Typically large, institutional investors, also known as creation unitholders
- Interact with fund sponsor to buy and settle basket of securities
- Define creation unit enumeration
- Work with distributor to place buy/sell creation units orders

Broker dealer

- Intermediary between authorized participants and individual investors through which exchange transactions are managed

NSCC/DTCC

- Provides clearing, settlement, and information services for ETFs
- “Nets” buys/sells of underlying securities
- Transfers ETF shares via DWAC process
- Publishes portfolio composition file daily, which reflects “basket” of securities that comprise a creation unit order

Index receipt agent

- Calculates cash component and transmits the PLF to the NSCC
- Handles processing, clearing, and settlement of purchase and redemption orders through the DTCC and NSCC
- Coordinates and transmits files and purchase/redemption orders between the Distributor and NSCC

Point of view—Evolution of a standard operating model

ETF processes, roles, automation, and controls generally lack the maturity and standardization of mutual funds, by a considerable margin.

This means that providers need to continue to improve in these areas in order to preserve the trust given to them by the historical mutual fund investor.

As mutual funds became the packaged investment product of choice in the 1990s, capabilities in people, process, and technology evolved quickly, enabling a highly scalable, risk-controlled operational environment. Front- and middle-office functions to support portfolio management and trading are well established. Likewise, a mature market of external service providers for mutual funds has also developed. These asset managers and service providers have significant experience in meeting regulatory guidelines, including 38a-1 and SAS 70 requirements.

In contrast, ETF sponsors continue to be supported largely by non-standard technology, “heroic” skills, undocumented processes, unclear roles and responsibilities, and evolving risk controls. Sponsors use a wide variety of operating models to rebalance portfolios, permit portfolio customizations, and report tracking errors, among other functions. Similarly, the ETF service provider market is still developing, with only four primary participants. As a sponsor, the success of your ETF strategy rests upon several operational considerations, both internal and external.

Sponsor focus point	Area for consideration
Control environment	A robust control environment including a strong internal audit function is an important step in supporting 38a-1 and SAS 70 requirements.
Performance metrics	Standardized performance metrics can provide measureable performance indicators for key functions and processes.
ETF-specific platforms	Platform configurations should be ETF-focused rather than simply geared toward mutual funds in order to fully meet product and market requirements.
Scalable, centralized automation	ETF automation should be maintained in centralized systems with scalable solutions rather than in a decentralized, spreadsheet-based fashion.
Knowledge sharing	ETF operational knowledge should be shared across the organization to make certain that reasonable operating practices are accumulated and documented within the firm.

Point of view—Evolution of a standard operating model

Leading asset managers and service providers are proactively addressing the maturity of their ETF operating models. Is your ETF operating model market-ready?

In our view, ETF sponsors need to quickly and decisively adopt new approaches or risk being left behind. Agile institutions stand to triumph over their competitors.

The industry continues to show exceptional growth, with no sign that investor interest is fading. Operating models, technology platforms, and distribution channels need to be able to support future volume increases and be flexible enough to accommodate new product launches.

Across much of the financial services industry, regulatory reform will put additional pressure on operating model efficiency and restrict revenue growth opportunities. New regulations, regardless of their exact nature, will require expanded reporting requirements. Stakeholders will seek reassurance in the integrity and infrastructure of sponsors, reinforcing the need for increased accountability. In turn, sponsors will have expectations of accountability from their service providers.

ETF sponsors and service providers should commit to maturing the industry model by both communicating frequently and sharing leading practices. Sponsors and service providers should continually assess whether their operating models can meet current and future demands.

Initiative	Examples of operating model considerations
Capabilities and market assessment	Diversified products and ability to innovate
Fund launch	Scalable automation and adequate support processes
Service provider analysis	Service provider capabilities and controls
Tax reporting considerations	Tools and processes to support tax allocation and lot selection methodologies
Operational risk considerations	Documented controls and testing

Section 2

Competitive intelligence

Competitive intelligence

Operating models of ETF sponsors reflect the lack of maturity in this enormous and still growing market.

A sample of four representative ETF sponsors falls into two categories: two established players focused exclusively on ETFs and two recent entrants with extensive experience managing registered mutual funds.

		Current state			
Characteristics of operating model	**Description**	**Sponsor 1**	**Sponsor 2**	**Sponsor 3**	**Sponsor 4**
Traditional manager and ETF sponsor	Does the asset manager offer a full breadth of registered mutual funds as well as ETFs?	ETF sponsor only	ETF sponsor only	Both	Both
Years in ETF industry	How many years has the sponsor offered ETF products?	5+	5+	<3	<3
Product breadth	Does the asset manager offer a full array of ETF products including broad-based equity, sector equity, fixed income, commodity, and global?	Broad	Broad	Limited	Limited
Automation	Does the asset manager have a strong suite of scalable automation to support front- and middle-office ETF processing functions?	Automation and spreadsheets	Automation and spreadsheets	Spreadsheet-based	Spreadsheet-based
Controls	Does the asset manager have documented controls and testing (e.g., internal audit, SAS 70)?	High	High	Limited	Limited
Middle-office functions	Does the asset manager have well-developed processes to support rebalancing, IOPV publication, PLF B creation, and monitoring tracking error?	Extensive	Extensive	Limited	Limited
Product innovation	Is the asset manager frequently introducing new, innovative products in response to emerging market opportunities?	Frequent	Infrequent	Infrequent	Frequent
Number of funds	How many ETFs does the asset manager sponsor?	>50	>50	<50	>50

Competitive intelligence

Similarly, the operating models of ETF service providers reflect a lack of consistency and standardization in processes, controls, and technology.

These four service providers fall into two categories: two are larger, more established players supporting a wide variety of ETF products and the other two providers have more recently started servicing ETFs and offer less automation.

		Current state			
Characteristics of operating model	**Description**	**Service Provider 1**	**Service Provider 2**	**Service Provider 3**	**Service Provider 4**
Funds under administration	How many funds does the service provider support?	>100 funds	>100 funds	<100 funds	<100 funds
Products supported	Does the service provider support a full array of ETF products including broad-based equity, sector equity, fixed income, commodity, and global?	All	All	Most	Most
Platform investments	Is the service provider aggressively investing in enhancing its servicing capabilities?	Significant recent investment	Some recent investment	Limited investment	Some investment
Automation	Does the service provider have a strong suite of scalable automation to support back-office processing including CNS reconciliation, PLF A + B creation, online order processing, and PCF bursted file?	Some automation with spreadsheet-based tools	Some automation with spreadsheet-based tools	Spreadsheet-based tools	Spreadsheet-based tools
Controls	Does the service provider have documented controls and testing in their internal audit and SAS 70 documentation?	Some documented controls	Some documented controls	Limited documented controls	Limited documented controls
Middle-office support	Does the service provider offer processes to support rebalancing, IOPV publication, PLF B creation, and monitoring tracking error?	No	Some middle-office support	No	No
Services breadth	Does the service provider offer expanded services for launch support, PFO, CCO, and tax?	No	Yes	No	No

Section 3

A framework for response

A framework for response

PwC recommends five key areas of analysis to help asset managers and service providers proactively address the maturity of their ETF operating models.

Defining a roadmap to further standardize and scale your ETF operating model:

Key area	Capabilities and market assessment	Fund launch	Service provider analysis	Tax reporting considerations	Operational risk and compliance controls
Asset managers	Identification of key functions and leading practices required to support products in front and middle office	Key considerations to operationalize activities to support fund launches	Capabilities analysis of key ETF partners including index receipt agent, distributor , authorized participants and index provider	Considerations for appropriate treatment of securities purchases and redemptions	Thorough analysis of controls for manual and automated processes to manage operational and regulatory risks
Service providers	Identification of key functions and leading practices required to serve as index receipt agent	Value-added services to support asset managers in fund launch process	Benchmark analysis of key index receipt functions to assess scope of services, service levels and pricing	Considerations for proper recording and reporting of taxable gains and losses with consideration for wash sale monitoring	Analysis of index receipt agent's process controls including financial and regulatory reporting

A framework for response

A structured analysis should be performed to gather thorough requirements, which may then be used to create a realistic implementation plan with a realistic cost estimate.

In preparing to enter the ETF market, fund sponsors should perform a structured analysis to define product specifications, document gaps to current operations, and define the future-state target operating model and business case.

Typical activities

- Define product operating components required to sponsor ETFs, including typical pricing approaches, target indices, and market making strategy
- Identify success factors considered necessary to transform into a viable ETF sponsor
- Conduct an assessment of existing capabilities and infrastructure
- Identify, document, analyze, and prioritize capability gaps
- Document and estimate the level of effort associated with building/acquiring capabilities required for ETF market entry
- Perform an analysis of potential high-level revenue projections
- Create high-level implementation roadmap with dependencies and timeframes

Illustrative outcomes

- Competitive product operating components
- Success factors for entering the market
- ETF product operations specifications, including capabilities assessment and gap analysis
- Target operating model and implementation plan
- Business case analysis

Definition

↓

Documentation

↓

Determination

A framework for response

Is your ETF operating model market-ready?

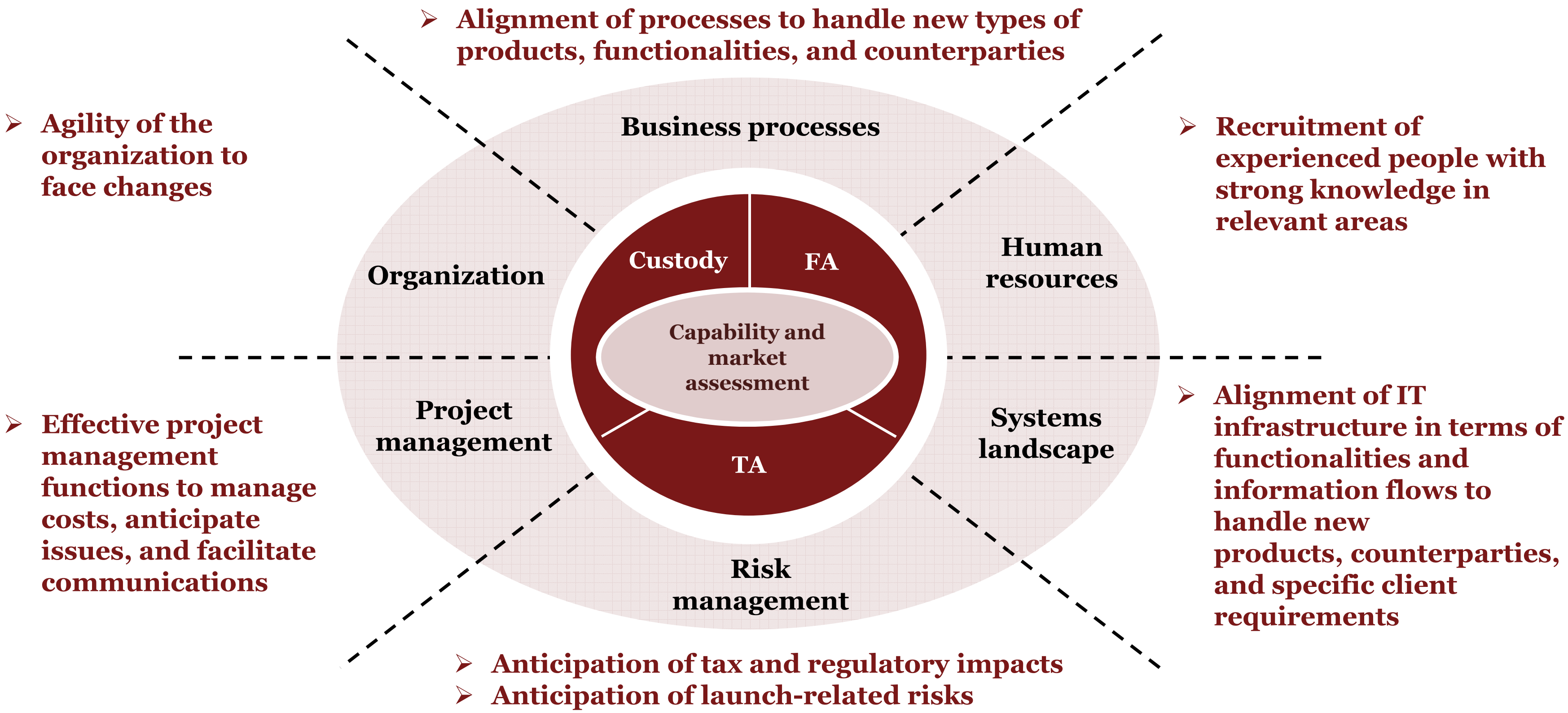
We recommend that sponsors already in the ETF market, or those considering an ETF product launch, evaluate several competency areas.

Index tracking	• Active evaluation of the composition of indices to promote ongoing accurate reflection of ETF-targeted investment objectives. • Daily analysis of portfolio listing files and near real-time tracking error analysis to make certain that any discrepancies are remedied in a timely manner to avoid ETF movement away from index performance.
Portfolio composition management	• Efficient document management to maintain margins and keep fund fees competitive. • Thorough document analysis and archival to support appropriate trade recording and source document availability post-trade. • Rebalancing activities should be automated and closely monitored.
Order activity monitoring	• Near real-time visibility into trading volumes to provide alerts regarding activity that may signal declines in fund liquidity. • Active trade analysis to assess distributor order completeness and cancellation activity.
Trade clearing management	• Close analysis of collateral to make certain that those trades made outside of DTCC's net settlement process are honored by counterparties. • Robust control environment for share delivery and balancing in deposit and withdrawal at custodian to promote proper trade clearing.
Innovation hub	• Contemporary outlook on industry to identify and respond to new product trends such as actively managed funds, disclosure requirements, 401(k) offerings, and patented share classes, as well as potential regulatory changes such as 40 Act rationalization. • Adaptable infrastructure and IT design to reduce time-to-market for new product offerings.

A framework for response

Approaching the fund launch process holistically allows sponsors to better understand operational and regulatory compliance considerations.

Key factors for preparing your operations for a fund launch include business processes, human resources, systems landscape, risk management, project management, and organization.



A framework for response

The operating model should have the capacity to support future volume increases and be flexible enough to accommodate new product launches.

Asset managers should follow a structured, multi-phase evaluation plan to assess whether service providers meet operational, risk, and regulatory requirements. This evaluation should be undertaken when choosing a new service provider or evaluating the maturity and effectiveness of your current service provider.

Typical activities

- Phase 1—Define scope of services
  - Confirm extent of outsourcing
  - Develop business and IT requirements
  - Develop platform criteria
- Phase 2—Issue RFP
  - Prepare shortlist of servicers
  - Draft, finalize, and issue RFP
  - Develop scoring matrices and methodology
- Phase 3—Evaluate RFP responses
  - Score and analyze responses
  - Perform pricing analysis
  - Conduct executive analysis of responses
  - Draft service level agreement measurements
- Phase 4–Conduct due diligence and develop implementation approach
  - Conduct onsite due diligence at servicers
  - Finalize winning servicer selection

Key service provider considerations

Proven and measurable service levels

- Industry standard capabilities
- Exceptions handling including short settlement requests and manually processed services requests

Scalability and flexibility

- As new ETFs emerge and trade volumes increase, adaptability is essential
- Customizable processes with open-ended architecture
- Leverage a service organization to reduce future roadblocks

Global operations

- Global operating model with consistency between different countries
- Regulatory issues

Experience and human capital

- Service provider with fund administration experience may offer legal, tax, and treasury services
- Proven track record with mutual funds/ETFs
  - Client list
  - References available for board
- Absence of conflicts of interest (real or perceived)

Technology

- Web-based service platform for 24/7 user access
- Front-end platform to service multiple ETF transactions through a single interface

A framework for response

Sponsors should perform thorough due diligence to assess service providers' ability to meet operational, risk, and regulatory requirements.

Both asset managers and service providers should commit to maturing the industry model through frequent communication and the sharing of operational, risk, and regulatory leading practices in the industry.

Sponsors should carefully evaluate service providers against the following operational leading practices:

Leading practice	Service provider response
Industry-standard capabilities and services	Scalable and mature processing platforms that are well documented, controlled, and promote business continuity, as well as provide for flexibility as new products evolve, such as truly active ETFs.
Proven, measurable service levels	Standardized metrics that effectively report service levels including trade fails, order fulfillment, cash reporting, reconciliations, and pricing exceptions.
Commitment to the business and the ability to invest	Documented plans with capital and headcount commitments updated regularly to continually respond to market growth and product innovations.
Track record with mutual funds and ETFs	Established list of current clients with similar products to make certain that capabilities are established and experience may be assessed by the board of directors.
Clear and transparent pricing	Straightforward pricing for comparison to other competitors; failure to do so may indicate management's inability to manage costs and/or service levels.
Policies and procedures to promote confidentiality	Robust safeguards to wall off sensitive information to providers or their affiliates which may be competitors of sponsors to avoid potential conflicts of interest.

A framework for response

ETFs may be structured as either RICs or PTPs, with the choice of organizational structure posing significant tax implications.

Sponsors should pay particular attention to the tax considerations arising from RIC redemptions in kind and wash sales and PTP tax allocation when determining the most suitable ETF structure.

Typical activities for RICs:

- Assess contributions in kind and the interplay with IRC Section 351
- Evaluate contributions in kind and the interplay with wash sales under IRC Section 1091
- Assess the calculation of earnings and profits, and the impact of redemptions in kind
- Evaluate redemption in kind lot selections

Illustrative outcomes for RICs:

- Management of issues arising from contributions in kind with respect to IRC Section 351
- Analysis of tax positions related to how contributions in kind interrelate with wash sales under IRC Section 1091
- Analysis of how the calculation of earnings and profits may be impacted by redemptions in kind
- Informed decision-making regarding most appropriate lot selection methodology

Typical activities for PTPs:

- Gain understanding of tax reporting considerations for PTP structure
- Assess trading strategy for book-tax differences and areas of tax uncertainty
- Identify uncertain tax positions under applicable partnership tax allocation rules
- Assess expected exchange trading levels and frequency
- Identify anticipated trading ranges and price volatility

Illustrative outcomes for PTPs:

- Summary of tax uncertainties related to trading strategy
- Customized investor tax allocation methodology
- Strategy to address implications of tax technical termination
- Development of policies regarding step-up and step-down calculations
- Customized investor tax reporting packages including supplemental schedules

A framework for response

ETF sponsors and service providers need to satisfy inquiries from investors, directors, and regulators about the design and effectiveness of their risk management, compliance, and controls program.

Governance and strategy	▪ Staying abreast of leading practices, perspectives, and regulatory developments in the industry. ▪ Integrating governance, risk, and compliance functions to support ETF-specific activities. ▪ Assignment of authority for approving risk decisions. ▪ Compliance and/or risk management training.
Policies and procedures	▪ Systematic procedure for identification and assessment of risks within ETF processes. ▪ Standardized policies and procedures to address risks. ▪ IT controls and application/database security. ▪ A robust control environment including a strong internal audit function to support 38a-1 and SAS 70 requirements.
Compliance and monitoring	▪ Standardized metrics and reporting for measuring and communicating performance. ▪ Monitoring of ICA and prospectus diversification and concentration guidelines. ▪ Periodic testing to ensure compliance with internal policies and procedures as well as 38a-1 and SAS 70 requirements. ▪ Monitoring of third parties and compliance with service level agreements.
Issues management and remediation	▪ Agreed-upon standards and tools for documentation and evaluation of issues. ▪ Protocols for identification, escalation, and reporting of issues. ▪ Adequate oversight to ensure proper assignment, reporting, and remediation of issues.

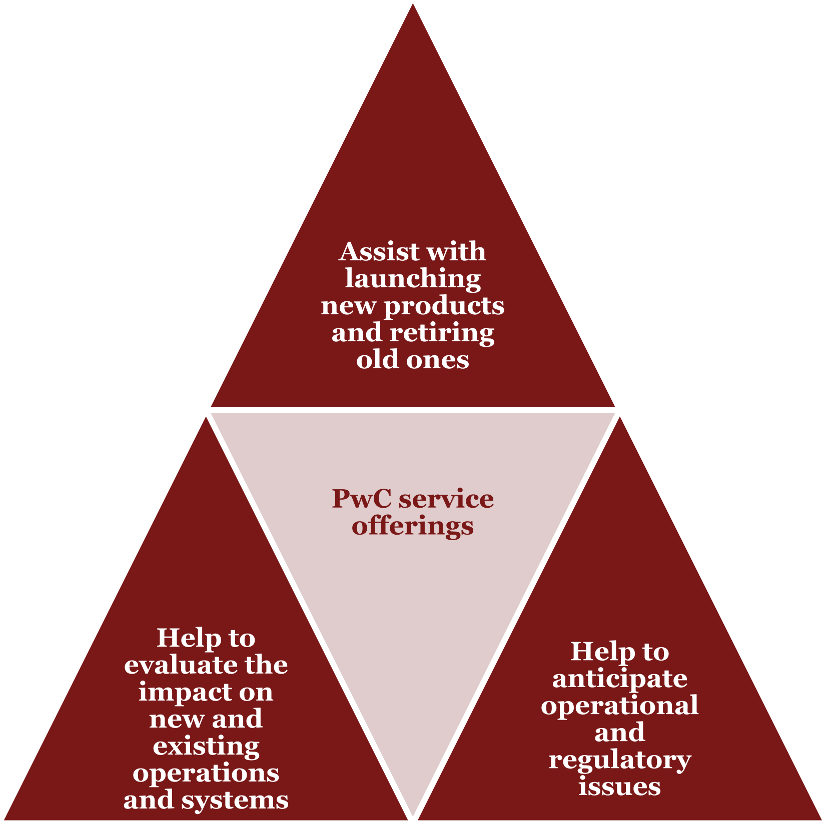
Section 4

How PwC can help

How PwC can help

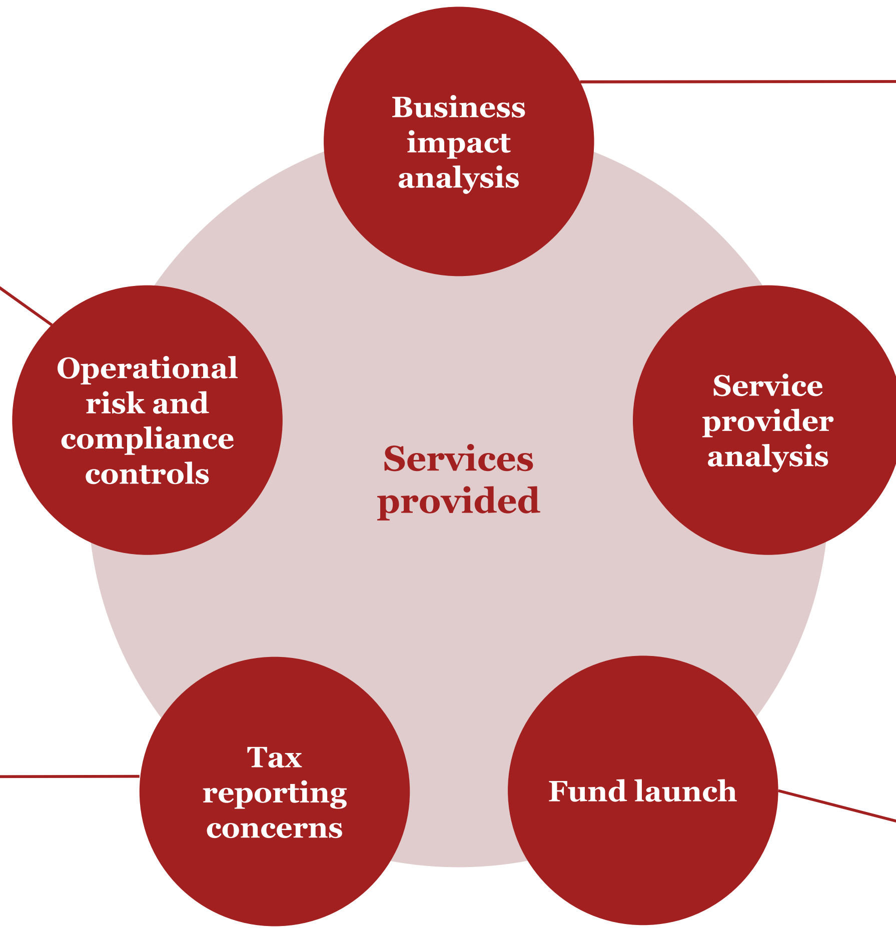
PwC offers a variety of services in the ETF marketplace.

Extensive experience	We have designed and implemented new operating models for several leading financial services firms, on both the sponsor and service provider sides. We have extensive experience with the leading ETF firms in the industry.
Industry focus	Our seasoned team of professionals bring deep industry experience and uncover key operational risks and market opportunities in the asset management sector.
Deep operations, finance, and IT experience	Our team includes finance, regulatory, technology, strategy, operations, and accounting advisory specialists. These specialists provide insight on market trends and risk management as well as strategic sourcing alternatives.
Tailored, integrated approach	We tailor our approach and deliverables to your needs based on your strategic goals, your current operating model, and the details of the business case for change.
A single point of contact	Our dedicated financial services team provides a single point of contact that can quickly mobilize the appropriate resources to assist you with your needs.
Global presence	We have a financial services presence in over 25 countries, allowing us to add significant value to companies considering cross-border market solutions.
Solution-based approach	Organizations have many choices with respect to addressing the risk, accounting, and operations issues related to ETFs. We provide a tailored approach to address these issues in a sustainable fashion for your organization.



How PwC can help

PwC provides assistance to components spanning the entire ETF lifecycle.



Business impact analysis — Key components:

- Define ETF market and appropriate product offering components
- Identify and evaluate competitors in the ETF market
- Identify success factors necessary to enter the ETF market
- Conduct an assessment of existing capabilities and infrastructure
- Identify overlaps and synergies with mutual fund servicing gaps
- Help create high-level implementation roadmap with dependencies and timeframes
- Develop business case

Service provider analysis — Key components:

- Define scope of services
- Prepare a list of servicers, develop scoring matrices, and issue RFP
- Evaluate RFP responses by analyzing responses and performing pricing analysis
- Conduct due diligence and help develop implementation approach
- Define service level agreements

Fund launch — Key components:

- Develop standard testing package, schedule, and reporting metrics
- Assess systems, processes, interfaces, and reporting functions
- Conduct operational readiness assessment
- Go live and execute first trades

Tax reporting concerns — Key components:

- Contributions in kind and interplay with IRC Section 351 and wash sales under IRC Section 1091
- Calculation of earnings and profits and impact of Redemption in kind
- Redemption in kind lot selections
- Qualified income analysis for prospective ETFs
- Tax allocation methodology for allocating income and gain/loss
- Methodology for calculating step-up and step-down adjustments related to inside-outside basis differences for exchange traded units
- Tax analysis of proposed trading strategies and implications under partnership tax accounting
- Tax technical termination analysis resulting from exchange traded units

Operational risk and compliance controls — Key components:

- Creation and evaluation of policies and procedures
- Requirements analysis and documentation
- Regulatory due diligence
- Integrating organizational governance, risk, and compliance

How PwC can help

For further information, please contact:

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Section 5

Select qualifications

Select qualifications

Assessing entrance to the ETF market—Large global custodian and asset servicing firm

Issues	A large global custodian and asset servicing organization was assessing the feasibility of leveraging its current capabilities to enter the ETF servicing space and determining the appropriate timeframe for doing so. As such, the client needed to assess the additional requirements and estimated costs for building out this service.
Approach	PwC supported the client in assessing its potential entry into the ETF servicing space by: ▪ Presenting a market and product overview session to educate the client on ETF products, requirements, revenue models, and operations. ▪ Conducting working sessions with business line representatives and technology personnel to create value chains for the ETF servicing model. ▪ Collaborating with the client to assess and document high-level business requirements for ETF servicing. ▪ Driving the initiative to develop cost and headcount estimates by leading working sessions with client personnel to analyze resource requirements. ▪ Creating working timelines of an ETF servicing implementation to assist in project and resource planning. PwC developed an executive summary leveraging the analysis and estimates from the project, which was a key input to the firm's management committee decision-making process.
Benefits	PwC added value for this client by driving this effort forward in the accelerated timeframe needed to make this decision. With PwC's help, the client was quickly educated on ETFs, their requirements, and the current market. Using the deliverables from this project, the client was able to make an informed strategic decision about whether to enter this market.

Select qualifications

Support for entrance to the ETF market—Global investment bank

Issues	A top global investment bank's asset servicing group planned to enter the ETF servicing market. The group intended to leverage its existing mutual funds servicing infrastructure to provide custody, fund accounting, and transfer agency services. The client was seeking to better understand the differences between back-office operations for mutual funds and ETFs to support its efforts in building out ETF-specific services and becoming an index receipt agent.
Approach	PwC supported the client's efforts by: ▪ Increasing the client's understanding of the ETF industry and its requirements: – Presented specialized training sessions on the ETF industry. – Identified required features, functionality, and services needed to service ETFs and completed a gap analysis based on the organization's current capabilities. – Conducted working sessions with product, operations, and technology workstream leaders to develop solutions to address gaps. ▪ Guiding project management efforts to prepare the client for entry to the ETF market: – Developed a high-level implementation plan, including timeline, cost, and effort estimates. – Defined business requirements needed to build out ETF servicing capabilities, including operational processes, controls, reporting requirements, and non-technical system interactions. – Created detailed process flow diagrams to assist the client in understanding the end-to-end design as well as the interactions between the various functional groups. – Assisted in defining a technical design for new ETF servicing components, including system architecture, communication protocols, and user interface design.
Benefits	The client gained knowledge of ETF-specific industry requirements and how it could cost effectively leverage its current infrastructure to enter the market. PwC's project management assistance supported the firm's efforts in keeping the implementation on track and helped the client meet its targeted go-live date.

Select qualifications

Building operational capabilities for ETFs—Fund servicer

Issues	A fund servicer was looking to build and implement technology and operational capabilities necessary to service ETFs. The client viewed this as an opportunity to increase revenue and attract new clients by offering a one-stop shop for mutual fund and ETF back-office services.
Approach	PwC assisted the client by performing the following: ▪ Developed training materials for the fund servicer's operations, sales, and marketing personnel as well as its potential clients, to educate staff about the ETF industry and the operational processes necessary to service ETFs. ▪ Managed the overall program office for the assessment, design, construction, and implementation phases of the project. This included oversight of new systems development, testing, and issue resolution. ▪ Developed detailed business and system requirements to support: – Daily generation of the portfolio listing file, indicative optimized portfolio value file, and other daily interactions with the DTCC and the NYSE. – Acceptance of ETF creation and redemption orders, including order reporting to the DTCC and internal stakeholders. – The Continuous Net Settlement (CNS) process. ▪ Defined and documented an integrated test strategy and plan that was shared across all key stakeholders in the ETF servicing process.
Benefits	As a result of our collaboration, the client is now positioned to implement ETF servicing capabilities, increase revenues, and pursue market-share growth for its fund services business unit.

Select qualifications
Analysis of ETF operational and controls analysis—ETF sponsor

Issues	An institutional investment advisor engaged PwC to assess its portfolio management operations, trading operations, and custody operations related to a newly launched family of ETFs. The client wanted to ensure that appropriate controls were in place to support efficient operations and risk management.
Approach	PwC collaborated with client personnel to understand the ETF business processes and identify key controls. PwC also tested control activities by interviewing process owners, observing control activities, and evaluating documentation supporting the control activities. Based on evaluation of the design and operating effectiveness of controls in the processes, the team developed observations and recommendations and provided them to ETF management, custody management, and the ETF audit committee.
Benefits	The client leveraged PwC's deliverables to prioritize remediation of key operational and control issues. By addressing the control gaps, the client was able to improve risk management, operational control, client service, and operating efficiency in its business operations.

Select qualifications

Evaluation and selection of service provider—Leading asset management firm

Issues	A leading asset manager was developing a new line of funds that included exchange traded funds, open-end funds, closed-end funds, and unit investment trusts. This client wanted to identify third-party vendor(s) to perform fund accounting, custody, transfer agency, and fund administration to support several product structures including a new set of ETFs.
Approach	PwC supported the client's evaluation process by: ▪ Developing the Request for Proposal (RFP): – Analyzed vendor request for information (RFI) responses and created a vendor short list. – Collaborated with client personnel to define key business requirements for fund accounting, custody, transfer agency, and fund administration. – Created and issued the RFP to vendors. ▪ Evaluating vendor responses and facilitating vendor selection: – Defined vendor evaluation criteria based on the client's business requirements, existing infrastructure, risk tolerances, and preferences. – Scored and evaluated each vendor. – Created a pricing model to compare pricing across vendors. – Facilitated vendor presentations. Based on the vendor responses and the evaluation process, PwC provided vendor recommendations in the form of an executive presentation to the client.
Benefits	The client benefited from extensive support and ETF experience in its vendor evaluation process. In addition, the client received recommendations on a vendor that was well-suited to meet its needs based on its new products and associated launch dates.

Select qualifications

Support for entrance to the ETF market—Fund servicing institution

Issues	A mid-sized fund servicing organization that was planning to enter the ETF servicing space needed to quickly become educated on ETFs and the additional requirements for building out its fund administration, fund accounting, custody, and transfer agency services. The organization required this information in order to get management approval for the project's capital expenditures and move into the design phase.
Approach	PwC helped the client build out its ETF servicing capability by: ▪ Holding ETF foundation sessions for multiple areas of the organization to educate the client on ETFs. ▪ Completing a gap analysis on the organization's current capabilities for servicing ETFs. ▪ Facilitating meetings and communication with external parties including the DTCC and NYSE. ▪ Conducting working sessions with business line representatives and technology personnel to create value chains for the ETF servicing model, and assessing and documenting high-level business requirements for ETF servicing. ▪ Collaborating with client personnel to develop cost and headcount estimates and aggregating results. ▪ Supporting the business case analysis process to obtain funding. ▪ Creating timelines for the client to help it meet the targeted go-live date.
Benefits	PwC added value for this client by driving this effort forward in the brief timeframe needed to make this decision. With PwC's help, the client was quickly educated on ETFs, their requirements, and the current market. In addition, PwC helped bridge the gap between business lines by facilitating multiple cross-functional meetings. Based on the work completed, the client was able to move forward into the technical design phase for building out its ETF service offerings.

Select qualifications

Assessment of ETF tax reporting—Fund service provider

Issues	A mid-sized fund servicing organization planning to enter the ETF servicing space was seeking more information about the tax implications of servicing ETFs. Since ETFs are less mature than other investment vehicles, there were limited legal precedent and relevant Internal Revenue Code (IRC) sections to guide the client's analysis. The client was aware that that ETF tax issues could have significant post-fund formation reporting and quantitative consequences, and could impact systems, processes, and vendors. The client was interested in understanding key tax considerations from the planning phase to the implementation phase and day-to-day maintenance and compliance issues.
Approach	PwC assisted the client by performing the following: ▪ Identified tax considerations to minimize FIN 48 risk during fund formation and minimize the risk of future burdensome tax reporting requirements. ▪ Created a customized tax checklist of items to consider with various parties before undertaking a new fund. ▪ Created an appendix for the checklist that outlined various IRC sections and prior legal cases, for use when considering key tax decisions with limited reference material. ▪ Defined business requirements to support tax decisions. ▪ Used industry experience to offer insight into procedures and planning considerations that can help to minimize administrative burdens. ▪ Offered valuable insight into industry positions on questionable tax items.
Benefits	PwC's insight and deliverables enabled the client to educate its business units on important tax considerations. In addition, the client's tax, legal, and fund accounting team members were better equipped to understand tax planning and workflow considerations with respect to ETFs. The client enhanced its tax policies and procedures for undertaking new funds and maintaining compliance for existing funds.

Select qualifications

Assessing entrance to ETF market—Large fund service provider

Issues	A multi-trillion dollar asset servicing firm was seeking an analysis of the potential impact and value of an ETF product offering to complement its existing 40 Act and Collective Fund custodial, fund accounting, fund administration, and transfer agency services.
Approach	PwC supported the client's needs by: ▪ Providing an analysis of global and US ETF trends and potential market value. ▪ Assessing competitors' market offerings and performing an analysis of industry pricing to assess business case profitability. ▪ Evaluating the client's existing fund servicing capabilities to identify ETF leverage points and gaps across transfer agency, fund accounting, and custody operations. ▪ Preparing a high-level roadmap to develop needed capabilities. ▪ Developing the business case to support an ETF product offering.
Benefits	As a result of the engagement, the client was able to better understand and quantify the financial and operational impacts of providing index receipt agent servicing capabilities.

Select qualifications

Expand ETF servicing capabilities—Large US bank

Issues	A large US-based bank was looking to build out the technology and operational capabilities necessary to service exchange traded funds. As assets under management in this sector continue to grow, this organization saw ETFs as a key source for revenue growth in a stagnant funds outsourcing market. This strategy was also seen as a way to diversify its existing service offerings and defend against any declines in the mutual fund servicing market.
Approach	PwC was engaged to assist in the following capacities: ▪ Develop detailed business requirements and technology design surrounding key ETF servicing processes. Specifically, PwC documented detailed business requirements and technical designs to support required reporting and file transmissions with external parties such as the fund sponsor, the clearing agency, and the index (e.g. NYSE). ▪ Facilitate informational sessions and further client understanding of the ETF industry. ▪ Recommend representative timelines and resource assumptions in the design, development, and test planning phases of the project. ▪ Facilitate communication across various business lines, ensure that issues were resolved in a timely manner, and facilitate the decision-making process.
Benefits	As a result of our collaboration, our client is well positioned in the market to service ETFs and grow its fund services business. The client was also able to leverage existing technology platforms and design a system that can be leveraged across fund sponsors for future growth.

Appendix

ETF glossary

Appendix
ETF Glossary

Acronym/Abbreviation	Definition
Accumulated Dividends	Accumulated dividends are per ETF share, net of expenses, through and including the previous day's close. Stocks pay dividends throughout the quarter while ETFs pay dividends only once per quarter. The accumulated dividend is the amount to be embedded in the share price and IIV waiting to be paid out.
Authorized Participant	Financial institutions that buy or sell ETF shares (called creation units) via an in kind exchange for the basket of underlying securities.
AutoRoute Files	The DTCC's proprietary file outputs that are sent to clients.
Bursted File	A “multiplier” file created on the evening of Trade Date based on the PCF File and Create and Redeem order instructions.
CNS	Continuous Net Settlement, NSCC's core netting, allotting, and fail-control engine. Security obligations are netted to a long/short position, regardless of volume.
Creation Unit	Large blocks of the ETFs underlying shares of equity or other assets. 50,000 shares is commonly designated as one Creation Unit.
DataTrak Files	The DTCC's proprietary file inputs that are received from clients.
Distributor	Intermediary to institutional/individual investors through which transactions are managed (e.g. Foreside, ALPS).
DTCC	The Depository Trust & Clearing Corporation provides clearing, settlement and information services for equities, corporate and municipal bonds, government and mortgage-backed securities, money market instruments, and over-the-counter derivatives.
DWAC	Deposit/Withdrawal At Custodian - An electronic method of transferring shares using the Depository Trust Company and a Transfer Agent.
Estimated Cash Amount (per current creation unit)	This amount is designed to give APs an idea of approximately how much cash per creation unit will be needed to create or redeem ETF shares on a given day.
ETF	Exchange Traded Funds are actively or passively managed funds that are listed on an exchange and trade like stocks. Most ETFs track an index.
Index Value	This is the underlying stock, bond, commodity, or other index benchmark that a fund is being managed against. It does not include any dividend reinvestment.
Intraday Indicative Value (IIV/Underlying Trading Value/Indicative Optimized Portfolio Value)	A value published for every ETF as a reference value to be used in conjunction with other ETF market information. The IIV for an ETF is typically published every 15 seconds and is updated throughout the trading day based on the last sale prices of the securities specified for creation and redemption plus any estimated cash amounts associated with the creation unit, all on a per-ETF share basis. IIV levels are available to the public through any market quoting service.

Appendix
ETF Glossary (continued)

Acronym/Abbreviation	Definition
Market Price	The price that investors receive when they buy or sell individual ETF shares on an exchange. The market price is a dual quote: the ask price and the bid price. The ask price (or offer price) is the level at which at least 100 shares may be purchased; the bid price is the level at which you would be able to sell at least 100 shares.
Net Asset Value (NAV)	This information is always from the close on the previous trading day. The NAV of an ETF is determined in a manner consistent with other mutual funds. It is calculated by taking the total assets of the ETF minus the liabilities, divided by the total number of ETF shares outstanding. The official NAV usually is expressed as a value per share. It is calculated officially once a day by most US funds, based on the closing prices at 4:00 PM Eastern time.
NSCC	National Securities Clearing Corporation is a subsidiary of DTCC. NSCC provides clearing, settlement, risk management, and central counterparty services for equities, corporate and municipal bonds, ADRs, ETFs, and UITs.
PCF File	Portfolio Composition File lists the securities in each ETF as well as the cash amount in each portfolio. The PCF File is equivalent to the PLF - A File + the PLF - B File. The PCF File is created by the NSCC on Trade Date-1.
PLF-A File	Portfolio Listing File - A represents the estimated cash component of the ETF for the current day. The PLF-A File is created by Fund Accounting on Trade Date-1.
PLF-B File	Portfolio Listing File - B represents the basket of underlying securities for each ETF. The PLF-B File is created by the Fund Advisor on Trade Date-1.
Shares Outstanding	The number of ETF shares issued as of closing on the previous day. It is used to calculate the NAV. Since ETFs are constantly being created and redeemed during a trade day, shares outstanding for many ETFs changes from day to day.
Sponsor	Completes the application and applies for the index license. The sponsor defines the ETF objective and the optimal basket of securities underlying the ETF.
Total Cash Required (per creation)	The amount relates to creations and redemptions executed the previous day to make certain that those trades occur at NAV. Cash required to make certain that existing ETF shares do not experience any dilution as a result of creation and redemption activity.
Trading Spread	The difference between the bid and ask price is the Trading Spread. The spread in some ETFs may be persistently larger than the spread in others. That is due to the securities that make up the underlying ETF. Trading Spreads of ETFs reflect a compilation of Trading Spreads in the underlying securities of that fund.

www.pwc.com

"Spring Ahead or Fall Behind: Creating a Market-Ready ETF Operating Model,"
PwC FS Viewpoint, May 2011. www.pwc.com/fsi