The impact of Brexit on investment bank operations and technology
The debates concerning Brexit have often focused on the political intentions of UK and EU negotiators and the likely stance that will be taken by regulators in impacted jurisdictions. Less attention has been devoted to the practical implications of Brexit on investment banks and, in particular, the operations and technology teams that will have a significant role to play – both in readying firms for the post-Brexit landscape and managing post-trade risk in that environment.

This paper addresses the questions that surround this aspect of Brexit by considering:

► The specific challenges that Brexit presents for those responsible for managing Brexit-related change
► The ways in which banks are currently responding to these challenges
► The opportunities and threats that Brexit presents
► EY’s perspective on the important questions that investment banking operations and technology teams should be focusing on
► The actions that should be taken now
► The ways in which EY can support the activities required
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Uncertainty
Following the result of the UK European Union membership referendum on 23 June 2016, one of the primary challenges that investment banks have grappled with is the uncertainty surrounding the anticipated final outcome of Brexit. The following represent major areas where the eventual outcomes can drive significant implications:

1. Future UK-EU partnership
   The UK and EU have yet to agree, even in principle, what their trading arrangements will be after Brexit and any related transition. The amount of mutual market access that is negotiated, which for financial services will include issues such as regulatory alignment and supervisory cooperation, will have significant impacts on the structure of institutions and the business models they wish to run. The timing of the announcement and ratification of any such deal will also be important, because without details, firms will have to plan on the basis of no deal.

2. Transition arrangements
   Following the triggering of Article 50 on 29 March 2017, the clock began ticking for the UK to remain a member of the EU for precisely two years. Therefore it is highly likely that the UK will cease to be a member of the EU on 29 March 2019. At the EU summit at the end of March 2018, EU leaders reached political agreement on a transitional period of 21 months from “Brexit day” to 31 December 2020. Crucially, this is only a political agreement and will not be legally binding until the Withdrawal Agreement is ratified in October 2018 at the earliest. Businesses still need to decide what course of action to take: plan on the basis of political clarity, trusting the March agreement and risking disruption if the politics ultimately fail; or plan on the basis of legal certainty and press ahead with business continuity plans for a March 2019 Brexit. Even assuming that a transition period is legally ratified, much negotiation is still required to agree the rules applying during that time.

3. Regulatory stance
   In all the aforementioned scenarios, further uncertainty surrounds the line that regulators will take at the point that transition begins. Lobbying is already in full swing to determine how supervision will be effected for banks that operate both in the UK and in Europe, and what models of operation will be permitted.

4. Client reaction
   While banks are considering their own response to the change, their clients are also going through the same process of assessing implications and determining how they will react. The outcomes of the decisions clients take have the potential to govern the shape of the ultimate operating models that banks will adopt after Brexit.

Scale of impact
In recent years, banks have seen a spate of regulation and structural change that has had major implications for many areas of their operations. Brexit has the potential to see even wider ranging impacts. Under a “hard Brexit” scenario with a two phase transition, where UK entities have to respond twice to changes in operating model and regulation, banks will need to implement significant change across the full range of businesses and supporting functions.

Contention with other regulatory programs
Against the backdrop of significant change that Brexit presents, banks are already dealing with the implementation of a raft of mandatory regulatory driven requirements. The prioritization and management of this large backlog of change across teams and applications that are intrinsically inter-related becomes complex and time consuming.
How are banks currently responding?

Worst case planning
Given the level of uncertainty and the significantly greater implications of a hard Brexit, most banks are planning for this as a worst case and considering operating model designs that allow them to continue to provide European client coverage in an environment where UK entities do not have access to the European market. With the European Banking Authority (EBA) providing guidance that suggests it will not tolerate the setting up of “empty shells” within the EU to provide this access, firms are considering options to extend existing entities or create new ones within the EU with the appropriate management, governance, staff and infrastructure to control the risk that they generate. This becomes more complex when considering the ambiguity still existing around the nature of restrictions for cross-border payments between the UK and the EU, and the rules for accessing EU-approved central counterparties (CCPs).

Delaying
In many cases, the level of uncertainty surrounding the outcome of Brexit is causing banks to delay the full inception of implementation activities. While a high level of impact analysis may have been performed and a high level operating model defined, many of the more detailed aspects of the implementation, where requirements are not clear, are being deferred until more is known. The European Council summit on 22 and 23 March 2018 provided some guidance regarding the potential arrangements for transition and end-state, however much negotiation still remains to determine the ultimate deal.

The uncertainty and potential upheaval typically associated with both the transitional and ultimate outcome of Brexit is most commonly linked to the threat of a more complex target operating model with greater cost of operation. Overlaid on this is the additional risk that significant investment will be made to deal with a worst case scenario that may not ultimately arise.

With this view in mind, many organizations are treating Brexit as another compliance project and considering only what is required to get over the line for day one with the minimum outlay and impact. For those organizations that take a different mindset by planning for the worst case (both during transition and at end-state) and adapting the plan over time to build a cohesive operating model, there are a range of opportunities and associated benefits that can be achieved:

**Client acquisition**

By moving sales staff closer to clients and providing a superior service to other organizations only doing enough to meet regulatory expectations, there is the opportunity to attract EU clients whose service level may have been reduced with existing providers.

**Operational and architectural simplification**

The potential that exists for increased operational and technical complexity after Brexit will be greater in banks that take short-term, tactical approaches in order to ready themselves for day one. In comparison, firms that use Brexit planning as a strategic opportunity to realign fragmented approaches to common operational processes and standardize their control framework, can reap significant benefits of simplification.
Despite the uncertainty surrounding the Brexit transition period and final state, banks should not delay in confirming designs regarding those aspects of Brexit for which there is a high level of confidence.

The increasingly clear regulatory stance is that a non-UK entity will be required to support market access for EU clients. One of the first design questions that banks need to answer is the way in which the EU client flow will be booked and risk managed.

**Booking model options**

The majority of the impact for operations will be driven by the way in which the model is defined to support the booking and risk management of transactions undertaken with EU clients. There are four primary models that may be used, each having its own implications for how the EU entity would operate:

1. **Agency trading**
   - The EU entity acts as a broker to the client, giving up the execution of the trade and its risk management to the UK (or other) entity.

2. **Principal trading – back-to-back intraday risk transfer to the UK**
   - The EU entity executes each trade with the client and then immediately executes a corresponding trade with the UK entity, which transfers the market risk and counterparty risk to the UK entity where it is risk managed. In this model, there is a limited capital requirement to support risk taking for the EU entity. However, for some products (for example, repos) there is an increased capital requirement for the UK entity because of a doubling up of the counterparty risk to take account of risk of default by both the ultimate EU client and the EU entity.

3. **Principal trading – back-to-back end-of-day risk transfer to the UK**
   - The EU entity executes trades throughout the day with EU clients and at end-of-day transfers all of the market and credit risk to the UK entity on a portfolio basis (for example, a single total return swap). In this model, there is a requirement for traders in the EU entity to manage market risk on trades executed during the day and an additional capital requirement to support intraday risk taking.

4. **Principal trading – full risk management in the EU**
   - In this model, all trading and risk management is owned by the EU entity. This increases the scale of the operation required, including intraday trading risk management, and the appropriate risk committees and governance to allow the EU entity to manage its exposure in its own right.

The expectation is that firms will not select only one of the above booking models. With different characteristics of product types, it is likely that operations teams will need to be able to handle a combination of the above booking models in order to be able to manage the new business flowing through the EU entity.
Operations implications

While none of the booking models on the previous page are new, the combination of models used will require a range of controls to ensure that all business and associated risk is being managed and closed out appropriately. The complexity that this creates will have implications for operations in a wide range of areas which will require consideration of the following questions:

1. Booking controls
   What controls will need to be introduced to ensure that risk is flat across entities in the back to back model either intraday or at end of day?
   Following the establishment of a new booking model or entity, firms will need to implement appropriate controls and governance around the new architecture. Although it may be possible to duplicate existing controls, there may be a need to modify these to align to the new model or establish new controls in response. Inherent and residual risks will also need to be reassessed and remediated accordingly.

2. Regulatory reporting
   How can teams ensure that the reporting requirements of the EU entity are satisfied and that all existing regulatory reporting rules are adhered to for the migrated trade and settlement flows?

3. Client migration
   How will banks ensure that on “Brexit day”, the appropriate clients have been migrated to face off to the EU entity and are repapered appropriately?
   Depending on the booking model chosen, clients may need to be transferred to other entities for servicing. This will involve operational activities that are beyond business as usual, including repapering existing contracts. Firms will also need to establish client outreach programs to ensure clients are aware of changes to their services and can provide any additional information required prior to the transfer.

4. Management of settlement locations and settlement instructions
   How will client and house reference data be controlled to ensure that clients facing the EU entity generate the correct settlement locations and settle both stock and cash through the correct depository and bank accounts?

5. Cross entity reconciliation
   What reconciliations will need to be created or extended to ensure that back-to-back business has been fully managed post-trade across multiple entities?

6. Cash and collateral management
   What changes are required to support the management of cash and other collateral associated with the business flowing through the EU-facing entity?
   Systems that are used for collateral management may need updating to point to different data sources or take into account additional parameters that the new or modified legal entity structure brings (for example, different credit ratings, etc.).

7. Network management
   Has the organization amended or novated contracts with brokers, exchanges, custodians or third-party suppliers where specific arrangements are required for the EU facing entity (i.e., not already supported through a group entity agreement)?
   Firms will need to ensure that operational service level agreements with their internal and external parties are updated to reflect changes in processes and systems. There may also be a need to establish new agreements between entities.

8. Cancellation and amendment scenario
   How will operations cater for back-dated cancellation and amendment of trades that span the migration period?

9. Training and talent
   Larger investment banks often utilize complex and bespoke systems that require weeks of training before operational staff can use them effectively. Where firms relocate their operational functions, it is possible that they will need to recruit new operational staff who have no prior experience or training with the systems and processes that are employed by the firm.
Technology implications

Similarly for technology teams, there is unlikely to be fundamental change to the architecture that supports existing businesses. However, the introduction of multiple new trade flows supporting EU clients will require front-to-back configuration to ensure that the new bookings are processed correctly, and that all downstream functions have the appropriate tools to see and manage the risk the business creates.

1. Infrastructure changes

While changes at the infrastructure level are expected to be minimal (other than desktop infrastructure and internal connectivity to provide access to application services from new locations), organizations will need to consider whether specific interactions with remote locations will be impacted, especially where low latency is important.

- Firms that leverage co-location servers are sensitive to latency (for example, high frequency trading (HFT) firms) will need to monitor changes to location services of market infrastructure providers such as trading venues. Similarly, providers of co-location servers will need to ensure that connectivity is maintained to their clients.

- Where intraday risk is being managed remotely through auto-execution of hedging algorithms using market data, delayed execution could have significant implications.

2. Application changes and testing

Introduction of a new entity for any purpose has front to back implications for the bank’s applications and is rarely achieved purely by configuration. Application changes will be required across the stack, and testing of the end-to-end flows will be paramount to prove business continuity, both in advance of transition and for any transition states that exist prior to full implementation. Coordination of those changes, testing and, ultimately, implementation will need to be tightly governed and controlled.

3. Reference data migration

Many aspects of the flow for EU-facing clients will be controlled by reference data at client or account level. For example, recognizing in the first instance that a client should face the EU entity, determining attributes such as place of settlement and determining the correct settlement instructions for each counterparty and contracting entity will all be driven by the appropriate reference data held, potentially, in a range of different repositories. Ensuring this is correct from day one and managing the values used for in-flight trades over the transition period, will be a significant challenge that requires a carefully designed strategy coupled with rigorous, controlled execution.

4. Book migration

Firms need to consider the careful migration of book positions from the existing entity to the EU-facing entity. While different approaches can be adopted, a critical aspect of the migration design is the assessment of all systems across which inter-entity migration is required and the external implications of the process. If the migration is to be achieved through a mechanism of cancelling and rebooking trades or positions, then thought needs to be given to how this will be represented externally (for example, on regulatory reports) and how the migration effort will be choreographed across the business, operations and technology.

5. Market data licensing

Where licenses for market data are not negotiated at group level, what additional agreements are required to support market data for the EU entity?

6. Data flow and storage

Where the flow of data across regions or regulatory jurisdictions has changed and storage locations are different as a result of entity migrations, are there any regulatory compliance issues? Even where this is not the case, firms should consider informing local data protection authorities of changes to the data controller, data processing activities or data processing locations.

Following the enforcement of General Data Protection Regulation (GDPR) in May 2018, it may be necessary to retain records and data within the EU should the firm establish a new entity. This will require all operational staff to be authenticated to have access to such data while ensuring compliance with GDPR requirements around data processing and handling.
What should banks do now

### Design for ambiguity

With the recognition that there is a fixed period before transition commences, the option of doing nothing is a risky one. However, the fact that the future is far from certain means that forging ahead assuming the most likely outcome is a similarly dangerous approach. Firms should consider an approach to design that builds in flexibility and allows systems to operate in a range of different configurations that can be switched with minimal effort as requirements become clearer.

### Deliver iteratively

It is natural that as negotiations continue, the associated requirements to which firms must respond will gradually increase in certainty. It is unlikely, however, that all requirements will be confirmed until shortly before Brexit day. Requirements will then continue to evolve during transition as the rules are agreed for final separation from the EU. Given the evolutionary nature of the agreement, a traditional development approach will have a high associated risk profile. Firms should develop their capabilities to be able to deliver in an iterative manner using agile techniques, prioritizing the delivery of requirements by the associated level of certainty.

### Test early

With software and process changes likely to be needed across many areas of the bank, adopting a “big bang” test approach in the run up to implementation introduces significant risk, with integration issues likely to be identified late and costly to address. Firms should consider a strategy of testing that assesses new processes and functionality early as soon as application changes are made. Integration testing should be addressed on a small scale as soon as groups of applications are in a position to test together.

### Combine initiatives

Treating Brexit purely as an independent exercise to maintain business continuity with European clients will not yield the significant benefit that could be achieved through a more holistic approach to change. Firms should attempt to align their Brexit implementation with other transformation programs in order to identify areas of shared opportunity and deliver additional value.
How we can help

Design authority set up and facilitation
Creation and facilitation of an appropriate governance structure incorporating experienced designers and representatives from impacted stakeholder groups to arbitrate on significant decisions that arise during the target design process.

Operating model validation and detailed design
Support to drive out the detailed design for people, process, data and technology dimensions to allow implementation to begin.

Booking model impact assessment
Detailed review of the new booking models that will be put in place on a product-by-product basis and front-to-back assessment of the impacts on:
1. Operational processes
2. Operational controls and reconciliations
3. Applications
4. Reference data

Testing
Definition of a test strategy which supports incremental validation of solutions and de-risks ultimate go-live, execution support for user acceptance and business readiness testing and assurance of test strategies, plans and execution.

Data governance and management
Detailed review of data requirements for each jurisdiction, understanding data sourcing and data lineage, identification of data impacts from booking model or entity changes and changes to data controls and data governance.

Requirements management
Definition of business requirements to support the target design with associated traceability backwards to Brexit legislation and regulation and forwards to system and process designs.

Detailed delivery and implementation planning
1. Definition of plans across asset classes, functions and technology teams to deliver the change required to support initial transition and full Brexit.
2. Creation of implementation playbooks and coordination of teams to support the migration, cutover and post-implementation activities associated with the Brexit “go-live”.

Program management
Ongoing governance, coordination, tracking, re-planning, risk management, etc., to support delivery of Brexit related changes and activities.

Post-implementation regulatory compliance assurance
Validation of compliance with regulatory requirements in the post Brexit state.
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