



The evolution of a core financial service

Custodian & Depository Banks

An outlook on the current and future status of the industry

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Executive Summary

Spending on technological and organizational changes remains a substantial factor in the Financial Services Industry (FSI) in general. This also applies to a particular subset of FSI players: custodians and depositaries.

By definition, custodians are responsible for the safekeeping of their clients' assets, as well as the processing of transactions. Although they are limited to fund clients, depositaries' duties go further than this, as they also perform some oversight duties and are liable for any losses. Today, both are often grouped together as the same entity, along with other functions, and only represent part of the capabilities of global asset servicers. On top of this, their service offering is constantly evolving, and services such as tax reclaims that were considered high value added several years ago are merely a commodity today.

Even though custodians and depositaries perform key functions as part of the investment management value chain, reality shows that many custodians and depositaries are trailing behind other players in the FSI when it comes to technological innovation.



Many focus on adapting their legacy systems to cater for requirements imposed by regulators. Most often, this means patching platforms, likely implemented in the 80s, adding custom-built End-User Computing, and change the organization and operations to keep the business going. Today, depositories and custodians face a set of further challenges, with shrinking margins due to high levels of manual processing, increased competition, and generally uncertain macroeconomic environments. Additional regulatory changes can be expected, such as Know Your Customer (KYC) being extended to distributors (KYD), and Anti-Money Laundering (AML) including digital assets such as crypto currencies. However, it is believed that, at least for now, a large

chunk of regulatory changes should already be behind custodians and depositories. This leaves time and budget to focus on opportunities, mainly centered on technological innovation and new services as differentiators.

On a technological side, the key trends and opportunities for custodians and depositories are the following:

- Increased operational efficiency through the automation of processes that are still partially manual and particularly repetitive, by leveraging on Robotic Process Automation (RPA) capabilities
- Revamped, faster, and cheaper settlement processing using Distributed Ledger Technologies (DLT)
- Adaptation to the digitization of assets through tokenization and creation of new asset types such as crypto currencies
- Consolidation, processing, and monetization of the large volumes of data that custodians and depositories have at their disposal, by acting as aggregators of data and services, through the potential adoption of new and emerging technologies such as AI, blockchain, and cloud solutions

Moreover, custodians and depositories can harness their broad reach within the markets and new client needs to take advantage of the following:

- Operational readiness needs to be ensured for assets such as Exchange-Traded-Funds, which can generate high volumes of transactions

Most often, this means patching platforms, likely implemented in the 80s, adding custom-built End-User Computing, and changing the organization and operations simply to keep the lights on.

- Service offerings need to be adapted for new types of assets, such as alternative investments, sustainable finance, and crypto currencies
- As global players, the organizational setup must be reviewed by leveraging potential offshoring, outsourcing, or insourcing of low-value-added services to focus on high-margin equivalents

We believe that amidst the challenges, acting now on the opportunities listed above, will help them to recover their strong position on the technological and digital front. The technological

developments emerging and maturing over the last few years (e.g. DLT, RPA) have the potential to completely disrupt custodians' core business, while organizing activities around a strong middle office with advanced data analytics could well be the future source of higher margin services.

Increased operational efficiency through the automation of processes that are still partially manual and particularly repetitive, by leveraging on Robotic Process Automation (RPA) capabilities



Introduction

In recent years, major financial institutions worldwide have continued to invest roughly a third of their IT budgets on projects¹ to change and adapt their core platforms. The underlying objective is to adapt to major shifts in the structure of markets, and to account for new client needs, stricter regulations, and an ever-evolving economic climate.

Global trading volumes are still high, yet according to McKinsey's study from early 2018, within the Financial Services Industry (FSI), the securities services industry only shows low single-digit revenue growth in recent years. Therefore, operational efficiency is becoming one of the main drivers for reducing costs and increasing margins for custodians and depositories. The vast majority of players involved in this industry believe that the accumulation of manual processes over the years has a devastating effect on efficiency. A solution is to appropriately assess the organization's information landscape and decide whether an evolution/change in the system is required or maturing technologies such as Robotic Process Automation can be leveraged.

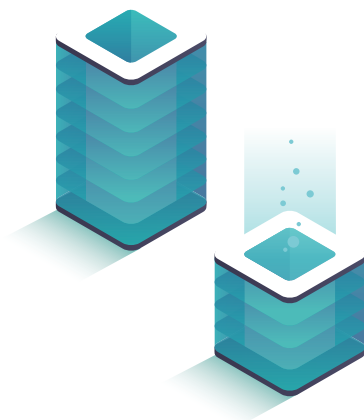
Besides, reality shows that many custodians and depositories are trailing behind other players in the FSI maturing technologies such as Robotic Process Automation (RPA).

Many focus on adapting their legacy systems to cater for requirements imposed by regulators. Most often, this means patching platforms, likely implemented in the 80s, adding custom-built End-User Computing, and changing the organization and operations simply to keep the business moving forward. Custodians and depositories, especially compared with other FSI players, are acting as followers rather than leaders when it comes to reacting to future market trends and the future challenges of asset managers, and anticipating key opportunities. Consequently, funding for investments with noticeable mid- and long-term returns is often limited.

It is crucial for custodians to understand today's challenges in order to propose an efficient and long-term-oriented response to them. The aim of this article is to address some major key trends, focusing on the regulatory landscape, on processes and technologies, and on the future of custody.

The first part will shed light on the complex environment of depositories and custodians to outline the differences between models. The second part, meanwhile, focuses on the key challenges these players face and the potential future opportunities that can be leveraged.

1. Gartner 2018



Setting the scene

To understand what the key challenges are for depositaries and custodians and what opportunities can be leveraged for the future, we need to revisit the common definitions associated with custodians and depositaries to set the scene for the upcoming walkthrough.

Definitions

Even though the terms are often used interchangeably, depositaries and custodians do not carry out the same activity, responsibilities, or duties. As the name would imply, a custodian is an institution acting as a guardian of its clients' securities. It is, therefore, responsible for the physical or electronic safekeeping of those securities, but also for the settlement of the associated transactions. On the other hand, the depositary, as defined by the ABBL, has the dual mission of safeguarding the assets of the collective investment scheme and monitoring the lawfulness of certain activities by the fund or its management company. As will be detailed further below, a depositary's clients are investment funds only, while custodians can have a wider array of clients.

Compared with depositaries, custodians focus on the operational side of the safekeeping and settlement of

securities while depositaries focus on the accurate monitoring of the assets. Today, most global institutions act as both depositary and custodian for their clients to ensure proper monitoring and reporting of their activities and increased operational efficiency in the settlement and safekeeping of their assets. Additionally, depositary banks focus on local regulatory requirements to make sure that their clients are compliant within their jurisdiction. But then, custodians (or global custodians) have a much broader client base and role. They focus their delivery model internationally by expanding their network of local custodians and ensuring coverage of emerging markets.

Compared with depositaries, custodians focus on the operational side of the safekeeping and settlement of securities.



Overall, the main differences between custodians and depositaries can be subdivided into two categories:



Assets

Depositaries’ responsibilities go beyond simply safeguarding assets. They have greater control, liability, and responsibility over the assets they hold. Furthermore, depositaries act on their own judgement with respect to investments, transfers, and other assets and securities operations, while custodians conduct activities on the instruction of their clients.



Liabilities

Depositaries are fully liable in case of losses, while custodians are liable only in very specific cases. This is only true for standard assets such as listed shares, bonds, or derivatives. In the case of alternative assets, e.g., real estate, the depositary bank does not ensure full liability of the assets. In such a case, the depositary bank must ensure that all controls are in place to guarantee minimal risk of loss on assets. So, in the case of a loss of alternative assets, the depositary bank is not required to return the asset value, whereas for standard assets the depositary bank acts as an insurance.

Responsibilities	Depositary	Custodian
Safeguarding of assets	✓	✓
Full liability of potential losses for standard assets	✓	
Independent judgment on investments	✓	
Portfolio administration - oversight	✓	
NAV compliance - oversight	✓	
Investment monitoring - oversight	✓	
Cash flow monitoring	✓	
Transaction management		✓

One particularity when it comes to the rights and obligations of depositaries, relates to regulated investment funds, where the administrative responsibilities of the depositary are broader. As such, the depositary must also engage in day-to-day portfolio administration, verify that the net asset value calculation is carried out in accordance with the law and the management policy, and ensure that the fund manager's instructions are in line with the law and the fund prospectus².

A parallel could be drawn between depositaries and libraries that simply hold books, while custodians might be compared to museums, which maintain

and restore their artefacts. On the legal side, investment funds are required by law (both at EU and Luxembourg level) to entrust the custody of their assets to a custodian/depositary.

As the depositary is required to safeguard the assets of investment funds only, its client base is restricted to those as well. However, custodians have a variety of clients. Most of them embed their activities in the investment management value chain. Banks have started to extend their client base to funds and therefore nearly all offered custody services as well. These include alternative investments funds (AIF) and other vehicles, such as pension and insurance schemes.

In addition to these, custodians also offer their services to other (global) custodians that would like to extend their market reach to other regions, banks, corporate clients trading on their own account, and lastly to issuers of assets (e.g., bonds or stocks).

While this article focuses for the most part on fund clients, the majority of key challenges and future trends apply across the custodian and depositary client portfolio. To properly understand where the opportunities lie, we need to look at the activities performed by custodians and depositaries today and how these evolve over time.

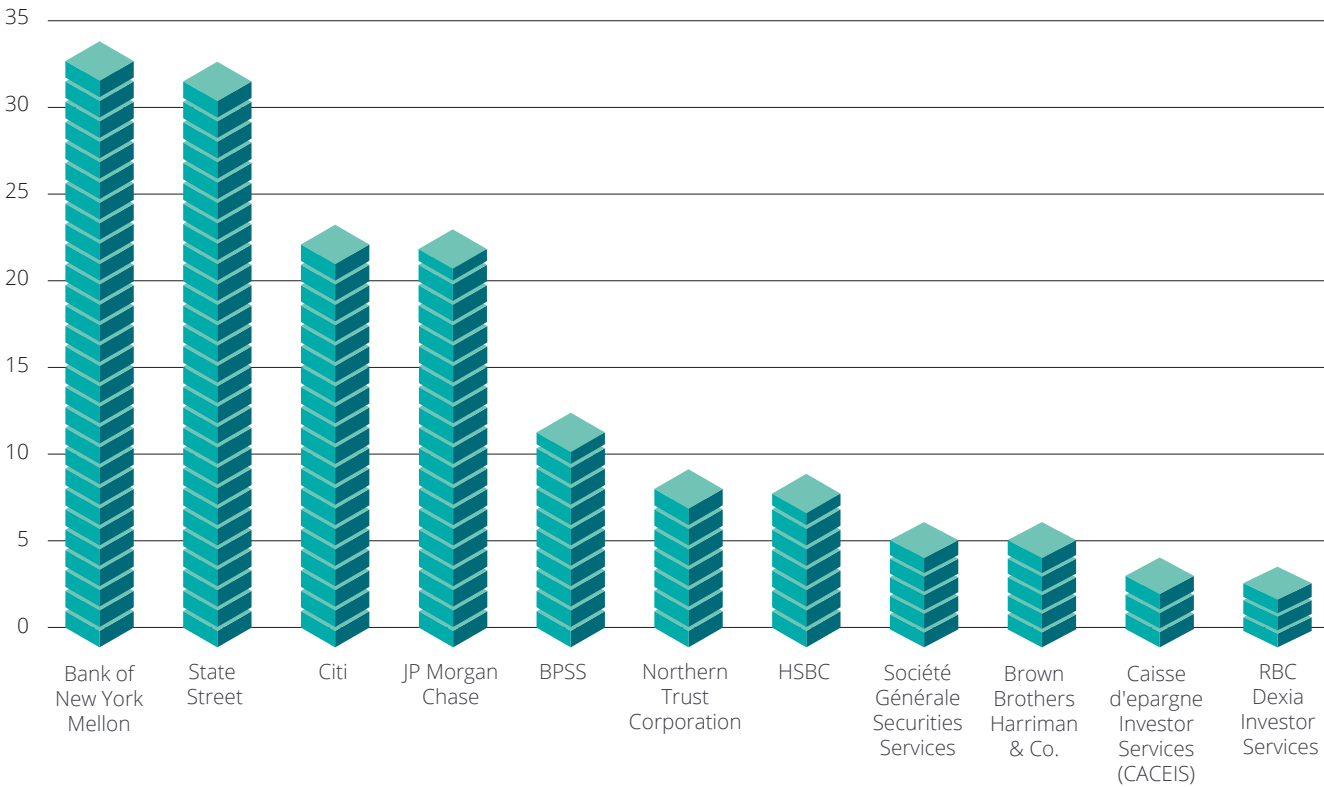
Client type	Depositary	Custodian
Investment funds (incl. ETF, PERE, AIF, etc.)	✓	✓
Insurance funds		✓
Pension schemes & funds		✓
Banks/Bank deposits		✓
Global custodians		✓
Corporate clients		✓
Asset issuers (public & private)		✓

Markets

The custody industry is very concentrated due to consolidations and fierce price competition that have historically favored larger players. As with many financial services, acquisitions and mergers have been a popular method to gain market share or increase economies of scale. Nearly half of the total assets are under the custody of the four largest players, which are all from the US.

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AUC/A in trn USD (2018)



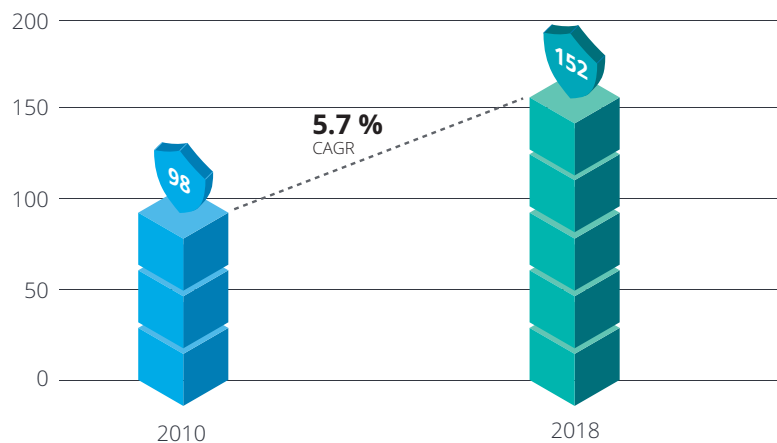
Source: Deloitte Analysis

Furthermore, the custody industry as a whole has seen strong growth over the last decade. The total Assets under Custody (AUC) of the 11 largest custodians increased on average by 5.7 percent per year from 2010 to 2018 mainly associated to the growth of the overall market.

The predominance of US custodians is also largely due to the fact that most global assets held by funds are American, counting for just over half of the total for open-ended-funds, i.e. nearly US\$26 trillion. More than half of these assets are to be attributed to the Americas, which showed the highest year-on-year growth as well from Q3 2017 to Q3 2018, with 9.5 percent compared with 5 percent for Europe, or 7.8 percent of the global market.

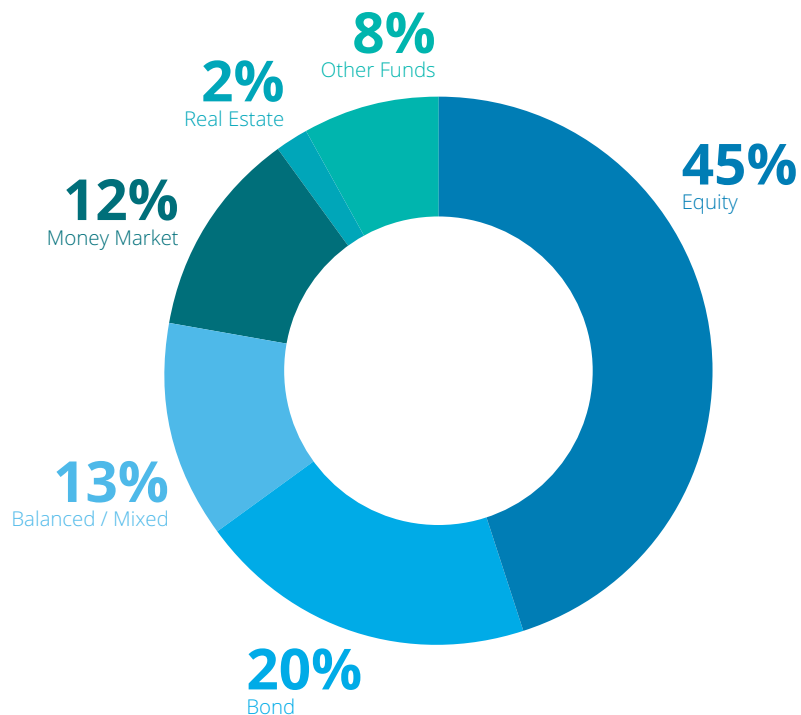
On top of this, major global asset servicers focus on traditional assets, i.e., equities, bonds, and money markets, which in terms of asset split make up the largest proportion by far (90 percent). Although alternative assets, such as real estate, are on the rise (AuM in PE&RE funds more than doubled between 2008 and 2018 from US\$1.8tn to US\$4.3tn worldwide³), especially in terms of value, they only make up a small part of the total investments held by open-ended funds.

Top 11 custodians AUC in trn USD (2018)



Source: The Asian Banker & Deloitte Analysis

Asset type split (for open ended funds, Q3 2018)

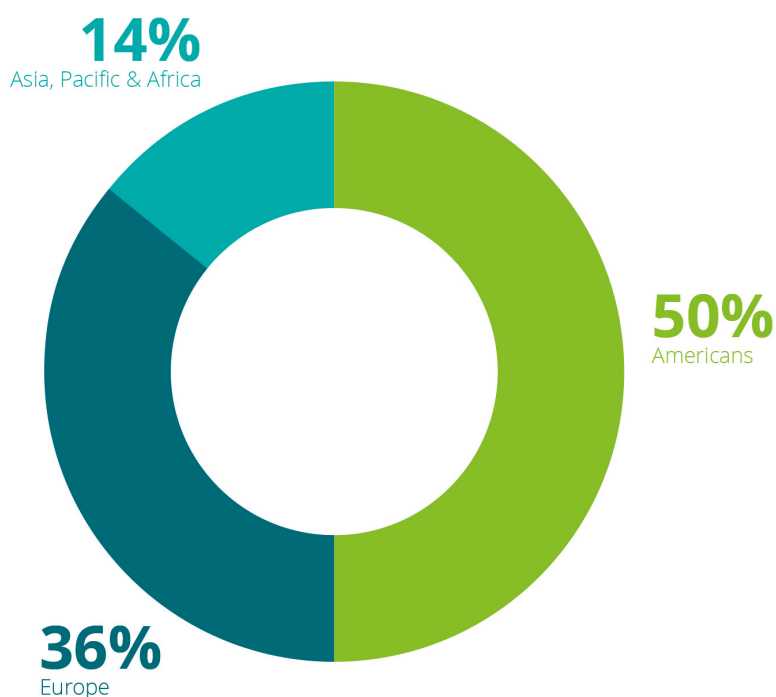


Source: EFAMA

Major custodians still show strong growth and Q3 2018 data suggests further growth for the four largest US custodians with an additional increase in their market share.

Major custodians still show strong growth and Q3 2018 data suggests further growth for the four largest US custodians with an additional increase in their market share. Yet, neither global asset servicers nor specialized local custodians can escape the current challenges the industry faces. Major advances in innovative technologies generate significant opportunities. The following section looks at the main challenges and opportunities in an attempt to draw a vision for the future of custodians and depositaries.

Regional Split (for open-ended funds, Q3 2018)



Source: EFAMA

Activities

Custodians and depositaries have a similar set of core activities, but as explained above, they differ slightly when it comes to the purpose of these activities.

The depositary ensures that the fund's assets are properly segregated from other assets (own assets + other clients' assets), that the fund's accounting records are reconciled (where appropriate) with third-party records, and that investors' entitlements are correctly calculated. Ultimately, it seeks to safeguard against

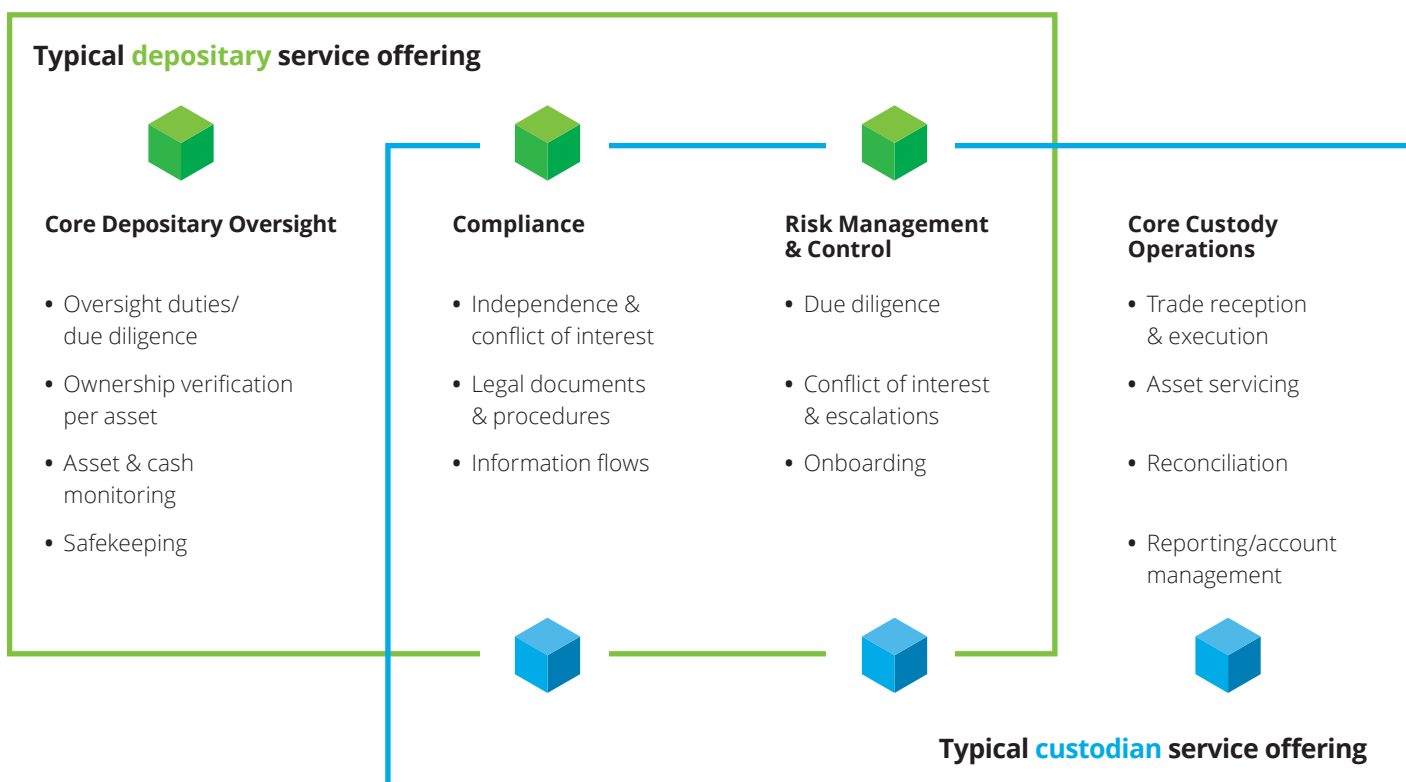
fraud, book-keeping errors, and conflicts of interest between the manager and the fund.

Therefore, a depositary acts as an intermediary between its clients and the regulators to monitor activity and reduce compliance risk. Services offered by depositaries include auditing and monitoring services, e.g., ensuring Standing Settlement Instructions (SSI) are carried out according to the right settlement process, corporate actions are paid on the precise date, providing cash-flow monitoring, and safekeeping, etc.

Custodians on the other hand traditionally offer services including settlement and post-trade activities, i.e., controls and reporting, clearing, and sub-custodian network management amongst others.

In addition to these traditional services, the vast majority of custodians and depositaries offer other ancillary services that are purely banking activities. They include treasury management, FX management, and securities lending, for instance.

Custody and Depositary Bank Service Offering




































The reach of the activities covered and services offered by custodians and depositaries can differ from institution to institution but have also evolved over time. Some depositary banks, for instance, also offer core custody services and vice-versa.

The custody core or minimum services, listed in case (A), cover mainly settlement of transactions, cash management, and oversight duties on assets. Core custody services are fairly uniform with little difference in the service level provided by different players. As a result, price competition and pressure is high for these services.

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Custody and Depositary Bank value chain

				
		A	B	C
		Minimum service	Current service	Future expectation
Issuance	Paying agent services			
Pre-trade	Middle office & pre-matching services			
Trade	Research			
	Execution			
Post-trade	Clearing & Settlement			
	Custody incl. asset servicing			
Cash	Cash management			
Supervision	Asset monitoring & Oversight			
Value added services	Securities lending & collateral management			
	Fund services			
	Risk management			
	Portfolio analytics			
	Performance management			



Standard offering



Additional services

Changes on the custodian side will be achieved in nearer terms through concepts such as Robotic Process Automation (RPA) and in the longer run with Distributed Ledger Technologies.

As margins tighten in the core services of global custodians, the latter tend to increase their range of products by proposing more added-value services. Current players, case (B), are enhancing their service offering, where many management companies are looking to outsource to focus on their primary duties. Tax reclaims—part of core custody activities—is no longer considered a high-value-added service and has now become a commodity that needs to be part of the custodian's standard offering.

Future enhancements in custody services, case (C), will affect every operational area, including front-office execution, by giving access to trading platforms and market infrastructures in a fully automated manner. Newer concepts and assets like crypto currencies have the potential to disrupt service offerings and operations by removing some of the existing trade barriers. Changes on the custodian side will be achieved in nearer terms through

concepts such as Robotic Process Automation (RPA) and in the longer run with Distributed Ledger Technologies. Also these organizations should focus on data valorisation either to improve internal data usage or expose their data and related insight externally, thus becoming an alternative data provider.

Today, we observe increasing client demand for extended middle-office services, going beyond trade capture, trade matching, and position-keeping. Custodians need to focus on these services, as they are where the future source for high value added lies. They will also need to adapt their product offering quickly as it is to be expected that these middle-office services will rapidly become a standard or must-have offering. The main focus should lie in improving data scope, quality, and controls, thus enabling robust risk management, regulatory compliance, and advanced performance and risk reporting. Additionally, this will also allow to bring value and increased efficiency through data valorisation and other advanced technologies. All these capabilities respond to many of the key challenges for asset managers.

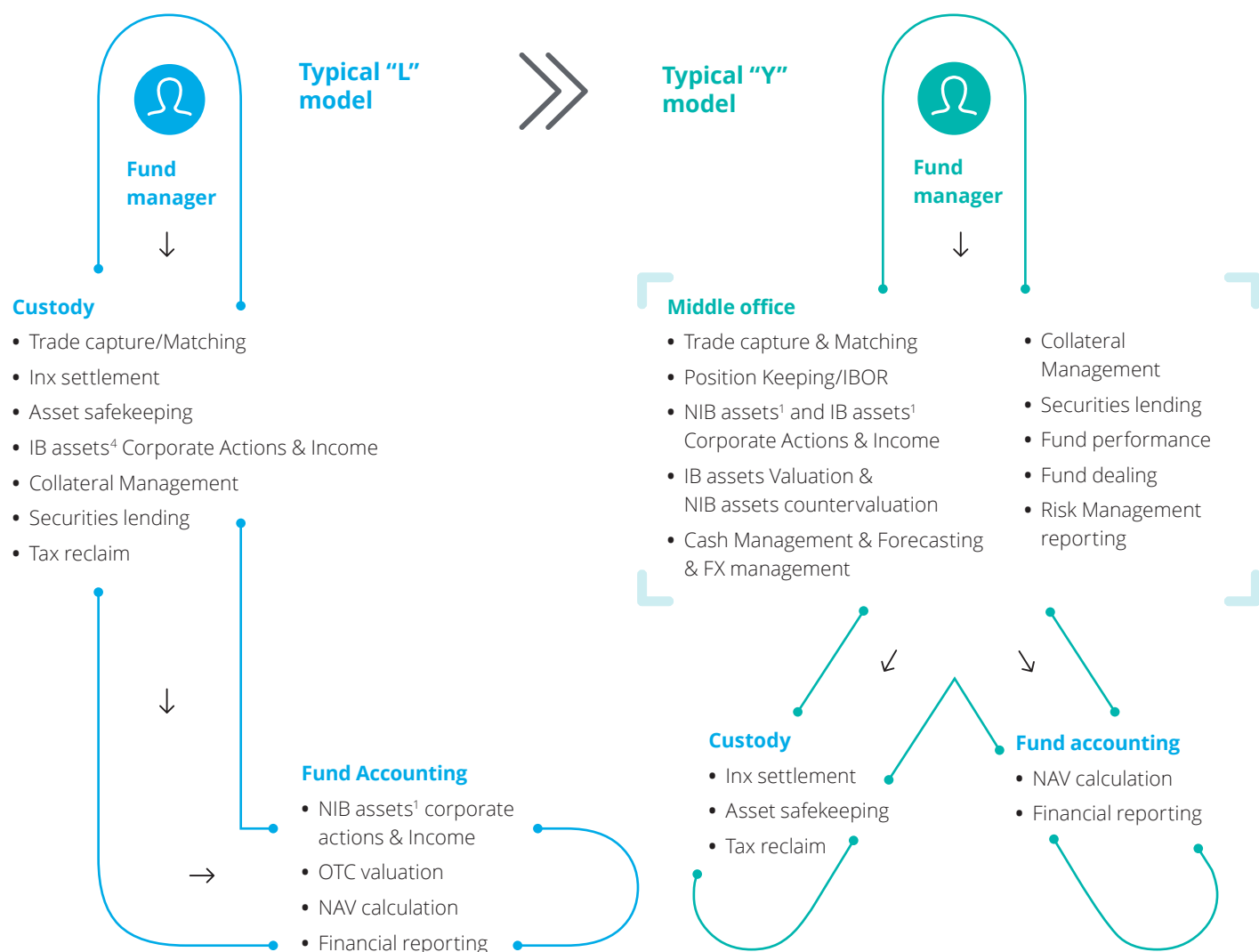


Global asset servicers can build on their network to move towards a reinforced and global model offering. This can be achieved by moving away from the current “L-flow” model, where middle-office solutions are largely part of the custody platform that feeds the fund administration platform. The current trend is to opt for a “Y-flow” model, i.e., leveraging centralized middle-office capabilities to feed the custody and fund administration platforms. In such a

setup, the focus lies on those areas where the value added lies, i.e., the middle office, while custody and fund administration operations can be run more efficiently and independently from each other.

Custodians/depositaries need to make sure they understand what their current service offering is and what model they would like to follow. As history shows, today's value-added services will become commodities

in a not so far away future and new client expectations will rise. Service providers will need to adapt their service offering to ensure profits, like in the case of tax reclaim services. As we will explain in section "05 Outsourcing and offshoring" as part of the challenges and opportunities further below, outsourcing is one of the preferred options to ensure all services can be offered at the right quality and at a competitive price.



4. IB stands for In-Bank assets, i.e. assets held within the network of custodians / cash correspondents, NIB stands for Not in Bank assets

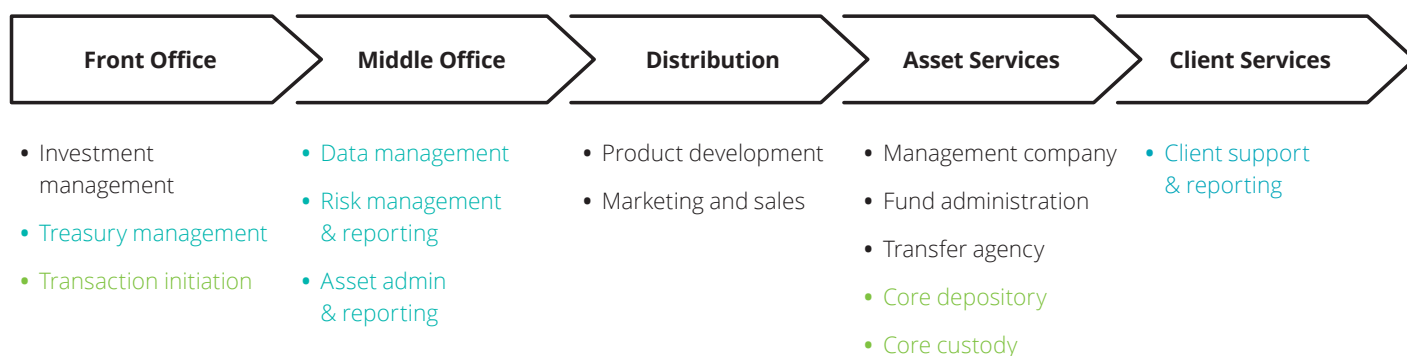
Investment management value chain and different asset servicing models

Both custodians and depositaries can rely on different models to support their businesses, which are detailed below. The depositary and custodian sit in the middle of an array of players of the Investment Management (IM) industry.

Traditional core depositary services sit at the back of the IM and asset servicing

value chain. Today, the custodian and depositary's services span across multiple steps of the IM value chain, from front office and middle office to asset services.

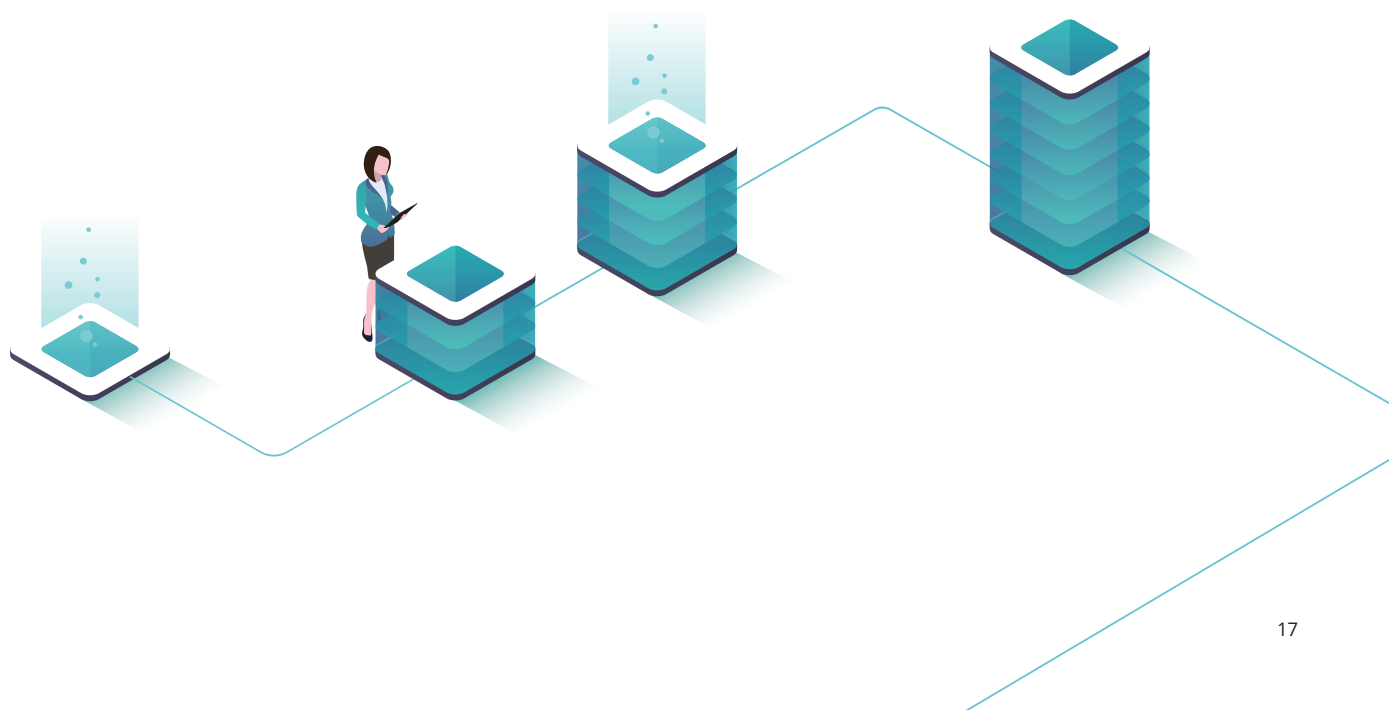
Although the setups differ from case to case, the one illustrated is a generalized view that can be applied to most players, regardless of their country or region of operation.



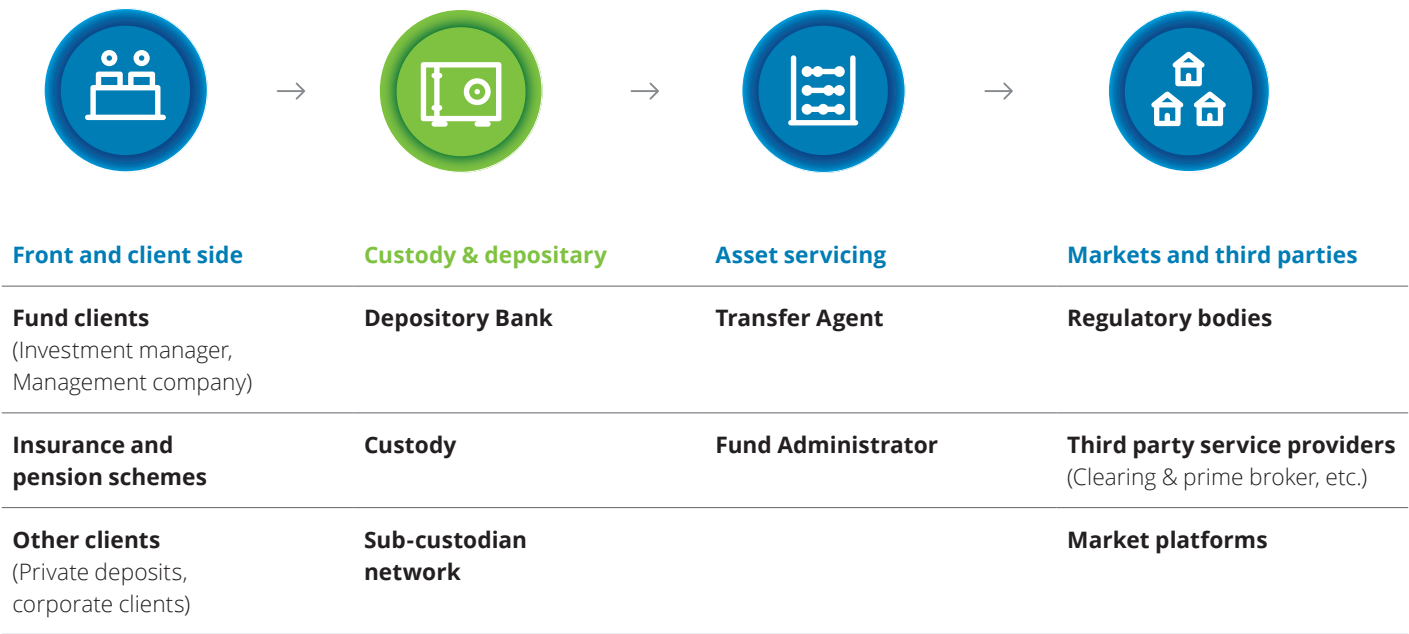
Services offered by custodians and depositaries:

Core services

Auxiliary services

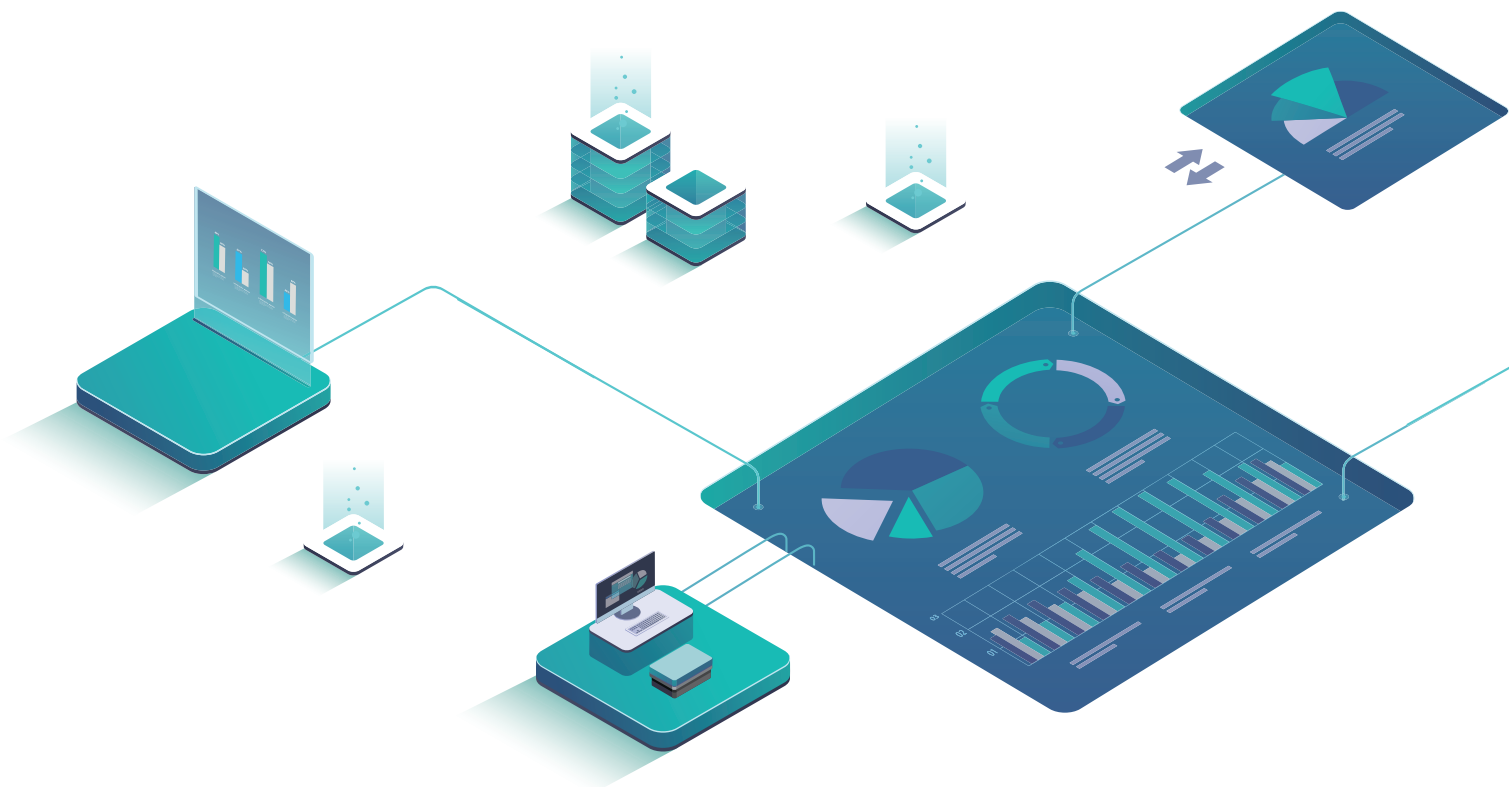


Custodian & depositary’s stakeholders



 Out of scope activities

 In scope activities





Custodian/depositary client layer

Key counterparts include investment/asset manager clients, often through management companies, which are in charge of managing investments and portfolios. Their investment decisions have a direct impact on the type and volume of transactions as well as assets custodians need to process and hold in custody. On top of processing, custodians and depositaries have to provide reporting to these parties, be it for asset, treasury, and performance management or to comply with regulatory and legal requirements (e.g., tax reporting).



Asset servicing layer

Transfer Agents (TA) as a register of the fund's shareholders and manager of the subscriptions and redemptions are key counterparts for the custodian. They communicate information on transactions to be settled and therefore need to be well connected for the continuous and real-time exchange of data. The custodian can help, on his behalf, with compiling data on the reporting for commission and fee management, for example.

The same applies to Fund Administrators (FA), which not only rely on information from the custodians for the calculation of the Net asset Values (NAV), but also offer value-added services, such as risk management, compliance support, etc., to the same clients based on the same data. Consequently, all major custodian and depositary players also offer TA and FA services and clients tend to choose one global asset servicer for all of these services.



Third-party layer

Custodians will often rely on a sub-custodian network to allocate the instruments to their clients, to ensure global market access and mitigate risks. On top of this, they need to engage with brokers, clearing agents, and other specialized players as data or reporting providers. The various players, especially depositaries, custodians, transfer agents, and fund administrators are subject to regulatory supervision, which generates the need for monitoring and reporting on cross-disciplinary data.

The different players can all be integrated or different entities. This means that sensitive data can be distributed among the different players, potentially spanning multiple countries. As custodians cover the processing of trades, have access to a large proportion of this data, and often have a global reach, they are well placed to act as service integrators, one of the key organizational opportunities.

This tightly linked and interfaced network of stakeholders generates specific needs and challenges for all parties involved, but especially for depositaries and custodians, as they sit in the middle of the chain. Data sharing, data security, as well as stakeholder and contract management are key aspects to be considered, while the needs of the global market call for a follow-the-sun approach.



New entrants should not be considered as a threat by classical players, but rather as partners that foster new services and capabilities.

01 Asset servicer models

As part of historic asset servicer consolidation exercises or banking players moving into the custody business, today's custodians and depositaries often provide additional services under the same roof. The biggest players, namely State Street, JP Morgan, BNP Paribas, BNY Mellon and Northern Trust offer a full range of services. This allows clients needing multiple asset servicing capabilities alongside custody (such as TA and FA and Manco services) to look to them as a one-stop shop.

At the other end of the spectrum are smaller specialist players. These generally only cover a few specific services, such as targeted manual processing for Private Equity or Real Estate funds, or possibly auxiliary services such as data management, reporting, and benchmarking. Their value proposition to clients consists of either services that are more tailored to client needs or at a lower

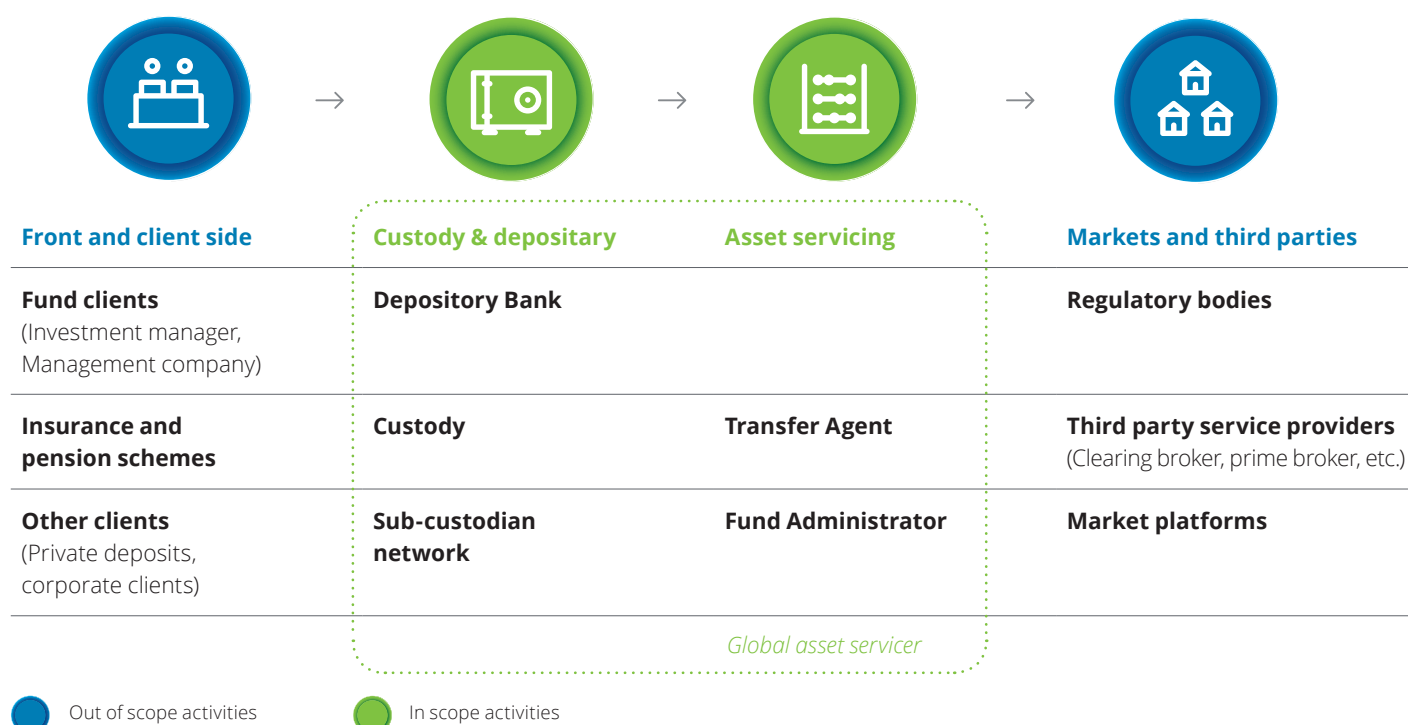
cost than those of larger players. In these cases, the depositary and custodian might not be the same entity, or at least they may be governed separately (see "02 Regional custody governance models"). The presence of specialists such as FinTechs can lead to setups where clients pick and choose their preferred player for each activity.

Due to the granulation of roles and responsibilities, the number of players that make up the value chain is also increasing. As a consequence, regulators are reacting by issuing adapted or additional legal burdens, not only for new types of specialist players but which also affect partially or fully integrated asset servicers.

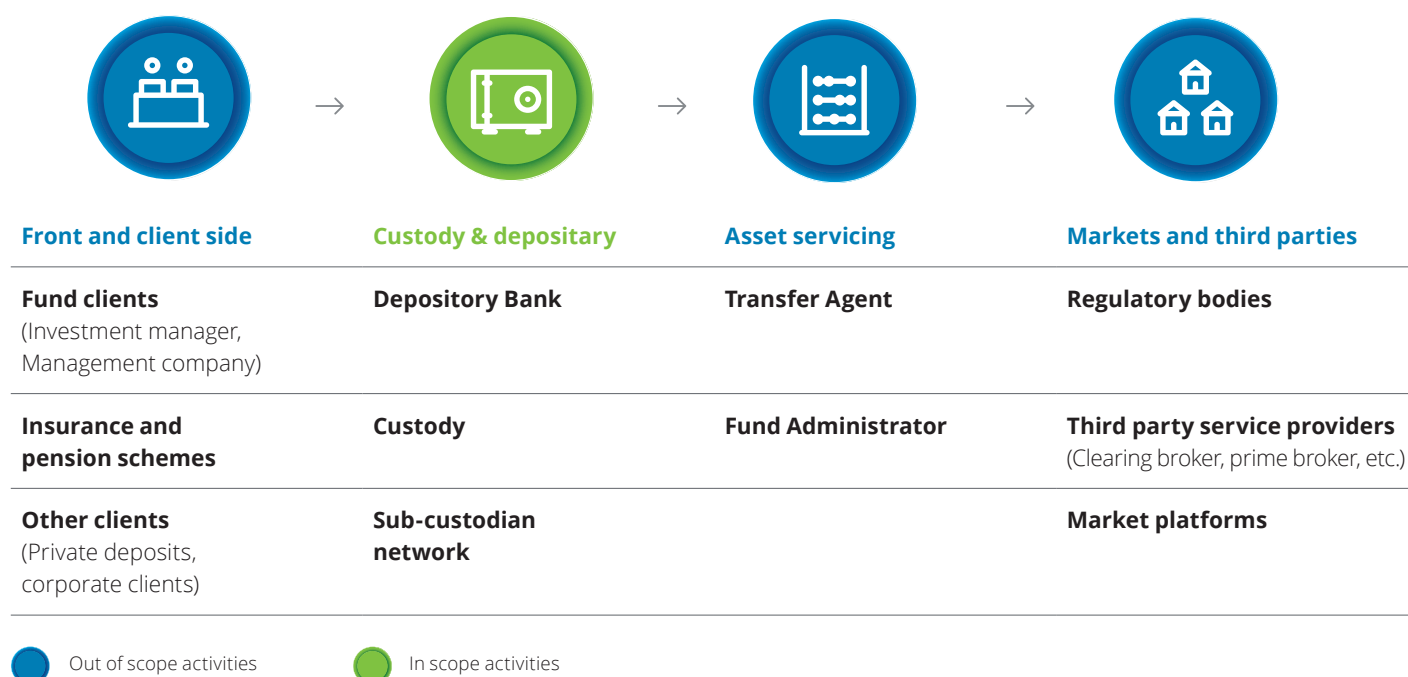
Even though there are more and more specialist providers for Private Equity, Real Estate, or FinTechs providing innovative solutions, the current trends suggest that consolidation and reliance on large global asset servicers is set to continue. Indeed, the delegation of services requires monitoring, management of SLAs, and makes regulatory reporting more challenging. Asset managers prefer to have their investments in different markets and asset types held at the same global player. On top of this, the global reach, economies of scale, and regulatory know-how of large custodians is still valued most highly. This counts for large ETF (Exchange-Traded Funds) providers as well as smaller alternative funds, which are increasingly subject to regulation.

Service granulation tends to be found among custodians choosing to outsource some of their activities to specialists or cooperate with FinTechs to take advantage of the latest technologies and be able to offer innovative and high-margin products to their clients.

Global asset servicer

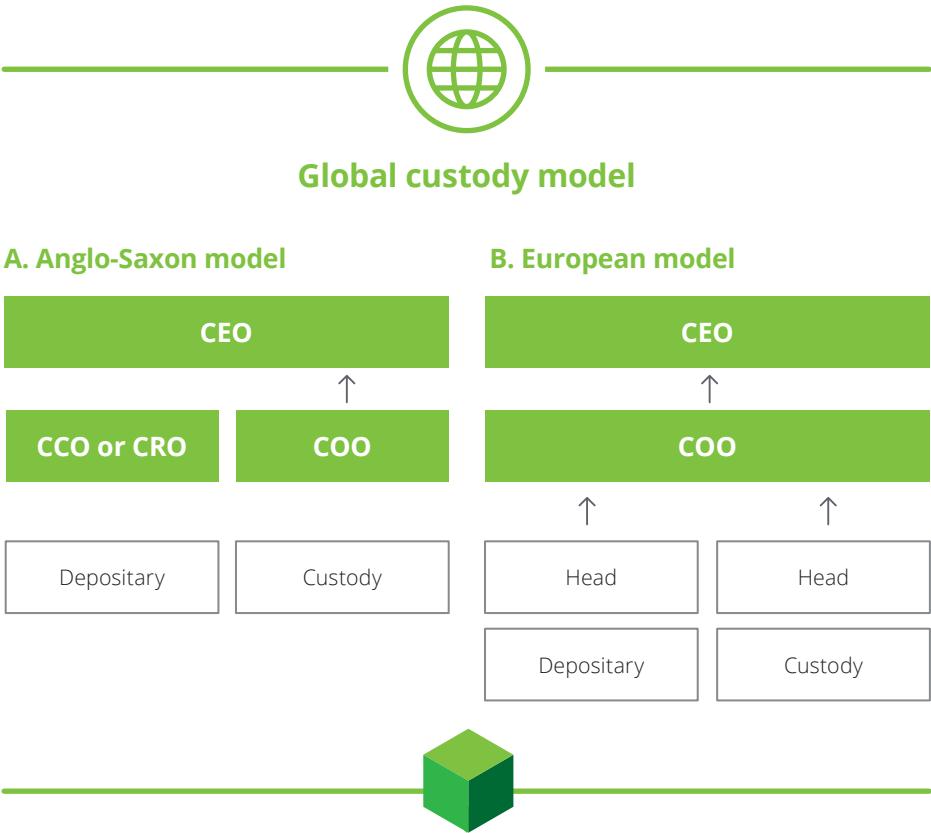


Fragmented specialist setup



02 Regional custody governance models

Whether players offer a full complement of asset services, including custody, depositary, TA, and FA or if they only offer custodian and depositary services, there are three major governance models that are generally followed. The different models detailed in the diagrams below show Custody and Depositary are structured based on their target clients and the range of services provided.



Global Custody Model

The Global Custody Model includes both depositary and custodian duties, but can differ depending on the origin of the company.

A. Anglo-Saxon model: separate departments

Historically, this model is the most common among Anglo-Saxon Trustee models and it has been introduced in continental Europe by the AIFM directives.

Mainly operated by Global Custodians, the very first model depicts a separation between the depositary and custody functions. Here, custody is considered part of the operations department, whereas depositary is in a control function line (CCO or CRO).

This model allows full functional and hierarchical independence between custody operations and depositary function, but on the other hand it prevents operational synergies between both

functions and control frameworks are more complex to implement. In addition, the depositary functions are relegated to the second line of defense.

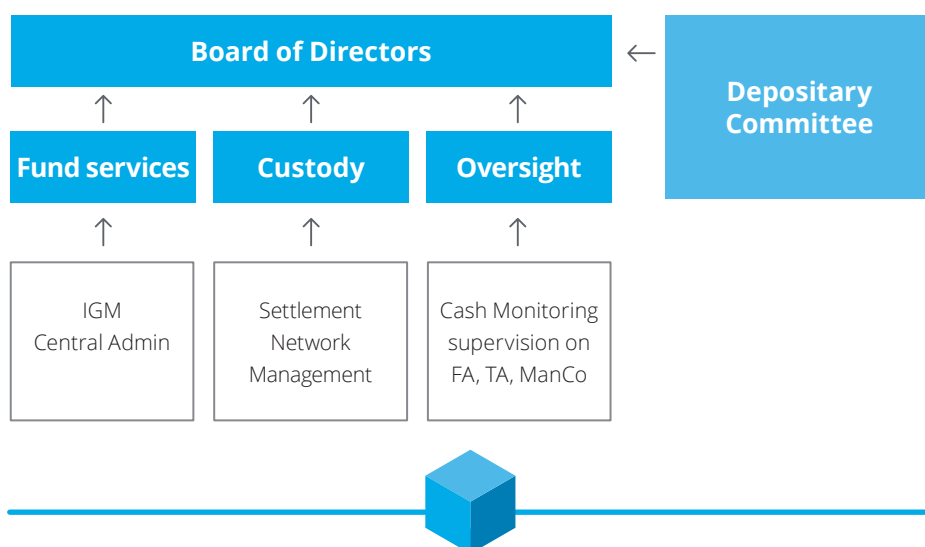
B. European Model: same department but separate reporting lines

This model is widespread in continental European banking groups. It is a model that is mainly used by global custodians; here, depositary and custody functions are located in the operations function and have different functional heads, both reporting to the COO.

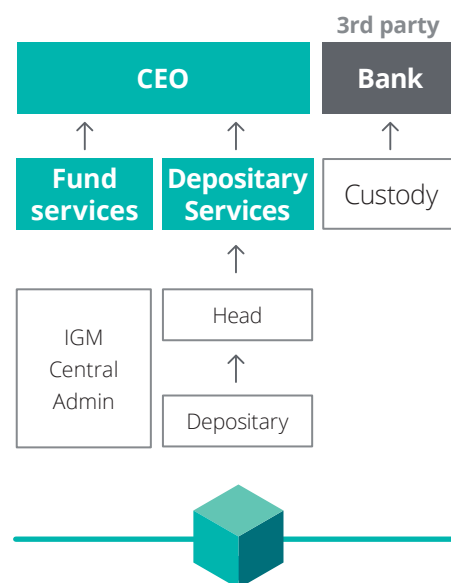
Having the same leader on both custody and depositary functions part of the operations service line may lead to potential conflicts of interest for the COO. But, compared with the previous model, it allows greater operational synergies between custody and depositary functions. The complexity lies in the depositary's role in the second line of defense, which is more complex to demonstrate.



Fund servicing model



Corporate trust model



Fund Servicing Model

Unlike the centralized model, this structure decentralizes the depository activities within different departments of the bank and has a Depository Committee composed of Oversight, Custody, Fund services, Compliance and Risk management function heads.

This allows for decentralized control frameworks within the organization with the counterparty, which leads to fewer operational and control synergies.

Independence between custody and depository functions is less clear within this model due to the fact that responsibilities are shared.

The depository committee formalizes the depository's contribution to the second line of defense. This setup tends to be observed within smaller organizations, mainly wealth management groups.

Independence between custody and depository functions is less clear within this model due to the fact that responsibilities are shared.

Corporate Trust Model

As the name suggests, this model supports corporate trusts, which are not credit institutions and therefore must appoint a correspondent bank for the day-to-day administration of financial instruments and cash.

This model requires major operational synergies between central administration and depository departments for most of the record-keeping, reconciliation process, and cash monitoring (i.e., streamlined controls framework). Additionally, they have a high dependence on correspondent banks for supervision of financial assets and cash.

The depository function is often within the same entity as the FA/TA, but some exceptions are observed where the function is located in a separate entity.

Challenges & Opportunities

Macroeconomic uncertainty

The sphere of custodians is challenged by several external factors that are gaining increasing exposure. Among them, the uncertain macroeconomic and geopolitical outlook generated by some recent global events will force custodians to review their models to ensure sustainability in the long run.

The low-yield markets in general, even with slight interest rate hikes in the US since 2017, also mean that asset managers become even more price sensitive when it comes to their service providers. This creates a vital need for custodians to find new approaches and rejuvenate their operations in order to keep sufficient margins and maintain profitability. Custodians are also shaken by the arrival of new competition. Smaller, technology driven players such as FinTechs are very much on the rise; according to CBInsights, global FinTech investments (deals and financing) increased to nearly US\$40 billion in 2018, up from less than 10 billion in 2014. FinTechs are positively challenging traditional custodian banks but also present an opportunity as developing partnerships or joint ventures, as further explained below.

Technology evolution is also a factor that will pose sizeable challenges in the coming years. Consequently, even though manual processes still persist, asset servicing is increasingly linked with technology and will have to create a more flexible, quick-to-market approach to cope with asset managers' needs. Furthermore, technology raises some specific challenges, such as cybersecurity, data protection, and innovation strategy.

On top of this, regulatory pressure, coupled with several other parameters such as changes in client needs and expectations, throws up several challenges that custodians need to overcome.

The sections below will focus on delivering a high-level view of the upcoming trends and opportunities for custodians and depositaries in the following areas:

- **Regulatory framework**
- **Technology as an accelerator**
- **New services as differentiators**

Regulatory framework

01 Current framework

Custodian banks are not subject to a harmonized regulatory framework specifically covering custodians' activities. Although several studies and papers on the regulation of custodians have already been issued, there are no plans, at least in the EU, for directives covering pure custody services in the next three to four years. The absence of such a regulatory framework does not mean custodians are not subject to rules and limitations however. In the European Union, custodian and depositary banks fall under the scope of several regulations and directives, including the UCITS (incl. CSSF Circular 16/644) AIFM directives, the AML IV directive, as well as Solvency II, MiFID II and GDPR to some extent.

In Luxembourg, custodian and depositary banks fall under the scope of the 1993 law on financial markets. Custodian banks and depositary banks must be "authorized entities" and are therefore supervised by the CSSF. The legal framework is however much broader and includes other laws, such as the 2004 law on the fight against money laundering and terrorist financing, completed by a comprehensive set of Grand Ducal Regulations and CSSF regulations and circulars.

This regulatory framework was and still is a major challenge, as it generates high compliance costs and can, to some extent, challenge custodians' operating models. Many major players have reached a certain maturity when it comes to the implementation of major regulations such as MiFID, UCITS, or PRIIPs. Even though additional regulation is certainly on its way, today custodians and depositaries should start to move their focus towards post-trade activities.



02 Upcoming regulatory issues

The European Union, through the European Parliament and the European Commission, is constantly renewing the regulatory landscape and regularly releases or amends new regulatory content that may affect custodians. For example, the future AML V directive will include a section about virtual currencies, hence taking into account the influence of technological changes.

The pressure from the regulatory environment is therefore still high, maintained by the continuous need for increased transparency and control risks in the financial sector. This pressure increases the costs of compliance and is therefore challenging the profitability of custodians. Regulatory pressure may result in broader movements, for example a full review of the business model, like MiFID II did for investment. Even though it may not systematically go that far, this pressure

represents an opportunity to review all relevant policies and procedures of the firm and therefore to identify areas of improvement to enhance the efficiency of the whole organization. Reorganizing the compliance function, systematizing regulatory related training courses, or rethinking the operating model in light of new requirements are only a few of the solutions custodians may opt for to harness the opportunities underlying the regulatory pressure.

Internationally, the regulatory landscape is also evolving; for example, US depositaries fall under the scope of FATCA and the AML/KYC 2003 regulations, which involves additional processes for custodians and depositary banks to be compliant.

Additionally, custodians and depositary banks are also affected by the ever-growing regulatory requirements related to the storage and protection of data. A recent example, GDPR (General Data Protection Regulation), concerns all EU states and members of the European Economic Area and gives control to individuals over their personal data. This leads to new processes being implemented within custodians and depositary banks in order to be able to retrieve any personal data related to investors when they are required to comply with the GDPR directive. With the increasing volume and frequency of data flows, new regulations will need to either be put in place to ensure proper handling of personal information—as in the case of GDPR—or make sure client and company data is stored safely.

Depositary banks were directly targeted by dedicated regulations over the last decade whereas custodians were mostly indirectly impacted.

Other trends such as Know Your Customer (KYC) and Anti-Money Laundering (AML) have led to significant developments in the regulatory framework to protect financial institutions. This is growing further to not only include client oversight, but also control over the B2B relationships. This is commonly known as Know Your Distributor (KYD). This is particularly applicable for custodians and their network of sub-custodians for which they need to have robust due diligence processes in place to mitigate risks and protect the trusted assets. Global custodians also need to make sure their sub-custodians comply with local regulations. Additional regulations will need to be enforced to make sure all financial institutions follow the same standards as far as KYD is concerned.

A burning topic concerns sustainable finance for which organizations, such as the Sustainability Account Standards Board (SASB) and the United Nations Principles for Responsible Investment (UN PRI), are trying to come up with a standardized regulatory framework around Environmental, Social and Governance (ESG) investments. This trend also connects with public opinion demanding socially and ecological investments. The challenge here lies in the fact that each market is defining its local definition and standards for ESG, which makes it difficult to define a universal regulation across all regions.

A similar concern can be observed with regulations around distributed ledger technologies that start to be implemented on a local basis. International institutions such as the European Union struggle to

keep up with these trends and define proper regulations to protect investors and define common standards. On a similar note, crypto currencies are also experiencing exponential growth and regulations are starting to appear to provide a legal basis. EU regulators, such as the European Securities and Markets Authority (ESMA) and the European Banking Authority (EBA), have kicked off 2019 by issuing two reports on crypto assets and their suitability within EU laws. This attests to the importance of these topics for the securities value chain and indicates that we can expect to see clearer legal and regulatory frameworks around this fast-booming sector in the near term.

The definite legal categorization of crypto currencies will impact how custodians manage them, what data they need to process and how auxiliary services, such as tax or legal reporting, need to be performed. Although crypto currencies are already covered in multiple jurisdictions by tax or AML laws, their status varies from country to country. In Switzerland, for example, crypto

currencies are taxed as foreign currency while in other countries such as Israel they are considered an asset. On top of this, the categorization is not yet clear for some major markets like the US, where the Token Taxonomy Act introduced in December 2018 would suggest that digital tokens would not be considered a security as defined by current US law.

Also, the technological framework of regulators is evolving, allowing them to treat information provided by custodians and depository banks more efficiently. In return, it allows them to request deeper levels of information to enhance oversight. Therefore, custodians and depository banks must consider this and prepare their delivery processes to stay ahead of regulatory requirements.

This being said, the evolution of technology and its efficient utilization will not only benefit from regulatory aspects, but also from the operational side where upcoming technologies will drastically change the way custodians and depository banks work. The next section will give an overview of these technologies and how they will affect the industry.

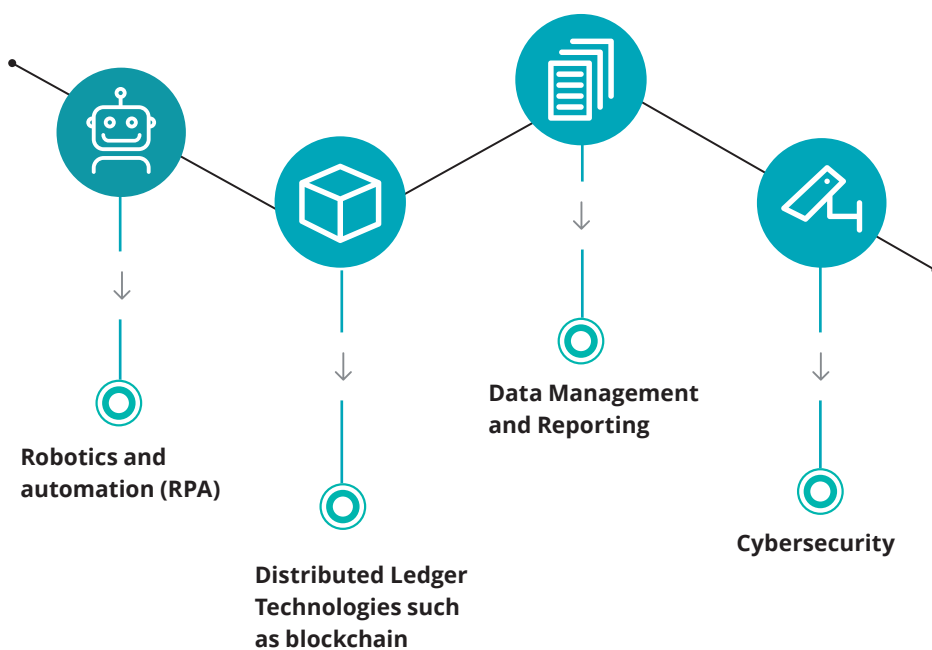


03 Technology

Finally, the fast stream of technological changes makes the efficient use of advanced technologies a key opportunity for the future. The industry broadly agrees that the systems on which they currently rely are either outdated or inadequate to keep up with technological trends. Buzzwords such as blockchain, RPA, artificial intelligence, or advanced analytics are believed to be the future and depositary and custodian banks are currently struggling to take advantage of the upcoming opportunities.

The impact of new technologies like Blockchain is over-estimated in the short-term, but under-estimated in the long-term.

We will now turn our focus to the following technologies and explain how they will potentially impact custodians and depositaries



03.1 Robotics and automation and artificial intelligence

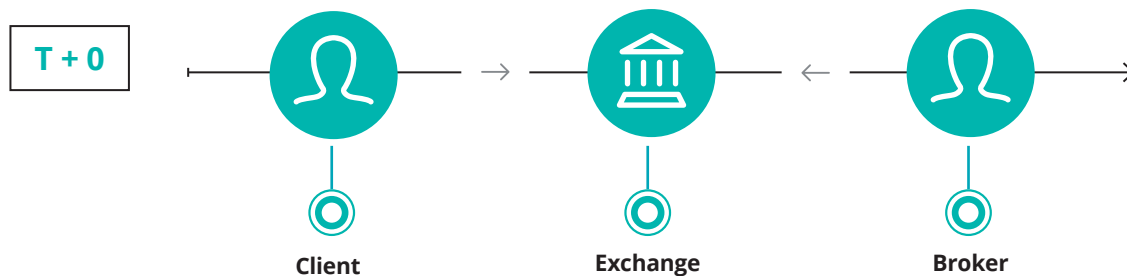
Some of the larger custodians, for example on the North American markets, have already achieved a very high level of automation in back-office processes. In Europe, TARGET2-Securities (commonly referred to as T2S) is a securities settlement platform that has been developed to streamline cross-border settlement between European players and increase their competitiveness. Yet, the T2S framework does not cover all activities and products, and exception management often requires human input as well. Many of the players that have been gradually transforming into global custodians based on largely manual processes can still benefit from applying robotics and artificial intelligence (AI). This is especially true of functions other than pure transaction settlement, such as the processing of corporate actions for example.

If applied to basic controls and operations currently performed by a manual workforce, RPA and AI will not only greatly improve operational efficiency, but will also allow the saved workforce to be reallocated for better use. Ultimately, the use of these advanced technologies should allow for more efficient and improved customer service. In Deloitte's 2017 article on the three disruptive technologies set to shape the asset servicing industry in general (RPA, blockchain, and Cognitive), it has been suggested that automation alone could achieve a cost saving of approximately 30–40 percent.





A potential use case for RPA is the settlement process, which could see a great impact from the efficient use of these technologies. The process below gives an overview on the current activities performed in a traditional settlement process.



Transaction validation:

- The client and broker agree on the terms of the transaction
- The transaction is sent to an exchange platform for matching

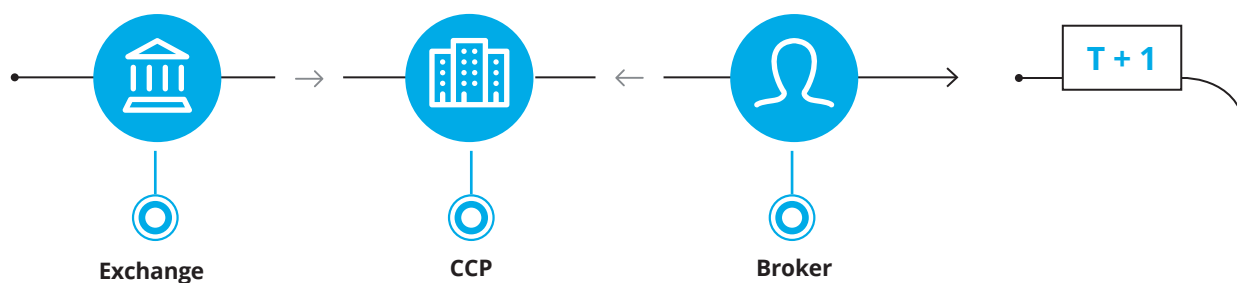
Using RPA to automate manual processes with high frequency and low added value will help speed up the whole settlement process and free up workforce, as previously stated, for high-value-added services.

Artificial intelligence, as a suite of technologies enabled by adaptive predictive power and some degree of autonomous learning, can have a profound impact on the operating models of back offices. Custodians may end up turning their centers of excellence into services while sourcing most of the other back-office functions from third parties. As it is rarely possible to excel at everything,

the focus should be on some best-in-class capabilities, enabled by intelligent solutions. Integration of external solutions can be enabled by cloud-based solutions and improved by AI as well.

Combined with distributed ledger technologies, RPA will no doubt affect the way custodians and depositary banks operate their processes and help them focus on new and more diversified service offerings.

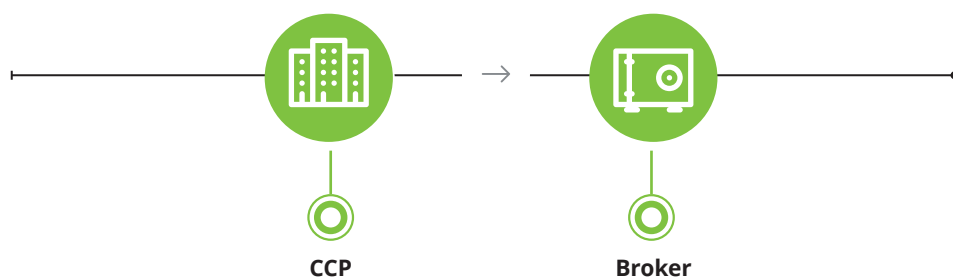
To learn more about the future of financial services via artificial intelligence, find more here:
<https://deloitte/2IUH0BT>



T + 1

Matching and Confirmation:

- Transaction is sent to a central counterparty (CCP)
- Additional confirmation required between CCP and broker
- Identification of potential issues and return for repair



T + 2

Settlement Instruction:

- Validation of availability of assets
- Contract is sent to relevant parties
- Final validation of the transaction

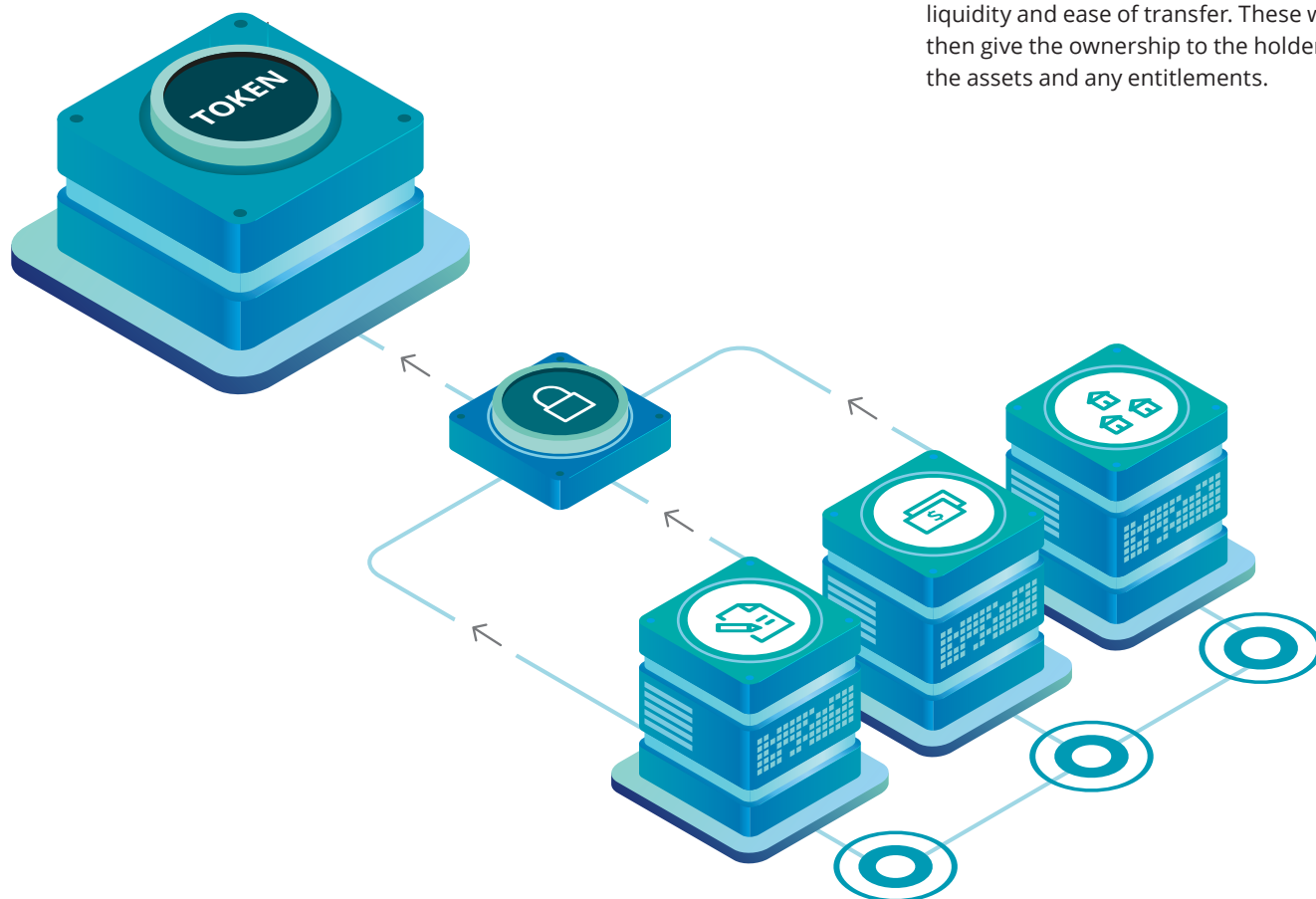


03.2 Distributed ledger technologies (DLT)

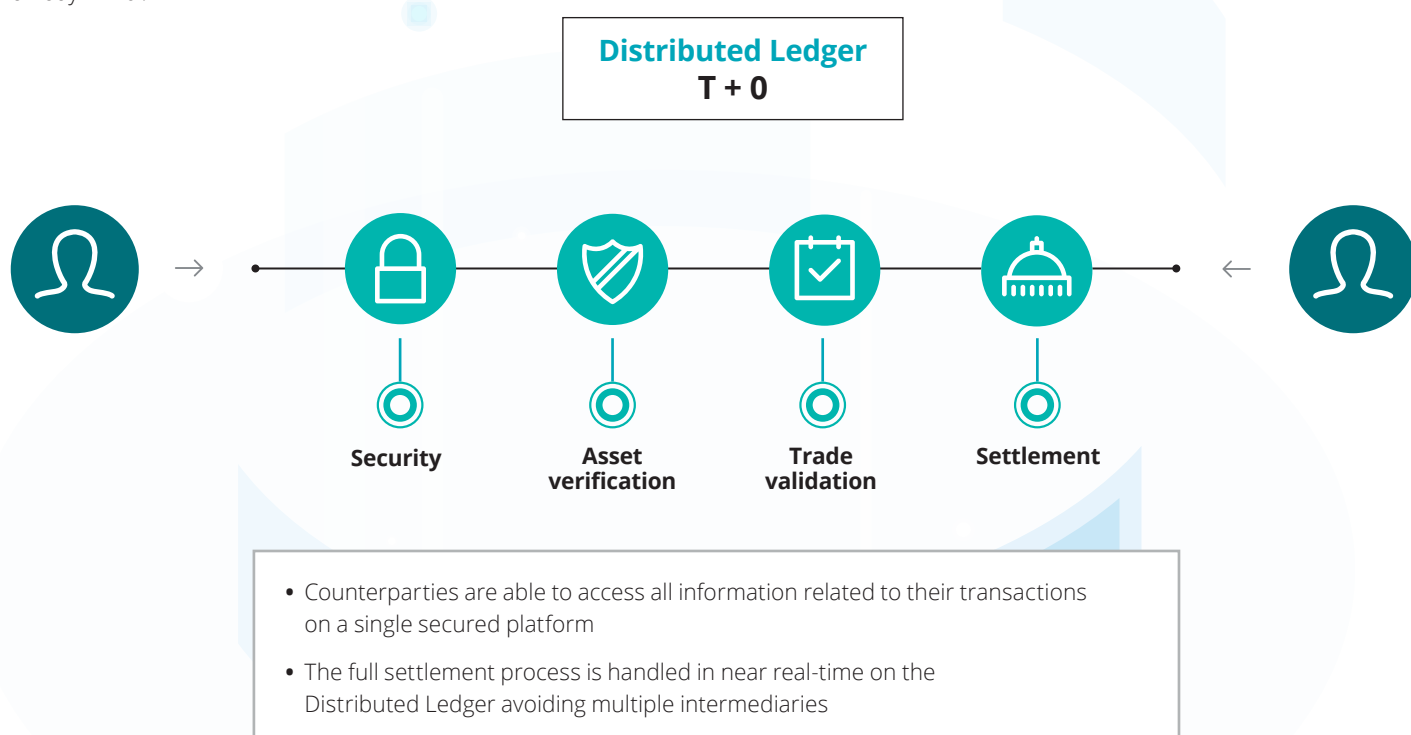
Overall, financial services experienced a rapid flow of technological changes in recent years. Embracing digitization such as blockchain will have major ramifications for the securities industry. Although its adoption by custodian banks will take some time, the benefits of a shared network that serves as the single truth could have major repercussions on the current way of doing business for

custody and depository banks. Imagine applying a distributed ledger technology to a whole network of sub-custodians: the consequences would be increased trust among the network, drastically reducing due diligence costs.

A concrete case where distributed ledger technologies can be a real benefit lies in “Tokenization” and the full automation of the trade and settlement process. Tokenization is the process of transferring ownership of an asset into a digital asset on a distributed ledger. The goal is to convert traditional assets (equities, bonds, warrants, etc.) into digital investment tokens to improve security liquidity and ease of transfer. These will then give the ownership to the holder of the assets and any entitlements.



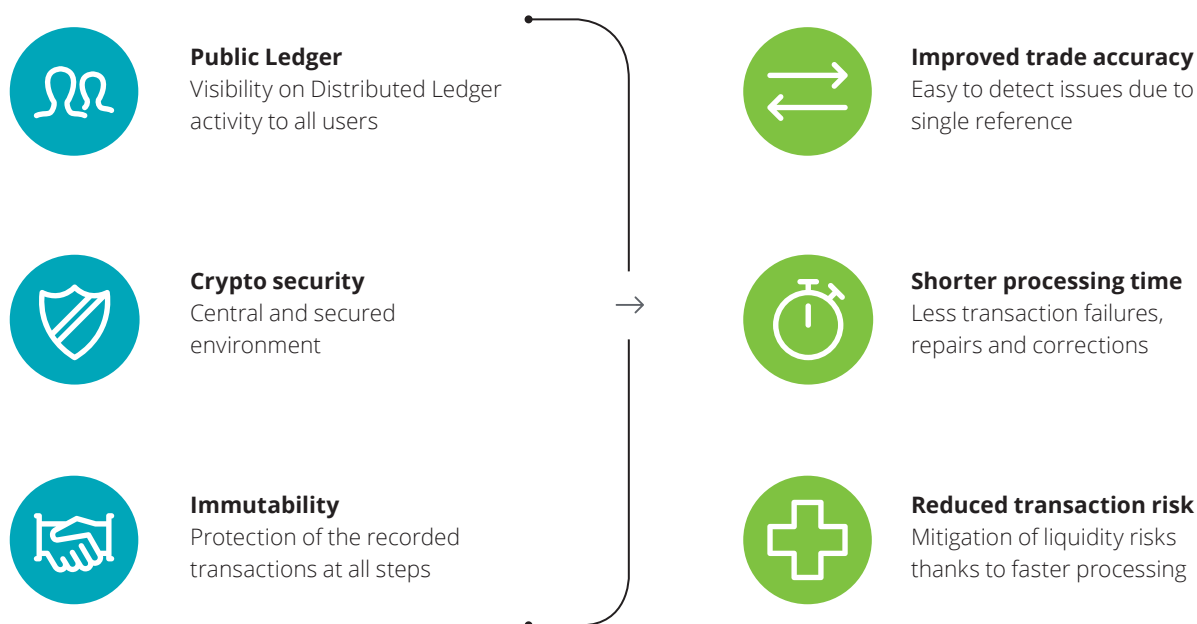
Using distributed ledger technology and RPA will eventually guarantee that all necessary settlement activities can be carried out on day 'T + 0':



Indeed, as ledgers are decentralized, there is no need to rely on multiple counterparties as it the case in today's settlement process. As this will require cryptocurrency to be accepted for the second leg, this is a transformation that will probably start with the simplest cases. Once assets like shares or bonds are digitized on a distributed ledger, corporate actions could be managed using smart contracts, which are built in or referenced programs that can automatically trigger events such as distribution of dividends,

stock splits, shareholder voting etc. This works best on mandatory events such as predefined interest or dividend payments. Current projects and proof of concepts show that voluntary or unforeseen corporate actions are more challenging to manage, but possible given the right framework. Other events such as voting can be tracked by the ledger as well and will drastically simplify the information gathering process due to the distributed nature of the ledger.

Overall, distributed ledger technologies will bring multiple benefits to the settlement process:



The combination of both investment tokens and DLT then poses a fundamental question: is there still a need to keep these assets in a depositary bank? Although it is not expected that there will be a single distributed ledger, nor ledgers that are completely decentralized that will be used for the custody business, the answer could well be no.

So where can the current custodians and depositaries position themselves in a world of distributed ledgers? Going back to the core responsibilities of custodians and depositaries, it is safe to say that there are indeed many activities and opportunities to be covered.

Distributed Ledger Technologies will substantially change the way custodians do business from a technological stand point. Digital custody will become a key function with the new technology.



01 Safekeeping of assets

As blockchains are shared and decentralized ledgers, cryptocurrency ownership is ensured through private keys, i.e., passcodes to which only the owner has access. The same will be the case for other assets that could be represented digitally, like securities, real estate, art, intellectual property, etc., and someone will be needed to safeguard these private keys, which is where custodians can step in.

This is already the case for the US-based company PrimeTrust, for example. PrimeTrust acts as custodian for crypto currencies like bitcoin and tokens on the Ethereum blockchain by offering cold storage for private keys. Consequently, institutional investors don't have to manage the safekeeping of their digital wallets and can rely on a qualified custodian. Long established players such as Northern Trust and Goldman Sachs are looking into solutions for institutional clients.

02 Oversight and monitoring functions

Even in a world where all assets are digitized and traded on shared ledgers, there will more than certainly still be the need for oversight functions. Depositary banks will still be needed to perform them and could potentially be in charge of managing distributed ledger platforms, very likely as part of a consortium.

A specific enabler is the KYC function as mentioned earlier. Indeed, on the major cryptocurrency ledgers, such as bitcoin or ether, anonymity of the user is a key principle. To ensure compliance with anti-money laundering and anti-terrorist financing obligations, someone will be needed to keep track of the various digital actors on the ledgers.

03 Management smart contracts

The use of smart contracts to handle corporate actions will simplify those flows and will make many of the currently related custodian activities redundant. As smart contracts are “merely” programs containing the rules for mandatory and voluntary corporate actions, someone will need to write and deploy those contracts. Different players could potentially cover this activity, from specialized FinTechs, to investment banks and even to the equity issuer itself. Yet, thanks to their subject matter expertise, custodians are in a good position to dive into this service offering.



Small incumbents such as FinTechs often lack the maturity and business knowledge but can have the edge over established players when it comes to go-to-market flexibility. Therefore, custodians and depository banks must keep ahead of these trends to stay competitive and not only gain new business, but also maintain their business in some cases.

A major challenge around the implementation of DLT in custody and depository banks lies in the initial investment, which is currently difficult to estimate and the potential increase in efficiency is even more difficult to prove. Yet, the biggest challenge for custodians will be to reinvent their business models once the distributed ledgers cover the core settlement or post-trade functions. In this case, it will be even more important to shift the focus to auxiliary and high-value-added services.

Which brings us to our next topic...

To learn more about the future of financial services with distributed ledgers, find more here:
<https://www2.deloitte.com/lu/en/pages/technology/solutions/blockchain-distributed-ledger-technology-stitch-in-time.html>



03.3 Data management

As custodians sit at the center of the asset servicing value chain and process all of the ever-growing volume of transactions, they have amassed an invaluable amount of data. This data, today largely unexploited, will be one of the key drivers for value added in the future. New technologies are maturing to provide insight using clients' activities on a real-time basis. This makes custodians and depository banks the perfect candidates to become global data consolidators of traditional transaction and also information related to trading efficiency or regulatory insight.

Modern custodians must be considered aggregators of data coming from multiple sources that they need to enrich to get relevant information and provide added value. Additionally, providing their clients with efficient tools to access this data is becoming a key differentiator and assists their clients in the decision-making process for their investments. This also means that custodian and depository banks will not only be aggregators but also creators of data for their clients, allowing them to answer questions that their clients have not yet asked.

To become global data providers, custodian and depository banks will need to leverage their network as well as external providers, such as market data providers, industry organizations, and regulators to enrich their flow of information. The process of efficiently aggregating information from multiple sources will be a key differentiator in the coming years, especially for custodians and depository banks. Smaller local providers can leverage their local

expertise to gather, process, and provide specialized data directly to fund clients or to global asset servicers.

Data is increasingly becoming a resource that can be monetized considering the amount of data collected by custodians, in view of client and investor protection.

Both cloud computing and advanced analytics should contribute to satisfying clients' needs to access information in real-time, anywhere in the world. The traditional reporting mechanisms will be revolutionized to make way for self-service reporting and dynamic/real-time access to dashboards and monitoring mechanisms through Application Programming Interfaces (API). In addition, this will not only benefit clients, but will also improve the way depository and custodian banks report back to the regulators.

Some players operating in the financial services industry have already started to use their data as a sales argument and even sell their data for analytical purposes. Additionally, the generalization of APIs allows easy and efficient access to data.

So, the volume of data accumulated by custodians and depository banks is growing exponentially and at the same time, access to stored data is being simplified through APIs and data providers. But this also presents issues in terms of cybersecurity and cyber risk. This theme and its possible outcomes is described in the next section.



The traditional reporting mechanisms will be revolutionized to make way for self-service reporting and dynamic/real-time access to dashboards and monitoring mechanisms through Application Programming Interfaces (API).

03.4 Cybersecurity

In each and every industry, cybersecurity is becoming an increasing concern for which organizations, and custodian and depositary banks alike, need to be ready. Security, in general, is the most important reason why investment companies place their assets for safekeeping in custody banks. Originally, physical securities were given for safekeeping to custodian banks, but, as the business has evolved, modern custodians no longer rely on holding physical securities and bonds. This makes cybersecurity one of the key services for their clients.

Additionally, only safekeeping their clients' assets is no longer sufficient; custodians will also need to ensure data protection and regulatory compliance. Therefore, the channels of communication that were detailed earlier with their providers and clients need to be thoroughly protected and reported.

Security, in general, is the most important reason why investment companies place their assets for safekeeping in custody banks.

It is well known that custodian and depositary banks hold and operate with strictly confidential client data. This data can range from asset owners, asset managers, employed trading strategies, trustees, holdings values, and beneficial owners that can include private individuals' personal information, to name a few. Given the vast amount of data these banks rely upon daily, the main risks for them is operational risk and in particular cyber risk. In this regard, cybercriminals and threat players are increasingly interested in gaining unauthorized access, compromising custody data, and initiating transactions to negatively affect custody assets. Furthermore, cyberattacks targeting specialized financial institutions that provide critical services, be it a settlement or custodian bank, might impact other firms or stakeholders relying on them.

Executives with responsibilities in information security for custody and settlement services should be aware of the evolving cyber threat landscape and offer guidance to their organizations in their journey to become more secure, vigilant, and resilient:

- Custodian and depositary banks cannot secure everything equally. Being secure means focusing protection around risk-sensitive assets at the heart of custodians' missions. Specific aspects of concern are the confidentiality of securities in transit and in storage, the management of access rights to security data, and the security hardening of securities processing systems against cyberattacks.

- By carefully plotting the motives and psychology of adversaries, and considering the potential for accidental damage, cyber risk functions within custodian and depository banks can anticipate what might occur and design detection systems accordingly. However, the sharing of real-time threat intelligence information on a cross-border basis remains a bottleneck for the industry due to a number of technical, legal, and security challenges.
- Being resilient means having the capacity to rapidly contain the damage, and mobilize the diverse resources needed to minimize impact, including direct costs and business disruption, as well as reputation and brand damage. Specific areas of concern are the obstacles to detecting suspicious activities within securities processing systems in a timely manner and raising awareness amongst staff on expected information security practices.

As far as cybersecurity trends are concerned, executives need to anticipate what the supervisory developments related to cybersecurity and data privacy mean for their organizations, and make decisions based on these as well as their own threat analysis and cyber programs. Additionally, the potential adoption of new and emerging technologies such as AI, blockchain, cloud solutions, and their increased use could amplify a range of threats to the cyber resilience of those specialized financial institutions. In fact, executives should ensure appropriate cyber coverage across these areas, commensurate with the level of risk and in coordination with relevant risk functions.

That being said, in the pace of today's environment, custodian and depository banks cannot afford to slow innovation simply because it cannot be perfectly secured. However, neither can they innovate without appropriate regard for the inherent risks being generated. Cyber risk and innovation are inextricably linked; rather than subordinating one to the other, executives must harmonize these important elements of business performance through a program to become secure, vigilant, and resilient.

Technology and the regulatory framework plays a key role, but, additionally, the ever-decreasing margins and evolving client expectations put pressure on the operational departments of custodian and depository banks. These challenges and opportunities will be detailed in the next section.





04 New services as differentiators

Custodians and depositaries face similar trends to the overall market when it comes to operational efficiency. Their clients demand new services and consider now traditional custodian and depositary services as commodities. For this reason, custodians and depositaries must reinvent themselves in the future and propose new services to stay in touch with global market trends. They have to focus on the development of high-value-added services without compromising their core activities. This section will try to show how custodians and depositaries will need to adapt to these changing demands and decreasing margins.

Challenges do also arise from the clients' side. Custody is indeed viewed today as an aging service line that is lacking a sense of innovation.

Until now, custody services have been driven by client requirements around safekeeping and settlement, valuing safety and access to global markets most highly. Today, changes in services are mostly driven by competition and the optimization of existing processes to increase margins rather than a search for service innovation, which the market is looking for.

On top of this, the market has experienced rapid change prompted by emerging technologies (FinTechs) and new business opportunities. Other drivers include the fine balance between increased protection of investor information and the necessity to provide transparency and improved data delivery.

One prime example of a disruptor in the banking landscape could be fully digital banks that offer their services mainly through mobile apps and don't have networks of physical branches, commonly referred to as "Neo-banks". Today, most of these digital banks, such as Monzo and Revolut in the UK or Chime and Varo in the US rely on a well-established financial institution to deposit their client funds. This could change, however, as they are rapidly gaining market share when it comes to client deposits and are moving to other segments as well. While they are not directly competing with the large custodians today, they are more prone to use innovative technologies such as distributed ledgers for crypto assets and might be better prepared to adopt these kinds of ledgers and the safekeeping of digital assets. Custodians need to be on the lookout to not lose this part of the business, which will increase in significance in the future.

When it comes to asset managers, they must still maintain and demonstrate their oversight of middle-office functions, but their role is now considered a set of business functions that can be outsourced to enhance operational efficiency and improve capabilities. Asset servicers can act as delegates of the asset manager and

leverage a best-of-breed approach to their middle-office functions to gain efficiency, scale, and new capabilities.

This goes beyond simply reducing costs and increasing transparency due to regulatory obligations. Asset servicers including custodian and depositary services are regaining importance when it comes to incorporating key technology components and data insights.

Such changes to processes, data insights, and related technologies can come from changes in the volume and asset types to be managed, as well as transaction volumes.

The European Exchange-Traded Fund (ETF) industry for example has shown consistent growth over the last decade. The trend towards passively managed trackers has also had and will continue to have an impact on custodians as well. These products can bring high transaction volumes in the form of subscriptions and redemptions, which need to be processed at a low cost. Many custodians still struggle to keep up with the high volumes and cannot offer competitive prices due to processes that are still partially manual or legacy systems that cannot offer the required performance.

On top of changes to volumes, the diversification of products offered by investment managers gives rise to more alternative asset types, which again impose new challenges on custodians and transaction processing, monitoring, and reporting services.

Recent attempts by the European Commission to push more towards green finance will give rise to new classification systems for the assets and funds investing in it. With clear investor trends towards sustainable investments, custodians need to make sure they are ready to have an appropriate service offering. Monitoring services will go beyond performance and investment tracking, as they will need to include these sustainable finance specific indicators and products as well. Additional challenges exist for even more complex asset types, such as physical assets; art finance is an example of this and it has also seen a boom in recent years.

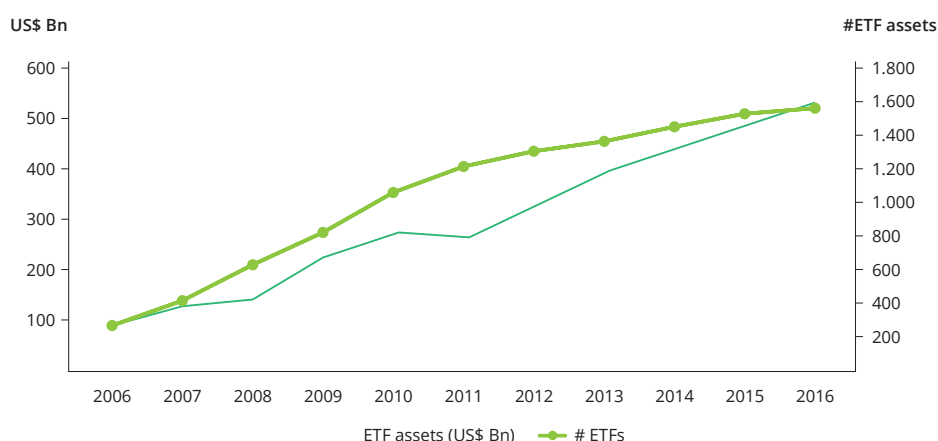
Due to the increased competition, traditional services (safekeeping, settlements, tax, and corporate

actions) now take on a role as commodities while additional services are being used as differentiators.

The overall context for custodian and depositary banks, comprising several challenging variables such as a quickly moving economic and technological environment as well as regulatory and client challenges, opens the door to numerous opportunities. These include advanced and tailored reporting services or efficient transaction processes to cope with growing transaction volumes.

We briefly touched upon the decreasing margins that custodians and depositaries face and outsourcing (or offshoring) some core activities with low added value is one way of coping with this issue. The following section will focus on that trend and how it may continue to affect the industry in the coming years.

ETF assets over the years in value and amount



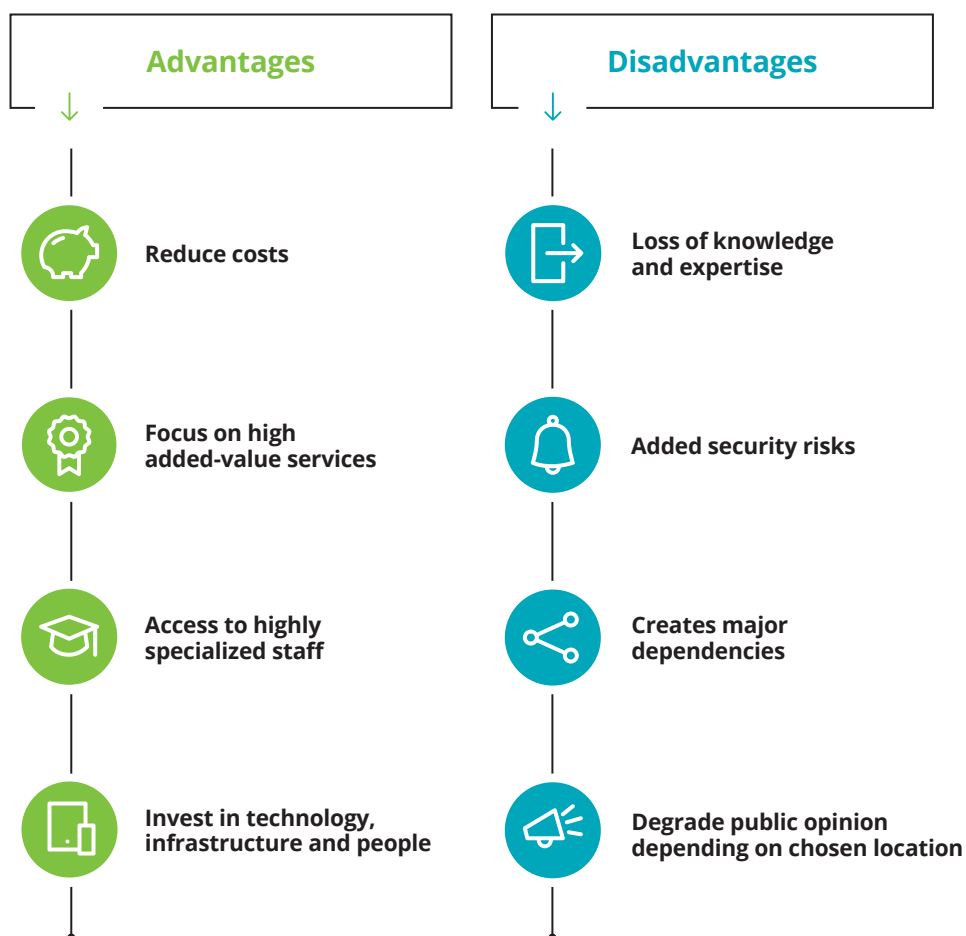
Source: Deloitte 2017

One of the biggest risks for global custodians is an excessive operational fragmentation.

is popular include Asia, Eastern Europe, and Africa where companies have access to a large educated workforce with significantly cheaper costs compared with Western Europe and the United States. For the last 40 years, companies, including custodians and depositaries, have been outsourcing operational departments to these regions to lower their costs and thus increase margins on core services that have experienced the largest margin creep. Typically, the outsourcing of services such as Transaction Management as part of the Custody and Transfer Agency business or NAV calculations in Fund Accounting are particularly interesting as they are highly repetitive with large volumes.

05 Outsourcing and offshoring

The outsourcing of services with low added value is not a new trend, but it is becoming more and more commonplace across the market. Global regions where outsourcing



The ultimate goal of an outsourcing model is to reduce costs and increase the efficiency of the industry's processes. Conversely, it involves some disadvantages that must be considered when opting for such a model. It is crucial to weigh up the advantages and disadvantages before making the final call to outsource a particular service.

As custodians and depositaries rely on high-volume and low-fee services, it is critical for them to stay efficient, and outsourcing allows them to release the cost pressure associated with their services. Meanwhile, it requires additional oversight to make sure the processes follow company standards. Also, relocating an activity to a foreign location brings security risks and, depending on the chosen location, reputational risk.

Another aspect of outsourcing is innovation. Indeed, outsourcing has long been associated with cost-cutting, but today, companies including custodian and depositary banks, see an opportunity in outsourcing to innovate and enhance the services they outsource. They now encourage their service providers to innovate by proposing new business opportunities as they innovate or simply drive it through compensation plans.

Although outsourcing and offshoring presents a key opportunity for custodians today, the decision to shift activities abroad or to another service provider should not be taken lightly. It is expected that regulatory requirements around outsourced and offshore delegated activities will increase, with regulators imposing additional checks, controls, and reporting. Therefore, it is important to ensure the quality of these services can be properly measured and that outsourcing partners are selected based on quality and trust rather than cost savings only.

To summarize, outsourcing has been a growing trend in recent years and it will grow further in the years to come. The key for custodians and depositaries is to outsource their services responsibly. Meaning, it is essential for them to preserve the expertise of their core services to maintain a healthy client relationship and mitigate risks. Cost reductions are not the only aspect that must be considered when deciding to outsource a service; innovation will also play a growing role.

Now that we have addressed the different aspects around technology, regulation, and operations, it is time to conclude and focus on the overall messages.

Cost reductions are not the only aspect that must be considered when deciding to outsource a service; innovation will also play a growing role.



Conclusion

The world of custodians and depositories is full of opportunities for the coming years. The pace of regulation is expected to slow thanks to the upcoming EU elections and the maturity of important regulations, which will free up some capacity for custodians and depositories to focus on emerging technologies such as DLT or RPA.

Indeed, the efficient use of these new technologies will be key to staying ahead of the competition and surfing on current market trends. Those gains in efficiency and quality for clients will come at a heavy

cost that is still, to this date, difficult to estimate until they themselves become commodities. The impacts of technologies such as RPA will be felt across all industries, including the custody and depository business. Moreover, distributed ledgers and tokenization might disrupt the custody business completely, requiring custodians to reinvent their business models.

So based on the custody activities outline above, what will the value chain of a leading custodian look like in 2030?



Custody function	Degree of automation	Description
Front office and client onboarding	75%	This includes account setup and compliance checks such as KYC and AML and will, as it is already partially the case for retail banks, be fully automated. Client representatives will be able to focus on business development and clients' questions rather than spending time on setup topics or investigating issues
Middle-office services and trade capture	95%	These functions will be fully automated as well. Here RPA and data management will have the biggest impact
Trade processing and settlement	95%	The core custody functions are already largely automated, but new technologies such as blockchains/DLT will take automation to the next level. Only failed trades will require some manual or human input, where AI will help reduce these cases to a minimum
Corporate actions and mandates	95%	The management of corporate actions and mandates will be automated too, for both mandatory and voluntary events. The key drivers for this change will be well-managed data consolidation, with RPA or even DLT simplifying the notification and execution of events, using digital tokens for proxy voting for example. Auxiliary services such as tax reclaims will be fully automated or outsourced to specialist third parties
Cash, treasury, and Forex services	95%	These functions will be fully streamlined through fully automated checks and AI. Clients will be able to manage and adapt their cash management preferences on the fly, using online custody applications
Collateral management	95%	The same will apply for collateral management. The process will be more structured and standardized. Risk and value controls on non-standard collateral (e.g., RE) will need to leverage huge amounts of data and AI to reach full automation
Reconciliations	95%	There are already many ways to simplify reconciliations. With a well-integrated architecture and platform, custodians will be able to perform these with confidence without the need for human intervention

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We would like to thank our many clients who have contributed their time and insights to this whitepaper.

Contacts

**Patrick Laurent**

Partner - Technology & Innovation Leader
+352 451 454 170
palaurent@deloitte.lu

**Jean-François Giuliani**

Director - Strategy Regulatory & Corporate Finance
+352 451 452 403
jgiuliani@deloitte.lu

**Simon Ramos**

Partner - IM Advisory & Consulting Leader
+352 451 452 702
siramos@deloitte.lu

**Mathieu Bruneton**

Senior Consultant - Technology & Enterprise Application
+352 451 454 123
mbruneton@deloitte.lu

**Laurent Collet**

Partner - Strategy Regulatory & Finance
+352 451 452 112
lacollet@deloitte.lu

**Maxime Kirpach**

Senior Consultant - Operations Excellence
& Human Capital
+352 451 452 433
mkirpach@deloitte.lu



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