

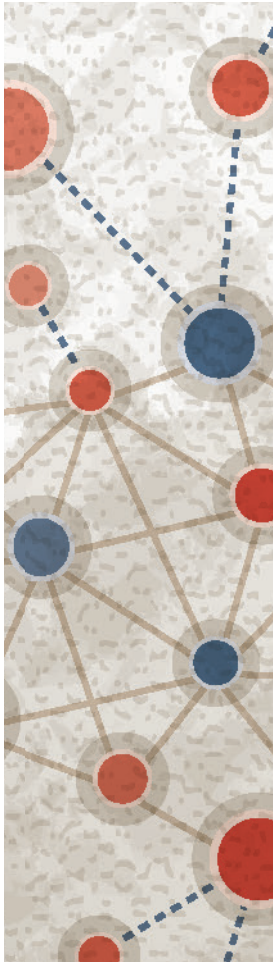
The Legal Entity Identifier: The Value of the Unique Counterparty ID



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Executive Summary

When the collapse of Lehman Brothers—at the time the world’s fourth-largest investment bank—sparked a global financial crisis in 2008, regulators and capital markets players needed to quickly assess the extent of market participants’ exposure to the bank and each of its hundreds of subsidiaries. Like many other capital markets participants, Lehman Brothers transacted from a maze of affiliate and subsidiary legal entities (Exhibit 1), and there was no standard global identification system for each financial counterparty within that maze. Consequently, financial regulators and market participants found it impossible to reliably assess counterparties’ exposure to Lehman’s entities and to each other.

The financial crisis thus laid bare the critical need for a system to identify and understand exposures at the legal-entity level instead of the aggregate, parent-company level. If it had been available at the time, a system that assigns electronic, standard identifiers to legally distinct parties would have helped to fill this gap.

The 2008 financial crisis made influential organizations like the Group of 20 (G20), the Financial Stability Board, and regulators keenly aware of the need for a universal system to identify legal entities, and they began to call for its development. Based

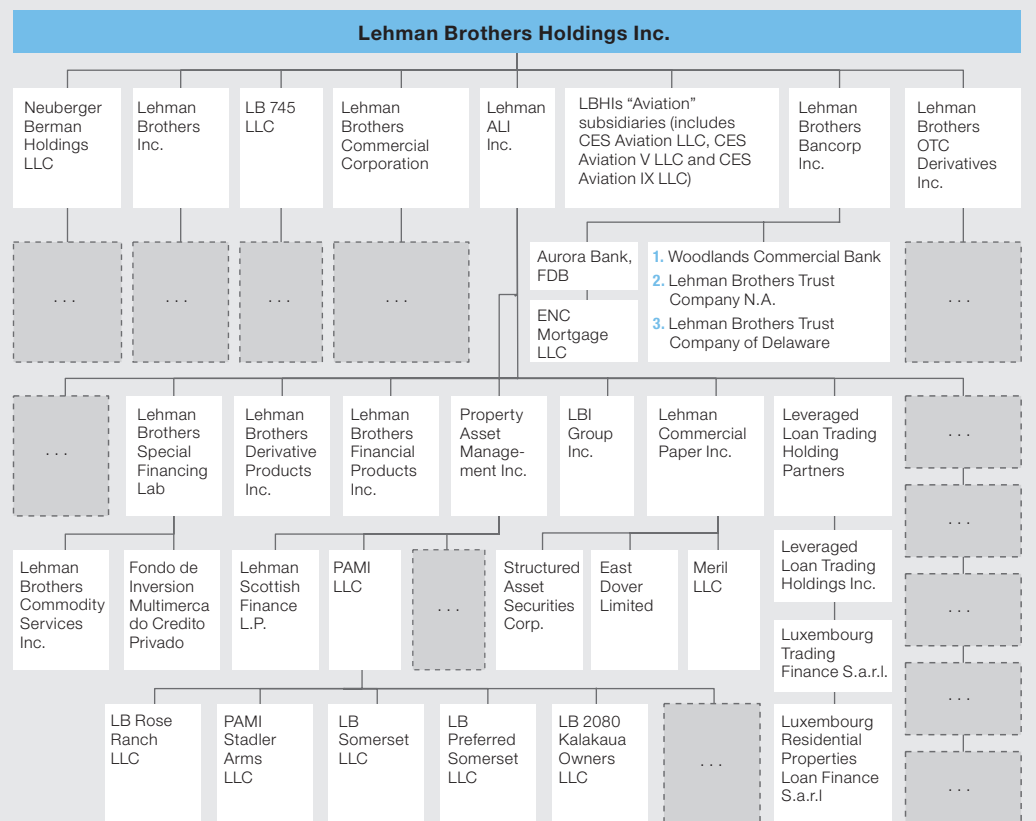
on recommendations developed by the Financial Stability Board, market authorities worked with private-sector entities to create the Global Legal Entity Identifier System (Global LEI System), which serves as a publicly available, global directory of legal entities.

The Global LEI System assigns 20-digit, alphanumeric Legal Entity Identifiers (LEIs) to uniquely identify legal entities participating in transactions worldwide. Each LEI contains information about an entity’s ownership structure and thus answers the questions “who is who” and “who owns whom” among market participants. At present, capital markets participants who trade over-the-counter (OTC) derivatives are the early adopters of the LEI, using the unique identifier for transaction reporting to regulators.

However, the LEI has much broader potential applications; for example, banks can use them to issue loans, and corporations can use them to verify the identities of their sellers, suppliers, and other counterparties. In general, the LEI creates business value in two ways: first, it reduces transactional and operational friction in the identification of transaction counterparties. Second, it makes important information about the background of a legal entity in a particular

Exhibit 1

Lehman Brothers legal entity structure



Note: Blank boxes for illustrative purposes
Source: SEC filing

transaction more accessible and traceable. Collectively, these benefits reduce the time spent on identifying counterparties and improve the reliability of information.

Current identification and verification processes have significant manual components and often require the use of multiple databases in which a counterparty may be identified by different names. Many banks and corporations still use names rather than identifiers, resulting in confusion. As an example, a large bank's client services

division recently found that it had an average of five names—with minor variations in its database—for the same organization. Additionally, commonly used databases and different divisions and IT systems within organizations can all have varying versions of the same entity's name, making it harder to trace and to link information from multiple sources.

This paper discusses three use cases that demonstrate the wide potential application of the LEI. These use cases—which are not

meant to be exhaustive—relate to capital markets, commercial transactions, and the extension of commercial credit. The use cases and benefits are especially relevant to large corporations, small businesses and their banking institutions, and investment banks.

In capital markets, the LEI's primary value is derived from reducing the cost of onboarding clients and of middle- and back-office activities related to the processing of stocks, bonds, and other securities trades. In commercial transactions, LEIs enable faster processing of letters of credit and better identification of sellers on e-invoicing networks. And in the process of extending commercial credit, the use of the LEI allows for more robust and efficient know your customer (KYC) diligence on borrowers, as well as better traceability of information on borrowers from multiple sources.

These benefits yield quantifiable value. Our analysis suggests that savings of at least 10 percent of total operations costs for client onboarding and trading processing for banks adopting the LEI are possible. For the broader investment banking industry alone, this would yield savings of over \$150 million annually. Banks in trade financing could save an additional \$500 million per annum overall by using the LEI in the issu-

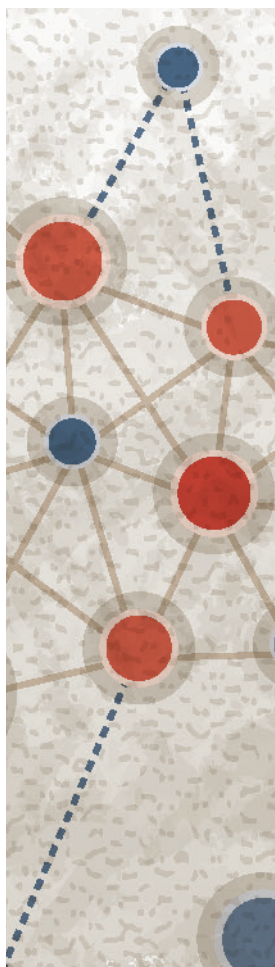
ance of letters of credit. Further savings are likely from the reduction of spend on seller identification for e-invoicing, and from a more automated process for commercial credit extension.

The use cases described in this paper represent a small percentage of potential savings. Introducing the LEI into almost any process that requires identification and verification of a counterparty—and that has a manual component—can deliver efficiencies and greater reliability.

As with any identifier, the broad application of the LEI depends on network effects within each industry subgroup. Key beneficiaries of new uses of the LEI should work with each other and their counterparties to discuss the adoption of the LEI in day-to-day processes.

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This paper is a collaborative effort by the Global LEI Foundation and McKinsey & Company to increase awareness of the LEI, including the potential capabilities and business benefits afforded by LEI adoption. McKinsey served as a knowledge partner to GLEIF in researching and writing the paper. In the pages that follow, we explain the LEI in detail and describe three important use cases.



The Legal Entity Identifier: A Global Solution for Identifying Trade Counterparties

The LEI and its beginnings

The 2008 collapse of the world's fourth-largest investment bank, Lehman Brothers, and the subsequent global financial crisis exposed—among many other systemic vulnerabilities—a critical need to implement a system that would assign unique identifiers to legally distinct entities. After Lehman's demise, participants in the global financial system could not assess their exposure to Lehman, its subsidiaries, and each other because there was no standard system for identifying counterparties in the maze of subsidiaries and affiliates from which banks, insurers, asset managers, and other market participants transact. The needed information was technically available somewhere among the thousands of documents signed by Lehman's hundreds of subsidiaries—which in turn were trading with hundreds of subsidiaries of other market participants—but without a consistent identifier for each entity, no electronic system could determine individual market participants' risk or how participants were connected to each other.

That maze still exists, and is further complicated by the fact that most entities have multiple identifiers that are used for different purposes. For example, local business register codes that vary by country of incorporation, tax identification numbers such as the Value-Added Tax (VAT) number in the European Union (EU) or the Employer Identification Numbers (EIN) in the United States, various sectors' company registers such as the Commercial and Government Entity codes for U.S. defense contractors, and payments I.D.s such as the Business Identifier Code (BIC).

Moreover, many entities share their names or part of their names with other, similar entities. For example, a bank can have multiple identifiers and share its name, or part of its name, with many other banks, making accurate data aggregation and validation difficult (Exhibit 2).

The lack of consistent, unique identifiers for entities can have dire consequences. It is now widely accepted that financial institutions'

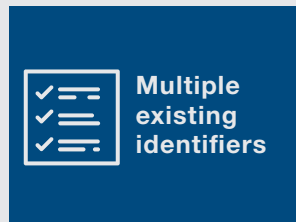
Exhibit 2

Multiple
identifiers,
common name

Hypothetical, based on real examples



ABC National Bank in California

RSSD¹ ID = 77812FDIC² Certificate ID = 41652SEC CIK³ = 571060ISO BIC⁴ = ABCNUSX8CUSIP⁵ and various Vendor IDs = Proprietary**12** banks named ABC National Bank**131** banks with a variant of the name ABC National Bank¹ Replication Server System Database (assigned by the Federal Reserve Bank)² Federal Deposit Insurance Corporation³ Securities and Exchange Commission, Central Index Key⁴ International Organization for Standardization business identifier code⁵ Committee on Uniform Security Identification Procedures

Source: McKinsey

failure to monitor their counterparty activities at the legal entity level contributed significantly to the crisis and its repercussions.

Over the years, private-sector firms and industry associations had made attempts to establish a standardized legal entity identification system, but were unable to sufficiently coordinate their efforts to launch a single, worldwide solution. In the wake of the 2008 crisis, however, the Financial Stability Board and G20 marshaled a consistent, coordinated, global commitment to act in the public interest and create such a system.

Based on recommendations developed by the Financial Stability Board and endorsed by G20, market authorities worked with the private sector to develop the Global LEI System. This identification system assigns electronic, 20-digit, standard identifiers—LEIs—that include “business card information” reference data and uniquely identify legally distinct parties, thereby allowing financial connections to be identified, mapped, and linked. To ensure data quality and interoperability across systems and networks, the LEI is based on the ISO 17442 standard developed by the International Organization for Standardization.

The business card information available with the LEI reference data—the official name of a legal entity and its registered address—answers the question of “who is who” among entities. Currently, the LEI data pool is being gradually enhanced to include information that answers the question of “who owns whom.” This data can be used to identify a legal entity’s direct and ultimate parents so that individual companies can be sufficiently researched. Parent company information is expected to become available for most of the LEI population in the first half of 2018 at the latest.

Since the establishment of the LEI system, a series of regulatory initiatives have urged—and in some cases required—market participants to adopt unique, cross-industry legal entity identifiers.

Since the establishment of the LEI system, a series of regulatory initiatives have urged—and in some cases required—market participants to adopt unique, cross-industry legal entity identifiers. These initiatives have included the Dodd-Frank Act in the United States and the forthcoming revised EU Markets in Financial Instruments Directive (MiFID II) and Regulation (MiFIR).

Strong governance, readily obtainable, and easily searchable

The Global LEI System is supported by a three-tier governance structure that includes

the LEI Regulatory Oversight Committee (LEI ROC) and the Global LEI Foundation (GLEIF) (Exhibit 3, page 8). This structure ensures the accuracy and integrity of the reference data recorded under the LEI of each entity.

To facilitate efficient acquisition of LEIs and to ensure high data quality, the Global LEI System is set up as a federated system under which several LEI-issuing organizations (LEI issuers) act as the primary interface for legal entities wishing to obtain an LEI. These LEI issuers provide registration and renewal services while also offering in-depth knowledge of local markets and helping to overcome language barriers between customers and suppliers.

The process of ensuring LEI data quality starts when an entity “self-registers” to obtain an LEI. The entity must provide accurate legal entity reference data when it registers; the LEI issuer must then verify that reference data with a local, authoritative source—e.g., a business register—and issue an LEI that complies with the LEI standard.

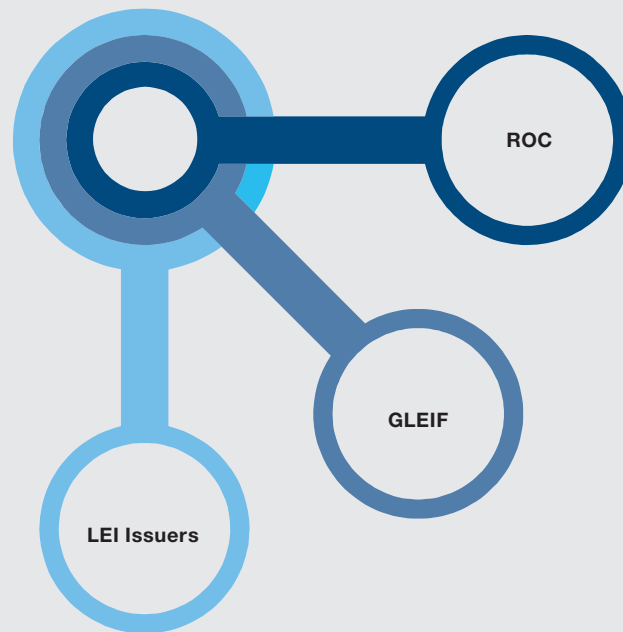
The annual renewal process for the LEI further assures the quality of the reference data. While legal entities are required to notify their managing LEI issuers of changes to their legal entity reference data, the annual renewal process ensures that each legal entity and their LEI issuer review and re-validate the legal entity’s reference data each year.

The annual renewal requirement distinguishes the LEI from other identifiers in two ways:

Exhibit 3

The Global LEI System

The Financial Stability Board and the G20 have endorsed the LEI, Global LEI System and GLEIF



LEI Regulatory Oversight Committee (LEI ROC)

Represents public financial market authorities from around the world
Coordinates and oversees the Global LEI System, a worldwide framework of legal entity identification

Global Legal Entity Identifier Foundation (GLEIF)

Ensures the operational integrity of the Global LEI System
Monitors and manages LEI data quality
Makes available the technical infrastructure to access the full global LEI repository free of charge to users

LEI Issuers

Issue LEIs to legal entities

Source: GLEIF

1. No other global, open entity identification system has a comparably strict regime of regular data verification.
2. Data users can see when the information related to a specific LEI was last verified.

The Global LEI System is designed to encourage competition among LEI issuers. The LEI issuer sets the amount of the fees for issuance and maintenance of an LEI, but these fees must be cost-based. As of July 2017, fees ranged from \$75 to \$219 per entity, but most LEI issuers grant bulk discounts.

A legal entity is not limited to using an LEI issuer in its own country; rather, it can use the registration services of any LEI issuer that is accredited and qualified to validate LEI registrations within its jurisdiction. At the end of June 2017, 30 LEI-issuing organizations were managing more than 520,000 LEIs representing legal entities in 200 countries.

The LEI system provides online search capabilities through its Global LEI Index, a central repository of open, standardized, historical, and current LEI reference data. Any

interested party can access and search the complete LEI data pool free of charge using the web-based LEI search tool.

Establishing the Global LEI Index as the primary source of reference data identifying corporations of all sizes and market

segments could save costs, expedite the execution of transactions, and improve risk management for individual firms and the entire market. The three broad use cases in the following section demonstrate the potential value and impact of secure, instantaneous counterparty identification.



The Business Case for the LEI: From Counterparty Identification to Business Value

The LEI has business value in two broad areas:

1. It reduces transactional and operational friction, both within and among organizations.

For example, within an organization, the use of the LEI can facilitate more efficient, precise communication among functional departments and business units. Across different systems and organizations, the LEI can simplify and expedite reconciliation among different systems or networks, enabling faster identity verification when using multiple data sources.

2. They make important information about the background of a legal entity in a transaction more accessible and traceable.

For example, commercial credit providers could use the LEI to verify an entity's ownership structure before granting credit, and banks could use them to match multiple legal documents to a client when processing a specific transaction.

These benefits apply to a range of business settings. When widely deployed, the LEI reduces the time spent on manual tasks,

facilitate interaction among platforms, enhance reliability by providing a "single source of truth," and decrease the incidence of exceptions.

The need for the LEI

Identifying the entities with which an organization does business can be time-consuming, costly, and complex, especially since most organizations use multiple identifiers in multiple systems for their existing or prospective clients, business partners, and counterparties. For example, a corporation commissioning a seller's services may have several internal identification (I.D.) numbers for the same seller: an I.D. number in their seller onboarding system, another I.D. number in their seller management and invoicing system, and a third in their legal department's document management system.

Meanwhile, local corporate registers, industry associations and utilities, exchanges, credit bureaus, customs and tax authorities, and other market infrastructure players each maintain their own identification numbers for the same entity. This situation makes it nearly impossible to determine which of

these organizations has a relationship with a particular entity and has approved that entity as a credible counterparty.

Consequently, a corporation seeking to verify the identity of a legal entity that it is considering as a counterparty for a specific transaction must spend significant time and resources trying to collate and properly attribute the information available on that entity. Once gathered, the information can often be contradictory and sometimes ineffective for identification.

The reliable, instantaneous identification of an entity through its LEI can create real business value by expediting transactions and the exchange of payments. Moreover, by providing information about “who is who” and “who owns whom” among entities, the LEI also enables better traceability within and across organizations. A single LEI can be used to obtain information about ownership and parent-subsidiary relationships to facilitate checks for multiple invoicing, for example, or to verify the parent company’s credit capacity based on its subsidiaries’ assets.

Select business use cases

The use of LEIs as a common identifier for entities has a wide range of business use cases—for industry utilities and databases, market authorities, and a corporation’s own internal systems. These business cases span multiple industries, business activities, and functions, and the benefits accrue to both individual market participants and the entire business community.

The following sections describe select use cases for the LEI that illustrate the breadth of its potential applications. The use cases—

which are not exhaustive—span 1) capital markets, 2) commercial transactions and 3) the extension of commercial credit. They discuss the types—and in some cases the magnitude—of benefits that can be realized.

In these use case examples, the LEI yields benefits throughout the lifecycles of both the customer relationship and the transaction. It does so by reducing friction in key processes and by enhancing traceability and access to information.

Capital markets: Securities trade processing, client onboarding, and client documentation

The origins of LEI adoption in capital markets

Market participants involved in OTC derivatives trading were the first to widely adopt and use LEIs. In the United States, the Dodd-Frank Act’s requirement that entities report their OTC derivatives activity sparked a push toward implementing an identification system for such entities. With its rules on the implementation of the Dodd-Frank Act, the U.S. Commodity Futures Trading Commission (CFTC) specified the use of the LEI. In Europe, the use of the LEI was mandated by, for example, the European Market Infrastructure Regulation (EMIR).

Current use of the LEI in capital markets, beyond OTC derivatives

Once they had obtained LEIs, banks discovered benefits beyond the ability to instantaneously identify counterparties in OTC derivatives transactions. In particular, banks have found that the LEIs has additional applications that span the entire lifecycle of the client relationship—from the pre-onboarding phase through conducting the necessary on-

boarding checks, signing trading documents, and trading with the client.

Adoption of the LEI for uses beyond OTC derivatives varies across the industry. Several investment banks are already leveraging the LEI during the trading phase of the client relationship to reconcile information related to their clients' positions, both within the bank and externally with their clients. At one global universal bank, internal operations teams use the LEI as the primary attribute that aggregates and reconciles client trade information, which is often stored in disparate internal systems and tagged under different client I.D. numbers. This bank found that internal communications and trade reconciliation-related tasks have been simplified and expedited through the use of LEIs.

Client onboarding has emerged as another area where banks are beginning to use the LEI as an effective identifier. A detailed description of the benefits of LEI use in onboarding follows below. Banks that have yet to adopt the LEI in trade processing or onboarding could reap benefits in terms of efficiency, speed, and improved client service. The benefits to all banks would be significantly enhanced if a greater number of legal entities obtained LEIs.

LEIs and client onboarding: KYC and documentation management

The LEI could be leveraged more broadly during the onboarding phase of the client relationship, particularly for activities related to KYC requirements and documentation management. In KYC processes, firms work to verify their client's identity by conducting due diligence. They aggregate information from various databases and utilities, each of

which use a different identifier for the same entity (Exhibit 4). This lack of consistency forces banks to spend considerable time and resources on the effort to attribute the right information to the client that they are seeking to onboard.

To further complicate this effort, different areas of the same bank may use different identifiers for the same client, and vendors engaged by the bank to assist in the collection of KYC-related information may use their own identifiers as well. As a result, what should be a simple task—collecting and maintaining client information—becomes a complex, time-consuming, and resource-intensive effort. If all players in the onboarding process tagged client information with an LEI, client identification would be much more efficient and transparent.

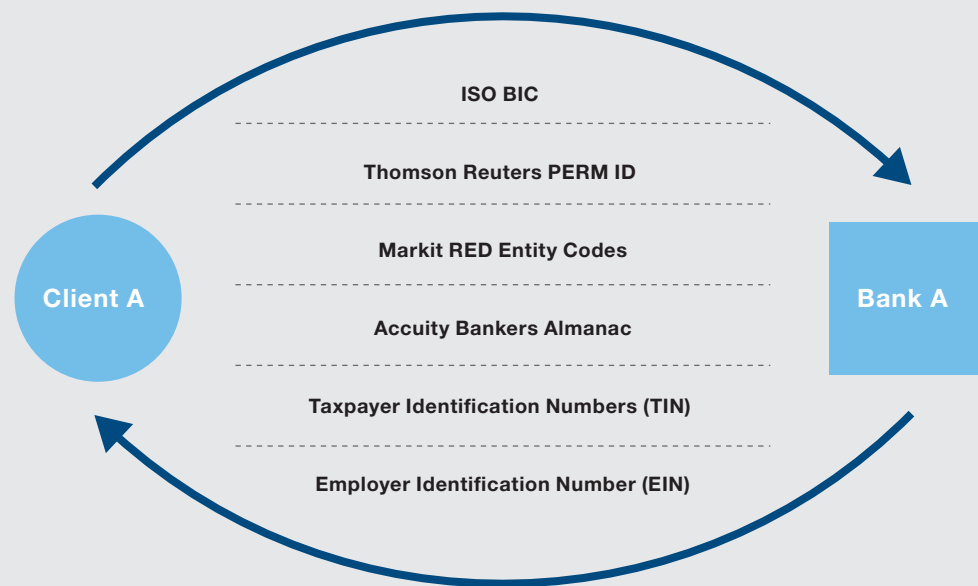
Once a client has completed the KYC phase, specific documents need to be signed before the client can trade various products. Traditionally, the documents are tagged with an internal legal entity I.D.; however, once accounts are opened for the counterparty, the account number replaces the legal I.D. as the key identifier for the client. At this point, the bank misses the chance to establish a common identifier that can link the client's account with the signed documentation that allows the client to trade.

The consequences of missing this opportunity can be dire. For example, a client, needing to raise cash quickly to pay obligations, might put in an order to sell a bond or a stock. If the bank cannot immediately locate the documents showing that the client can enter into this type of trade, the client's account could be blocked from trading. False positives are also a frequent problem: on

Exhibit 4

Different identifiers are used for the same client by different databases

Identifiers used by different sources of information for a single client



average, almost 50 percent of AML alerts potentially blocking a client from trading are false positives, according to a survey by the Association of Certified Anti-Money Laundering Specialists (ACAMS) and Dow Jones. A third of the respondents to the survey said that more than 75 percent of AML alerts are found to be false positives.

Beyond simplifying processes and ensuring good customer service, LEIs can expand FTE capacity and enable banks to do business with clients faster. Investment banks typically employ 1,000 to 1,500 FTEs who focus on onboarding. Onboarding a capital mar-

kets client takes an average of 120 days, according to McKinsey. If market participants broadly adopted the LEI, then the onboarding teams who spend much of their time identifying legal entities and tagging that information to the appropriate data could be made available for other functions. Further, the time required to onboard clients could be materially shortened so that banks could start trading with their clients much sooner, thereby improving time to revenue.

Based on its Capital Markets Trade Processing Survey, McKinsey estimates that approximately one-third of the industry's

operating costs of \$5 billion is spent on activities such as client onboarding, client trade reconciliations, trade allocations to clients, and verification of client reference data. All such activities could be simplified and streamlined if LEI use were more broadly adopted throughout the lifecycle of the client relationship. The use of the LEI in the onboarding and trading phases of the client relationship would reduce the time spent on data correction and reconciliation necessitated by inconsistent identification of legal entities (Exhibit 5).

We estimate that introducing the LEI into capital market onboarding and securities

trade processing could reduce annual trade processing and onboarding costs by 10 percent. This would lead to a 3.5 percent reduction in overall capital markets operations costs, amounting to over \$150 million in annual savings for the global investment banking industry alone.

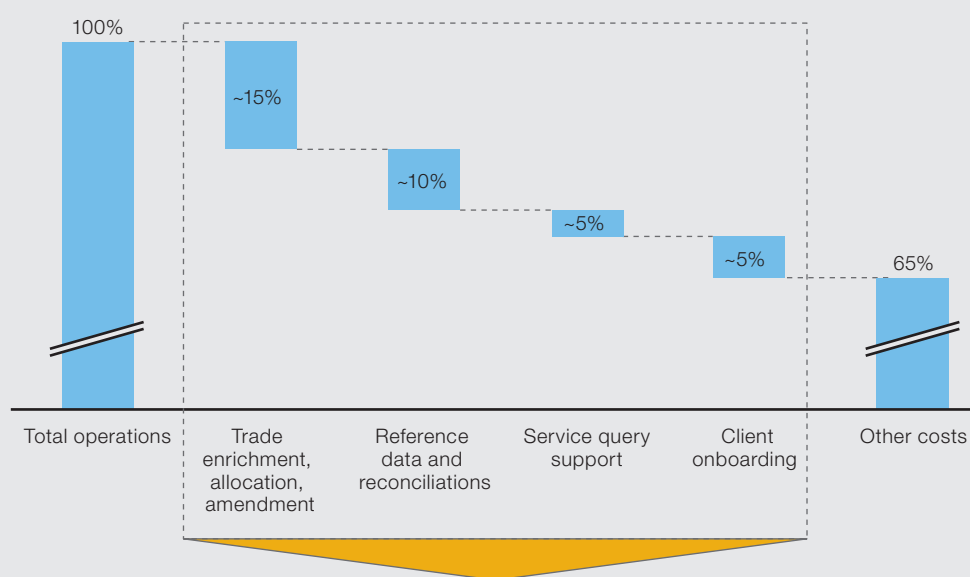
There are several uses for the LEI throughout the lifecycle of the bank-client relationship; currently the LEI is only leveraged for a subset of the potential applications. Broader application could have business benefits for banks beyond savings related to operational costs. Specifically, banks could expect to gather additional revenue by shortening

Exhibit 5

LEIs can help reduce operational costs in several capital markets processes

Annual operations costs — Global investment banks

Percentage



~35% of total trade processing costs can be streamlined through the use of LEIs

There is potential to optimize 10% of these costs, leading to 3.5% reduction in total operations costs

Source: McKinsey estimates based on expert interviews

the “time to market” for trading with customers while simultaneously improving the client experience.

Commercial transactions (B2B commerce): Trade finance and e-invoicing

The commercial transaction lifecycle

The commercial transaction lifecycle involves ordering goods, sending invoices for the goods, obtaining trade financing, producing the goods, reconciling payment, and delivering/receiving the goods (Exhibit 6). Of these steps, the LEI could have the most impact on invoicing and trade finance.

In the lifecycle of commercial transactions—especially international transactions—several manual, time-consuming activities are required to complete the transaction. In particular, verifying the identities of counterparties often involves a great deal of manual processing. The use of the LEI could automate identity verification and—as described below—enable the digitization of several of the activities required in the invoicing and trade finance steps of a commercial transaction. It could even potentially reduce the time required to exchange payments.

Exhibit 6

Key steps in international B2B trade

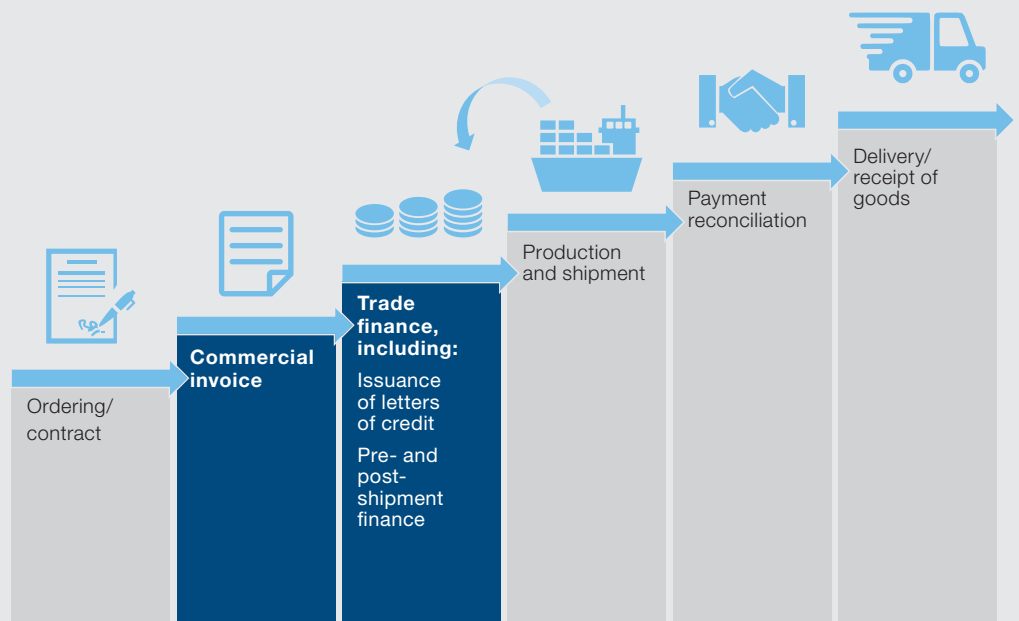
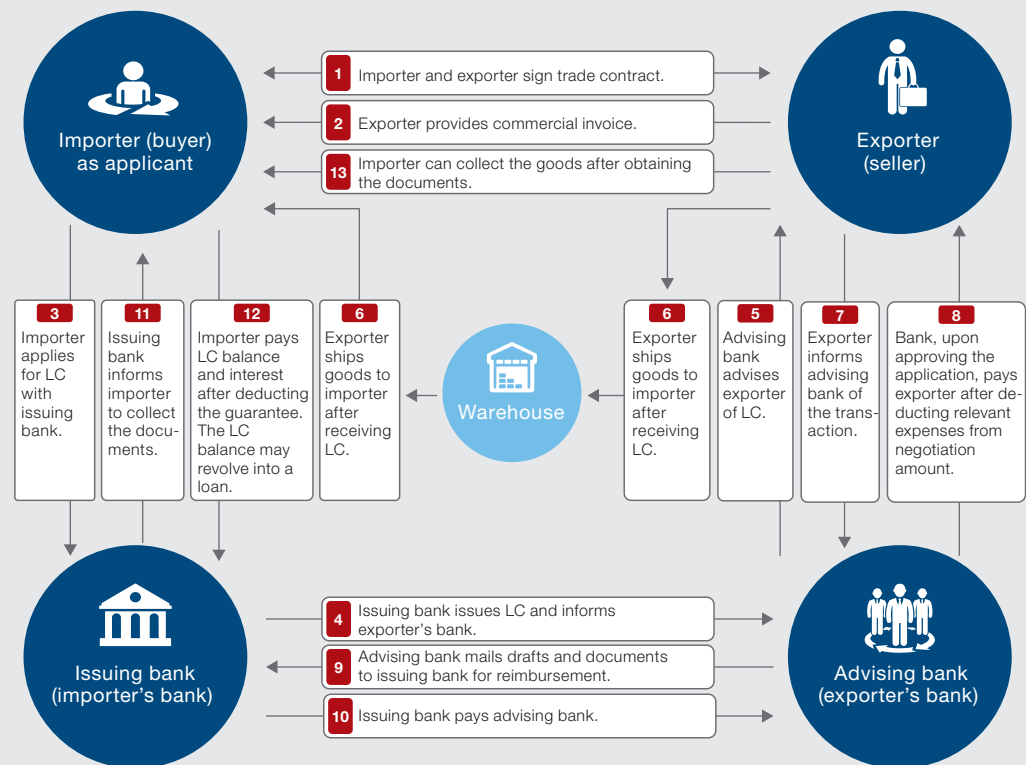


Exhibit 7

Using a letter of credit to facilitate payments in a cross-border transaction



Source: GLEIF; McKinsey & Company

LEIs and trade finance

Trade finance encompasses a broad range of products and services that facilitate international trade. In the application most relevant to LEIs, buyers obtain letters of credit (LCs) or bills of exchange from their banks to facilitate payments to sellers, and sellers use purchase orders or invoices to obtain financing for production and purchase.

The process of acquiring and using letters of credit is time-consuming and typically involves multiple steps, many of which require identity checks and reconciliation (Exhibit 7).

After completing the necessary identity checks and verifying the relevant documents, the buyer's bank issues the LC in the buyer's country and sends the LC to the seller's local bank. The buyer's bank and subsequently the seller's bank must confirm the buyer's and seller's identities—a manual, time-consuming process, as unique identifiers for the seller and the buyer are not included in the SWIFT (Society for Worldwide Interbank Financial Telecommunication) messages between the banks.

To mitigate risk and comply with AML regulations, both the buyer's bank and the sell-

er's bank must conduct several counterparty checks, including: gathering information on the nature of each counterparty's business; identifying the buyer's and seller's sources of funding; confirming that the buyer or seller is not trading in or from a country under embargo; and ensuring that the buyer or seller does not appear on any trade blacklists. These controls, too, rely heavily on manual processing and paper documentation. Moreover, banks must use a number of databases to perform these checks, but they can only search by entity name, which creates significant risk since multiple entities may have similar names.

"The LEI would help at every level. The current process is very messy. The reduction of false positives would be a clear and significant improvement."

— *Former head of trade finance at large global bank*

These manual checks could be streamlined considerably and made far less costly through the adoption of the LEI. LEIs would enable the immediate, digitized identification of entities and would allow banks to dramatically curtail the time and resources spent on background checks and investigations. These efficiencies would be compounded by reducing the incidence of false positives based on AML and other compliance lists. Rather than searching by name, institutions could simply search the relevant databases using each entity's unique LEI—or, in an advanced stage, using a single database.

In addition to facilitating AML efforts, the use of the LEI can mitigate fraud risk. Using an entity's LEI, a seller's bank could trace outstanding invoices to identify suspicious activity like multiple invoices for the same shipment.

Essentially, the LEI makes two key activities in a complicated process—verification of entities and tracking an entity's history—far simpler.

On an annual basis, banks could potentially collectively save between \$250 million to \$500 million per annum if LEIs were used to identify international entities and to automate the tracing of their history for the issuance of letters of credit.¹ At its maximum potential, these savings could represent four percent of the current global trade operations cost base. The lower end of this estimate assumes high adoption in Europe and North America with low adoption in Asia, while the higher end of the estimate assumes high adoption globally.

The estimate is derived from two sources of savings: the reduction of time spent on currently manual checks by about five minutes (on a weighted-average basis) for each letter of credit and the elimination of false positives during the multiple checks. Through the use of LEIs and subsequent automation, the time spent on manual counterparty identification and background checks could be reduced by up to a third.

In addition to these efficiencies, the use of LEIs would also facilitate better risk management by allowing banks to maintain a more holistic view of the transacting entity.

¹ Value based on 48 million LCs per year, estimated by using the total number of SWIFT (MT700 only) messages. The estimate of average savings per LC has been derived by assuming a savings of five minutes per LC that are currently spent on manual tasks. Sixty percent of LCs are impacted in the lower end of the estimate, and 90 percent are impacted in the higher end of the estimate. We assume 15 percent of total LCs are false positives that require additional manual intervention and a savings of an additional 10 minutes for these LCs.

LEIs and e-invoicing

Like any paper-based process, invoicing is manually intensive and prone to human error, which drives up costs and lengthens processing lifecycles. Digitizing invoices to enable “e-invoicing,” or online invoicing, reduces these costs and expedites processing. In e-invoicing, suppliers are assigned a unique, numerical identifier, which is automatically validated upon invoicing.

The LEI would have tangible benefits for buyers and e-invoicing networks. Faster, more reliable identification and verification of seller entities would reduce time spent on manual verification and data consistency checks while also potentially curbing the incidence of fraud. While the current global adoption of e-invoicing is nascent² and varies by region—representing 2.25 percent of invoices in Europe, 3.75 percent in Latin America, 2 percent in North America, and 1 percent in the Asia-Pacific region—the adoption of the LEI could further accelerate the use of e-invoicing as a standard due to the benefits described below.

Before engaging in transactions with sellers, buyers perform identification checks to ensure that sellers are reliable counterparties. This is especially true for large buyers transacting with smaller sellers as they attempt to comply with the Sarbanes-Oxley Act (2002) in the United States or the EU Directives (2009, also known as EuroSox), which impose corporate governance norms on corporations. These include compliance requirements related to identification of sellers as well as the need to periodically update records on seller data.

The use of an LEI could mitigate operational friction and introduce enhanced traceability

in both the initial identification of sellers as well as the subsequent updating of records. An LEI system would make seller data reconciliation for buyers more efficient and significantly reduce costs; specifically, businesses could decrease the staff needed to manage seller information and lower the costs associated with auditing and failed audits.

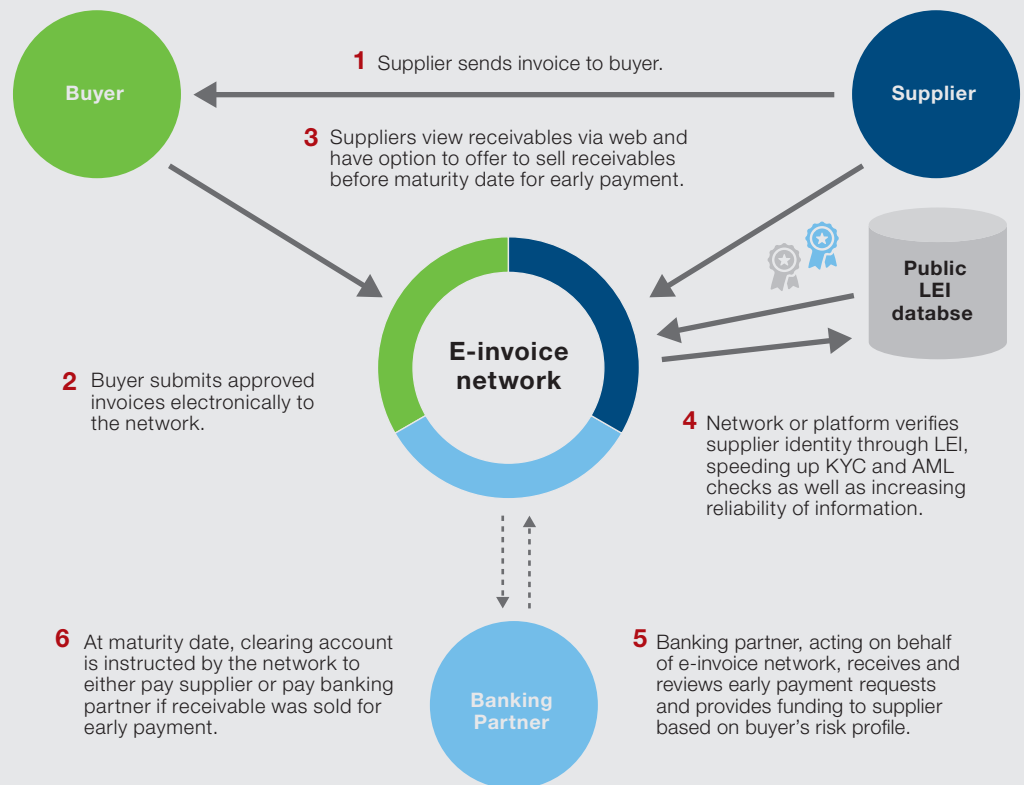
Use of the LEI could also curb the incidence of mandate fraud, in which criminals misdirect funds into their own accounts by pretending to act as the original entity. Buyers would have more current information on their sellers and a more reliable identifier, which would help detect any attempts to fraudulently reroute funds. Additionally, buyers could potentially access a wider range of sellers, as they could more reliably verify the identities of smaller or international sellers.

E-invoicing networks are not mandated to verify the identity of each seller that buyers add on to their platform; however, they do provide additional identification, verification, and completeness checks as a value-added service to buyers. Further, e-invoicing networks are increasingly providing supply chain finance services in the form of early payments against invoices and dynamic discounts based on timing of payments by buyers. Verifying sellers’ identities on behalf of buyers and providing supply chain finance services based on invoices both require e-invoicing networks to perform KYC, AML, and sanctions checks on sellers. These checks are especially time-consuming when performed for sellers that are small or based in locations with limited data sources. The success of e-invoicing networks and supply chain finance platforms depends on the

² “E-Invoicing/E-Billing - Significant market transition lies ahead,” Bruno Koch, Billentis, May 2017

Exhibit 8

Potential supply chain finance flow with use of LEI



Source: GLEIF

number of buyers and suppliers that join the network or platform. By offering the value-added seller verification service, e-invoicing networks can encourage more buyers to join their platform.

Similar to the benefit to banks, the use of an LEI would reduce the time spent by e-invoicing networks on manual checks across multiple databases and enhance the traceability and reliability of information (Exhibit 8). Further, while current interoperability among platforms is low, the availability of a unique identifier would significantly improve buyers' and sellers' ability to transact across

platforms by eliminating the need to standardize different identifiers. The use of an LEI would also curtail the need to have multiple forms of customized identifiers based on buyer requirements. Widespread adoption of LEIs would enable standardization across platforms and countries, further encouraging the use of e-invoicing on networks.

Commercial credit: Use cases across the commercial credit lifecycle

Before extending credit to commercial borrowers, a lender must ascertain the borrowing entity's identity, history, and ownership group-structure. This task is

Exhibit 9

Lifecycle of commercial credit transactions

Steps where adoption of LEI would be most beneficial

Origination	Underwriting	Administration	Portfolio Management
Identification of potential customers Initial meeting with client (data/document collection) Pre-rating of client and initial limits for product Initial offer Selection of products and collaterals Data and document preparation/collection	Draft credit application Customer rating Risk analysis (forward-looking) Collateral valuation Finalization of credit application Transaction approval Price modification and adjustment (if needed) Conditional approval	Contract preparation, validation, signing Collection and verification of documents for disbursement Customer onboarding (including final AML checks) Collateral recording and disbursement Archiving	Review of account risk using internal and external data Monitoring of changes in account performance Assessment of impact of new loans on existing account across all platforms Recommendation on potential modifications

Source: McKinsey

complicated by the fact that corporate groups and small businesses often include multiple entities with similar names. In the United States alone, there are more than 18 million small businesses with revenues less than \$10 million, and 183,000 firms with revenues between \$10 million and \$1 billion.³ Moreover, each of these entities can interact with the financial system in multiple ways and across multiple institutions, often internationally.

In this context, lenders—who often have siloed IT and data systems—may find it difficult to unambiguously identify unique

customers. Sharing data within and across institutions to manage risk and exposure becomes complicated without a unique identifier that all market participants agree on.

Broadly speaking, the commercial credit life-cycle unfolds in four key phases: origination, underwriting, administration, and portfolio management (Exhibit 9). During each of these phases, various checks are required to trace the borrowing entity's identity, history, and ownership. Since these checks involve accessing multiple external and internal databases, they are often highly manual and time-consuming, and the integrity of the

³ "The Middle Market Power Index: Fueling The Nation's Economic Growth," American Express and Dun & Bradstreet, June 2016

collected data can be questionable. Further, entities often apply for multiple loans at different times, increasing the importance of clear traceability and reconciliation across different data sources, systems, functions, and business units.

“Often, when a smaller business fills out an application, they give us different or variants of the legal names. It’s not uncommon for us to have two different products with different legal names listed. [This] creates a mess in the middle and back office. A way to standardize this would be great.”

– *Head of commercial lending strategy at a top-five global financial institution*

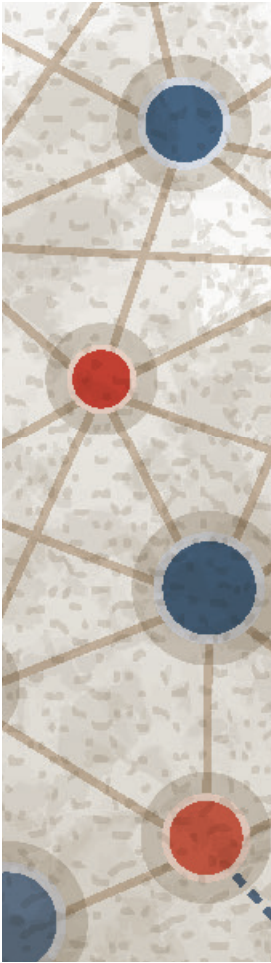
During the origination phase, having correct, verifiable information about the entity’s identity, history with the bank, and external financial/lending history is crucial so that appropriate products may be offered and risk can be assessed accurately. Often when entities fill out application forms, they fail to enter their complete name, or they enter a variation of the entity name previously used. This tendency is especially prevalent among

small and medium size businesses as well as affiliates of larger groups. The use of an LEI would help to standardize this vital information and thus would significantly reduce the time that banks’ middle and back offices spend on manual verification processes.

The ability to easily and accurately trace an entity’s history is even more helpful during the underwriting phase, when the final risk analyses and credit approval are undertaken. During the administration phase, when an entity is being on-boarded to the lender’s systems, the use of a single identifier would strengthen and accelerate the required AML and compliance checks.

After the loan is issued and the portfolio management phase begins, the lender must use internal and external data to review account risk while also monitoring changes in account performance. These tasks require a considerable amount of data reconciliation to ensure an up-to-date, accurate assessment of the borrowing entity’s risk profile based on its financial health, legal background, and transactions. The use of LEIs here would expedite data reconciliation and help to ensure its accuracy.

In all four phases, the use of an LEI would facilitate the automation and digitization of processes by providing a new data field that could be standardized across all systems.



Scaling Adoption of the LEI

To realize the full potential of the LEI, a substantial number of businesses would need to adopt it to set the necessary network effects in motion. In the near term, adoption can begin with select use cases that build on LEIs' current use in capital markets. This initial application will help strengthen and refine the LEI value proposition for all stakeholders.

Discussion among the primary LEI beneficiaries and users for specific use cases is expected to encourage adoption. Banks would play a major role in driving adoption in trade finance and commercial lending and thus should consider innovative approaches to encouraging adoption among customers, particularly small businesses. Simultaneously, adoption by regulators who signed the charter of the LEI Regulatory Oversight Committee⁴ in 2012 and have yet to add the LEI to their rulebooks could provide additional impetus for adoption.

To become a feasible standard, the LEI must be able to work within existing systems as adoption increases. An example is GLEIF's plan to reconcile to and confirm SWIFT's full BIC-to-LEI mapping. The BIC is commonly used as part of messaging, which financial institutions use to communicate, and is also used in SWIFT's KYC utility.

An encouraging sign of LEI adoption in emerging technologies is the potential adoption by R3, an enterprise software firm currently working with a consortium of more than 80 banks. R3 is building an operating system, based on Distributed Ledger Technology, that facilitates more efficient and reliable communication and transaction processing within and across banking systems. As a first step, R3 is considering using the LEI as the primary identifier embedded in its digital certificates, which are used to confirm the identity of a transacting identity.

The use of the LEI as a default identifier by distributed-ledger-based technologies and other emerging technologies demonstrates how adoption can be leveraged to scale up to industry-wide implementation of the LEI. In such applications, the LEI would provide the tangible benefits described—reduction of friction and information traceability—while also curtailing the implementation costs of adding a new identifier to existing processes. As the adoption of these innovative technologies proliferates, the LEI would add value by bringing additional efficiency to the new technology.

Based on dozens of interviews with leading industry professionals and experts, as well as secondary research on existing, LEI-enabled processes, we can state that there are

⁴ The LEI Regulatory Oversight Committee is a group of public authorities from around the globe established to coordinate and oversee a worldwide framework of legal entity identification, the Global LEI System: <http://www.leiroc.org/>.

multiple use cases beyond the three identified in this paper. Operational efficiencies, cost savings, reduction of time to transact with clients, and more reliable information can be gained by introducing the LEI into almost any process that requires identification and verification of a counterparty and that has a manual component.

For companies of varying sizes across different industries, the LEI can enable cost savings, expedited payments, and improved customer experience. While the value of LEI use is clear, the adoption of LEIs depends on

achieving the network effect within industry subgroups. This effect can begin with further discussion among beneficiaries and other stakeholders. As new use cases for the LEI take hold and companies and the banking institutions financing their activities work with each other to encourage the adoption of the LEI, the benefits and business value described above will grow, and easier counterparty identification will open the door to further automation and digitization of financial and commercial transactions around the globe.

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