Markets

The Illustrated Misadventures of the World's Most Important Number

The rise and fall of Libor—and a look at what comes next.

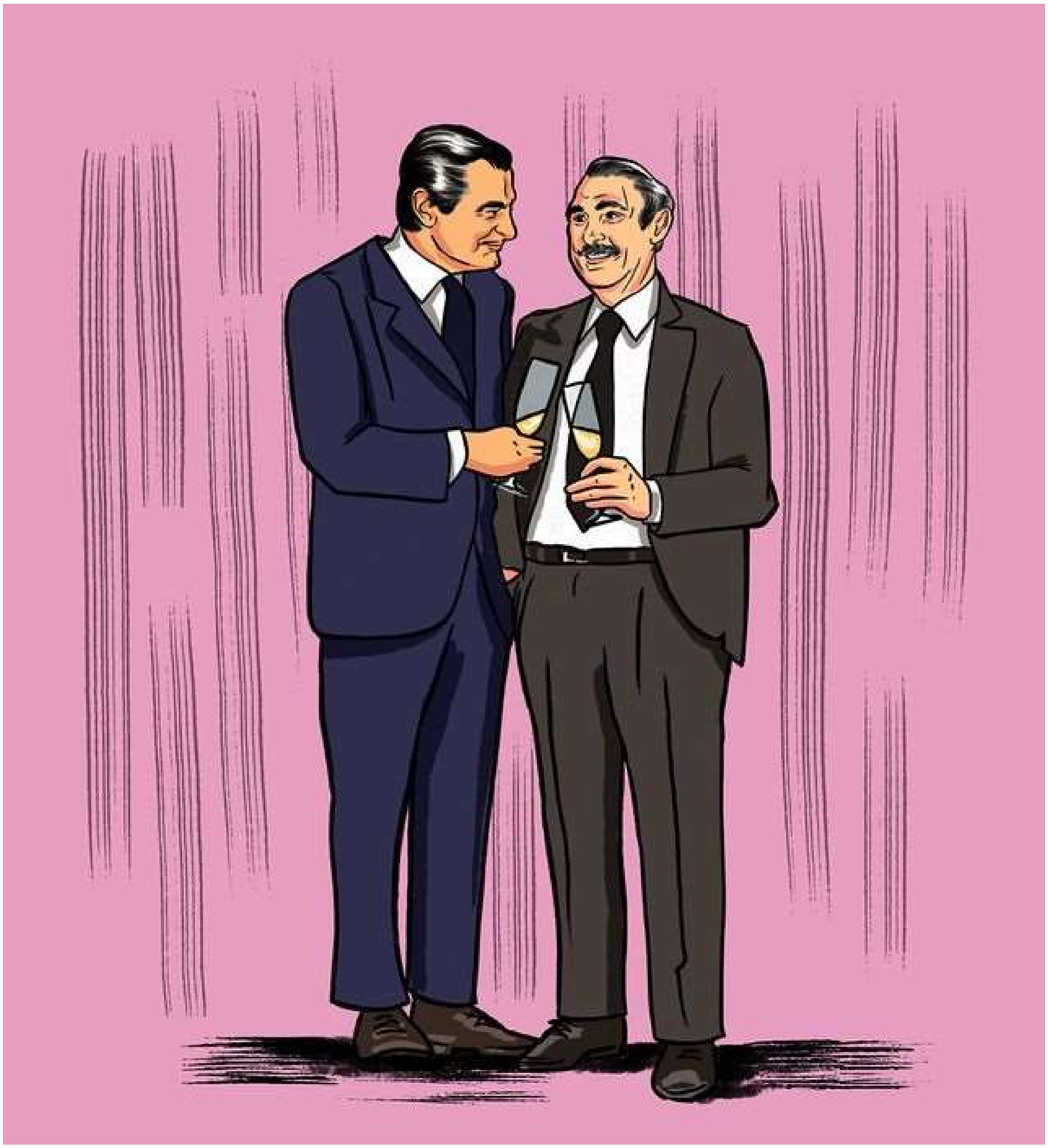
By William Shaw and Alex Harris
Illustrations by Jaya Nicely
December 10, 2021, 12:01 AM EST

In January the financial world will bid farewell to a measure that has guided banking for half a century. Called Libor, the London interbank offered rate, it represents banks' average cost for short-term borrowing. Companies will need to use an alternative for all new transactions–loans, bond sales, hedges against rising and falling interest rates. What follows is a brief history of the spectacular and scandalous career of the world's most important number, as well as a look at what happens next.

Libor underpins $223 trillion in dollar-denominated financial products. **It reaches everywhere.** Investment firms and businesses use it to enter into contracts, called derivatives, which help to balance risk, as well as for speculation. Libor determines the price businesses pay for loans and consumers pay for credit cards, auto loans, and mortgages.

Derivatives	**$214T**
Consumer Loans	**$1.4T**
Business Loans	**$4.8T**
Bonds and Securitized Debt	**$2.7T**
Total	**$223T**

In 1969, **Minos Zombanakis**, a Greek banker at Manufacturers Hanover in London, arranges an $80 million loan to the Shah of Iran. It's one of the first debt instruments to charge a variable interest rate that reflected changing market conditions and was meant to be split among a group of banks. He celebrates with Champagne and caviar at his desk in London with **Khodadad Farmanfarmaian**, the governor of Iran's central bank.



In 1970, **Evan Galbraith**, an investment banker who'd later become U.S. President Ronald Reagan's ambassador to France, is said to have come up with the idea of pegging a bond to Libor. It's known as a floating-rate note. Some even say the idea came to him in the bath—while he was playing with a toy duck.

Rick Kilcollin, an economist at the Chicago Mercantile Exchange, wants to help traders come up with a benchmark for their interest rate bets. He looks for a number to represent bankers' three-month borrowing costs. In 1981 he comes up with a method: **He samples banks, throwing out the two highest and lowest numbers** and averaging the rest. As he tells it, Libor's approach is born.

~~0.12675~~	0.12363
~~0.12663~~	0.12363
0.12400	0.12225
0.12400	~~0.12175~~
0.12375	~~0.12113~~

In April 2008, **Scott Peng**, a strategist at Citigroup Global Markets Inc. in New York, sends a research note to clients on Wall Street. The message: The unfolding financial crisis appeared to show that **Libor didn't represent true borrowing costs.** Later that month the Wall Street Journal published an article suggesting banks were lowballing their figures to avoid the perception that they were having trouble borrowing.

In September 2008, **Lehman Brothers files for bankruptcy**, a signal moment of the worldwide financial crisis. Banks won't lend to each other, and money-market funds go haywire. The collapse exposes a weakness in the interbank lending that forms Libor's backbone.

Authorities investigate whether banks have been rigging Libor to boost profits in their institutions' derivatives-trading businesses. In

December 2012, **Tom Hayes**, a former star derivatives trader at UBS Group AG and Citigroup Inc., hears banging on his door. It's officers from the City of London Police and the U.K.'s Serious Fraud Office.

Hayes is wearing only his **boxer shorts**, he recalls.

*May 2021 Interview with Bloomberg News

From 2014 through 2016, five traders are convicted of or plead guilty to criminal charges related to manipulating Libor to boost profits. Hayes, who's convicted in 2015, maintains his innocence, and several of his alleged co-conspirators are acquitted. **A judge sentences Hayes to 14 years in prison.** He's released on parole in 2021.

*May 2021 Interview with Bloomberg News

U.S., European, and U.K. regulators fine banks more than $9 billion in Libor-related cases. The authorities say banks submitted artificially high or low rates so they could profit from their own derivatives trading. In paying penalties, Deutsche Bank and Barclays accept responsibility for employees' behavior; Société Générale admits to making false submissions. UBS, Royal Bank of Scotland, Rabobank, Lloyds, and ICAP blame misconduct by employees.

Libor-related penalties

Deutsche Bank	**$3.5B**
UBS	**$1.7B**
Rabobank	**$1.1B**
Royal Bank of Scotland	**$1.1B**

Société Générale	**$1.0B**
Barclays	**$551M**
Lloyds	**$370M**
ICAP	**$87.4M**

Note: Includes penalties related to rigging Euribor, a Libor-like benchmark

Since 2014 the world's regulators have been pushing for banks to replace Libor. Starting in January, banks must choose a benchmark for their new dollar-based contracts, and old Libor products will wind down as they reach maturity. **Libor is expected to disappear entirely in mid-2023.** Some of the new rates are based on actual transactions, so they'll be tougher to manipulate. While Libor is calculated for five major currencies—the dollar, euro, pound, Swiss franc, and yen—other countries are reforming their own Libor-like reference rates. Here are the leading contenders for successors to Libor denominated in U.S. dollars.

The Secured Overnight Financing Rate

The Federal Reserve's preferred benchmark is based on repos, overnight loans backed by U.S. Treasuries. It's a huge market, which offers robust data. For years, SOFR was only an overnight rate, but it has expanded to other periods. Drawback: It lacks a component that reflects credit quality.

The Bloomberg Short-Term Bank Yield Index**

Based on Financial Industry Regulatory Authority data, the index tries to measure banks' actual borrowing costs. It tracks rates on banks' unsecured funding, such as commercial paper, deposits, and short-term bonds. Drawback: Unsecured bank funding is thinly traded.

**BSBY is administered by Bloomberg Index Services Ltd., a subsidiary of Bloomberg LP, the parent of Bloomberg News.

Ameribor

Based on average transactions in the overnight loan market between banks, broker-dealers, and private equity firms on the American Financial Exchange, Ameribor reflects actual borrowing costs of mostly small and midsize banks. Drawback: It doesn’t reflect borrowing costs of multinational institutions.

The ICE Bank Yield Index

Introduced as a framework by Libor’s overseer, it’s based entirely on real issuance, including banks’ commercial paper and certificate of deposit issuance. The index measures rates over multiple periods. Drawback: Not ready yet. It’s based—like BSBY—on thinly traded unsecured bank funding.