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Tracking the Libor rate

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Abstract

With an eye to providing a methodology for tracking the dynamic integrity of prices for important market indicators, in this article we use Benford second digit (SD) reference distribution to track the daily London Interbank Offered Rate (Libor) over the period 2005 to 2008. This reference, known as Benford's law, is present in many naturally occurring numerical data sets as well as in several financial data sets. We find that in two recent periods, Libor rates depart significantly from the expected Benford reference distribution. This raises potential concerns relative to the unbiased nature of the signals coming from the 16 banks from which the Libor is computed and the usefulness of the Libor as a major economic indicator.

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Notes

[1]Among many who have used Benford's law to check the validity of purported scientific data in the social sciences, see Varian (1972), Giles (2007), Cho and Gaines (2007) and Judge and Schechter (2009). See Abrantes-Metz and Bajari (2009) to study how statistical methods have started to be used in antitrust and finance to detect a variety of conspiracies and manipulations.

[2]The FFE rate is the interest rate at which banks (and other depository institutions) lend balances through the Federal Reserve Bank to other depository institutions. Because this rate is usually applied to overnight loans, it represents a short-term rate of borrowing between banks, making it a suitable benchmark for our study.

[3] , where e_i is the observed frequency in each bin in the empirical data, b_i the frequency expected by Benford. This statistic has 9 degrees of freedom with the 10%, 5% and 1% critical significance values of 14.98, 16.92 and 21.97, respectively.

[4]A short-term debt obligation backed by the US government with a maturity of less than 1 year. T-bills are sold in denominations of $1000 up to a maximum purchase of $5 million and commonly have maturities of 1 month (4 weeks), 3 months (13 weeks) or 6 months (26 weeks). The T-bill is also an important benchmark for short-term contracts with a price that is determined by the market.

[5]We also note that all of the analyses presented in this article were run for the 3-month Libor, with the same qualitative findings and in (Abrantes-Metz and Villas-Boas (2010)) using the individual bank's quote data we perform similar SD frequency divergence analyses yielding consistent results.

[6]On 17 April 2008, the Wall Street Journal (WSJ) published the news that the BBA intended to investigate the composition of these rates and this initiated a series of articles (see e.g. Abrantes-Metz et al., 2008).

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Detecting Problems in Survey Data Using Benford's Law
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