



# Bulletin

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# Developments in financial market benchmarks

Andrew Kendall<sup>1</sup>



Financial market benchmarks play an important role in the functioning of modern financial markets. Benchmarks are widely used to price, value and evaluate financial market transactions. It is therefore extremely important that these benchmarks are reliably measured, transparent, and are supported by strong governance arrangements.

Following the global financial crisis (GFC), international investigations revealed that several key interest rate benchmarks had been manipulated. This reduced confidence in the benchmarks and the financial system. Since then, significant reforms have been initiated by regulators around the world to improve the processes by which financial market benchmarks are generated, and ultimately improve confidence in these measures.

This paper discusses the recent developments in reform progress, with a particular focus on short-term interest rate benchmarks around the world, before turning to the New Zealand experience. Section 1 outlines what financial benchmarks are and why they are important, while section 2 discusses the London Interbank Offered Rates (LIBOR) scandal and the subsequent reform progress. Section 3 covers developments in the bank bill rate benchmark in New Zealand, including the implications of the decline in

volumes being traded in the market. Some possible solutions are provided. Recent changes to the calculation of closing market rates in New Zealand are discussed in box 1. Section 4 concludes.

## 1 What are financial market benchmarks?

Financial market benchmarks (benchmarks) are indices or indicators used as reference prices for financial instruments or contracts, or to measure the performance of investment funds. Benchmarks play a vital role in the functioning of modern financial markets. While prices for many financial market variables are constantly available via services such as Thomson Reuters or Bloomberg, these prices may be provided by a few institutions, or one only; or priced only for some counterparties. Benchmarks are designed to be representative of wider market conditions, providing participants information about the 'going price', thereby reducing information asymmetry. Increased transparency on financial market prices encourages greater market participation and improves market efficiency. Given the importance of benchmarks, it is crucial that they are reliably measured, transparent, and are supported by strong governance arrangements.

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There are a wide range of benchmarks across countries and markets, including for interest rates, equities, credit, commodities and foreign exchange (FX). Some benchmarks are considered to be ‘systemically important’ or ‘critical’. Such benchmarks may lead to financial market contagion or financial instability if they become unavailable or lose integrity.<sup>2</sup> Table 1 summarises some of the more commonly quoted financial benchmarks.

Benchmarks are used by a range of market participants for a number of reasons. Some uses include:

- as a reference rate in a range of financial instruments, such as in interest rate swaps;
- as a part of financial contracts, such as for corporate loans;
- as a reliable measure of prices in FX, equity, and bond markets;
- as a measure of prices in commodity markets, allowing for hedging of risk through forwards markets;
- as a comparison of return for various investment funds; and
- for investment management purposes for financial institutions and governments, including portfolio revaluation.

**Table 1**  
**Examples of frequently used financial market benchmarks**

Equities	Interest rates	Foreign exchange
S&P 500 (US)	LIBOR (US,UK)	EURUSD WM/ Reuters fixing
Euro Stoxx 600 (Europe)	EURIBOR (Europe)	GBPUSD WM/ Reuters fixing
ASX 200 (Australia)	BBSW (Australia)	NZDUSD WM/ Reuters fixing
NZX 50 (New Zealand)	BKBM (New Zealand)	
Commodities	Credit	
Brent crude (oil)	BofA Merrill Lynch US Corporate AAA Spread	
West Texas Intermediate (oil)	BofA Merrill Lynch US High Yield Spread	
LMBA gold fix	ITRAXX Europe	
Bloomberg Commodity Index	CDX North America Investment Grade	

## 2 Recent international developments in short-term interest rate benchmarks

### *LIBOR scandal*

The LIBOR is a systemically important interest rate benchmark where contributing banks submit, based on their expert judgement, the interest rate at which they believe they could borrow cash in the interbank market

<sup>2</sup> ASIC (2015) provides more detail about what attributes would lead to a benchmark being considered as systemically important.

for various durations at 11am London time. Some estimates suggest LIBOR is used as a reference rate in up to \$800 trillion worth of financial instruments worldwide, and is frequently part of mortgage, corporate and other contracts.

Confidence in LIBOR has been shaken following investigations in 2012 that found evidence of significant and systematic manipulation of LIBOR rates. The manipulation occurred as some banks attempted to make their borrowing costs appear lower by reporting a lower rate than at which they could actually borrow. This was to help make their bank appear more stable and credit worthy. This was particularly important during the global financial crisis (GFC), when banks became much more wary of lending to each other. In addition, some banks also manipulated LIBOR rates to profit from derivative positions than referenced LIBOR held by traders at the same institution. These developments in the LIBOR market have cast a spotlight on the integrity of other key interest rate benchmarks.

### *Regulatory reform*

The LIBOR scandal led to the banks involved paying significant fines to governments by the banks involved and more than 20 bank employees being criminally charged. There have also been numerous private settlements with other organisations and municipalities that hold contracts where interest rates had been manipulated. Following the revelations, the United Kingdom Government launched a review of LIBOR, which evaluated options for reform.

The “Wheatley” Review<sup>3</sup> found fundamental problems with the calculation and supervision of the LIBOR setting process, but ultimately concluded

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3 Martin Wheatley was the head of the UK Financial Services Authority and led the review. See HM Treasury (2012) for more details.

that LIBOR should be reformed, not replaced. It recommended a “ten-point plan” for reform, which included new regulations, reform of the submission process, new guidelines for contributing banks, and immediate changes to LIBOR.

Since then, a number of other reforms have been initiated globally to improve the reliability and robustness of benchmarks more generally. In 2013, the International Organization of Securities Commissions (IOSCO) – the international body that is recognised as the global standard setter for securities regulation – released a set of principles by which financial benchmarks should abide. These best-practice principles were subsequently endorsed by the Group of Twenty (G20<sup>4</sup>). The principles are aimed at benchmark administrators and provide guidance on governance, benchmark quality, methodologies used, and accountability arrangements. The IOSCO principles are summarised in table 2, overleaf.

The Financial Stability Board (FSB) – the international body that monitors and makes recommendations about the global financial system – released a report in mid-2014 titled “Reforming major interest rate benchmarks”.<sup>5</sup> The report details six key principles for change. The aim of the principles was to provide a framework of change and guide transition to alternative, additional, or reformed rates.<sup>6</sup>

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4 The G20 is an international forum for the world’s leading economies to come together to study, review and promote high-level policy issues.

5 See Financial Stability Board (2014a) for more detail.

6 The FSB also released a report detailing recommendations for reform in the FX market. The report outlines 15 recommendations to address issues with incentives and opportunities for improper trading behaviour, with a focus on the London WM/Reuters FX benchmarks. In response to the recommended changes, the administrator of the benchmark widened the window used to calculate the FX benchmarks from one minute to five minutes and began to incorporate a wider range of data sources. See Financial Stability Board (2014b) for more detail.

**Table 2**  
**Summary of IOSCO Principles†**

Issue	Details
Governance	<p>The IOSCO Principles ensure that benchmark administrators:</p> <ul style="list-style-type: none"> <li>• have appropriate governance arrangements in place in order to protect the integrity of the benchmark process;</li> <li>• retain primary responsibility of the benchmark determination process;</li> <li>• provide oversight for any third parties that participate in the process; and</li> <li>• have an appropriate control framework and oversight function so that any potential conflicts or other issues are identified and dealt with.</li> </ul>
Benchmark quality	<p>The IOSCO Principles:</p> <ul style="list-style-type: none"> <li>• promote the quality and integrity of benchmark determinations through proper design;</li> <li>• ensure the design of the process reflects the underlying economic realities of the interest that the benchmark seeks to measure and based on values that have been formed by competitive forces of supply and demand;</li> <li>• note there should be the establishment of clear guidelines regarding the hierarchy of data inputs and the exercise of expert judgement; and</li> <li>• require the administrator to describe and publish a concise explanation of how the benchmark determination was developed, and the basis upon and extent to which expert judgement was used.</li> </ul>
Methodology	<p>The IOSCO Principles:</p> <ul style="list-style-type: none"> <li>• promote the quality and integrity of benchmarks by setting out minimum information that should be addressed in the development of methodologies;</li> <li>• note there should be a Submitter Code of Conduct that addresses responsibility of data submitters;</li> <li>• ensure the documentation and publication of the methodology used to make benchmarks determinations, as well as procedures should changes occur; and</li> <li>• require appropriate internal controls over data collection and transmission processes.</li> </ul>
Accountability	<p>The IOSCO Principles:</p> <ul style="list-style-type: none"> <li>• that benchmark administrators establish complaint processes, documentum standard and audit reviews intended to provide evidence of compliance with quality standards; and</li> <li>• that relevant documents are made readily available to regulatory authorities.</li> </ul>

† The full set of principles can be found in The Board of the International Organization of Securities Commissions (2013).

The FSB notes that the overarching objective should be to transition benchmark rates to those that are anchored in actual transactions, rather than relying on expert judgement. Where these data are unavailable, perhaps due to market liquidity, the preference is for rates derived on a ranking system of different data types, with underlying transactions first, then transactions in related markets, then committed quotes, and then indicative quotes. The FSB supports the IOSCO principles; the FSB's principles and guidance are more around how benchmark operators should transition towards enacting them.

Following the release of the guiding principles from IOSCO and the FSB, widespread regulatory changes have been initiated around the world, including in the United Kingdom, European Union, Canada, Hong Kong, Japan, and Singapore. These reforms have largely followed the spirit of the guiding principles, while being adapted for local trading conditions. Work is continuing on the full implementation of these reforms.<sup>7</sup>

### 3 New Zealand developments

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This section predominantly focusses on developments in New Zealand's primary short-term interest rate benchmark, the bank bill rate benchmark (also known as 'BKBM'). BKBM rates have always been based on actual transactions, consistent with the IOSCO principles. However, a number of other improvements to the framework have been made in recent years, consistent with IOSCO and FSB principles. This section also highlights issues affecting the BKBM benchmark owing to the observed

decline in volumes being traded in the market. Alternative benchmarks are also discussed.

#### *Bank bill rate benchmarks*

Bank bills are short term (up to 12 months maturity) debt instruments issued by banks to raise funding. Investors seek to hold bank bills as they generally provide a good short-term return relative to their risk levels. Banks may also hold bank bills issued by other banks, usually to temporarily manage extra liquidity.<sup>8</sup>

Since the global financial crisis, domestic banks have reduced their reliance on short-term wholesale market funding in favour of more stable sources of funding, such as retail deposits, and long-term wholesale funding sources (bonds). This behavioural change has been reinforced through regulatory changes, such as the implementation of the Core Funding Ratio in 2010, and pressure from bank stakeholders and rating agencies.<sup>9</sup> In 2010, over \$20 billion of Prime Bank bills were outstanding; currently there are only about \$9 billion (figure 1).

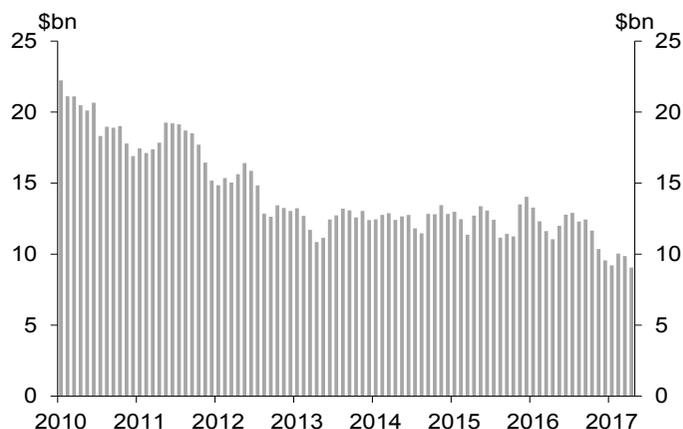
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7 An update of progress can be found in Financial Stability Board (2016).

8 For example, a bank may have raised funding from an overseas bond issue, but have no immediate use for these funds. Purchasing bank bills provides a way to manage this excess liquidity until the funds are needed for other purposes (such as lending for mortgages).

9 For more information on the Core Funding Ratio see Hoskin, Nield and Richardson (2009).

**Figure 1**  
**New Zealand**  
**Prime**  
**Bank bills**  
**outstanding**  
*(monthly*  
*average)*



Source: NZClear, RBNZ calculations.

In New Zealand, rather than LIBOR, the key short-term interest rate benchmark rates are the bank bill rates calculated at the time of the BKBM Trading Window (between 10:20-10:22 am). The BKBM benchmark rates are currently calculated from one to six month durations, and published daily by the New Zealand Financial Markets Association (NZFMA) at about 10:45 am.<sup>10</sup> These rates are used in a large number of financial contracts that influence all areas of the economy. In addition, while not the original or primary purpose of the benchmark, bank bill rates give an indication as to short-term funding conditions for banks, especially when compared to changes in rates for Overnight Index Swaps (OIS).

## Calculation of BKBM

The capture and calculation of the BKBM benchmark rates (and also commonly referred to as the ‘rate set’) is the responsibility of the NZFMA. The overall process is managed by the NZFMA Rates Committee, with oversight provided by the NZFMA Benchmark Oversight Committee. The Rates Committee is responsible for reviewing the operational management of the process and provides recommendations to the NZFMA Board concerning the operation of the benchmark.

The aim of the rate set process is to get accurate, reliable measures of the mid-rate of Prime Bank Eligible bank bills at the time of the BKBM Trading Window. Prime Bank Eligible bank bills are issued by the five largest banks in New Zealand: ANZ, BNZ, Westpac, ASB and Kiwibank. Given the eligible banks all have similar or the same credit rating and bank bills are relatively short-term instruments, the bills are considered “fungible” with each other, i.e. the market is willing to trade the bills of one bank at rates equivalent to those pertaining to another Prime Bank’s bills.

The participants in the rate set process include those banks whose bills are eligible and others that meet specific prerequisites such as membership to the NZFMA and being active participants in the market. In addition to the five current issuer banks, only Citibank is considered an active participant at the rate set.

The capture of the transactions and rates is completed by the two main financial market brokers in New Zealand: ICAP and OMF. During the Trading Window, the participating banks provide a feed of their bid and offer rates for bank bills, and any transactions that occur are recorded. Following the end of the Trading Window, the NZFMA uses the data to calculate the rates, and publishes them to paying members at approximately 10:45 am.

<sup>10</sup> The NZFMA is the professional body for institutional banking in New Zealand.

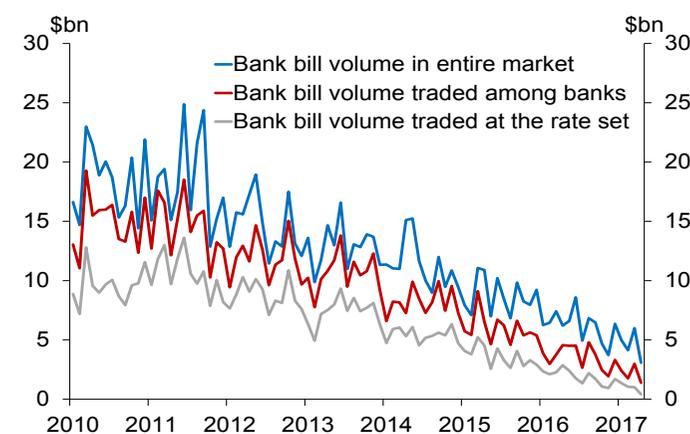
In line with the current IOSCO principles, the rate calculation is based on a hierarchical process. If available, the benchmark rate is the weighted average rate of any trades that occurred at the specific duration (one, three or six months). If no trades occur, bid and offer rates are used to calculate a mid-rate, with interpolation used for rates between the one and six month tenors. Other outcomes could occur depending on the available data.<sup>11</sup> Finally, if no bid or offer data are available, the previous day's rate is used.

The method and calculation of the BKBM has evolved over time. Notably, the framework has been designed to align with the new IOSCO and FSB principles. Some of the main changes have been: to introduce a better governance system (including the introduction of the Benchmark Oversight Committee); to widen the Trading Window from one to two minutes; the creation of operation guidelines that include rules and penalties for participants; and the move from banks contributing rates directly to the NZFMA to the capture by brokers. The NZFMA has also recently improved the framework for the capture and publication of a wider range of important financial markets prices at the end of each trading day. These changes are discussed in box 1.

### *Key issues with BKBM*

While significant improvements have been made to the BKBM rate capture process over time, some issues still warrant attention. Most notably, there is growing concern about the declining volumes of bank bills being traded during the rate set. Lower volumes indicate that the market is less liquid, which may mean published BKBM rates are less representative of underlying market conditions and less credible. This

**Figure 2**  
Traded  
volume of  
NZ Prime  
Bank bills  
each month



Source: NZClear, NZFMA, RBNZ calculations.

section examines these claims by looking at the underlying data and drawing on discussions with market participants.

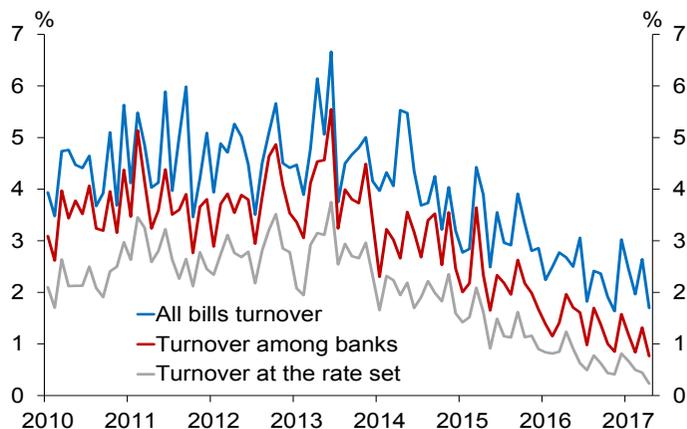
Using data sourced from NZClear<sup>12</sup> and the NZFMA, figure 2 shows the total monthly volumes of bank bills traded in the daily BKBM rate set, the total monthly volume traded between the participating banks (including the rate set) and the total monthly volume of bank bills traded among all market participants. A clear downward trend in all three series is evident since mid-2011, with total trades in the market falling from a peak of \$25 billion in September 2011 to only \$3 billion in April 2017. Volumes of trading in bank bills between banks and at the rate set have also fallen significantly over time.

Turnover statistics also show a downward trend in activity, albeit starting later (figure 3). Peak turnover of bank bills as a percentage of total bills on issue was 7 percent in June 2013, but has fallen to 1.70 percent in

11 For a more complete hierarchy see New Zealand Financial Markets Association (2015).

12 NZClear is the real-time settlement system used to clear and settle transactions in New Zealand, including those for bank bills.

**Figure 3**  
**Turnover of Prime Bank bills**  
*(average daily traded volumes as a percentage of total bank bills on issue)*



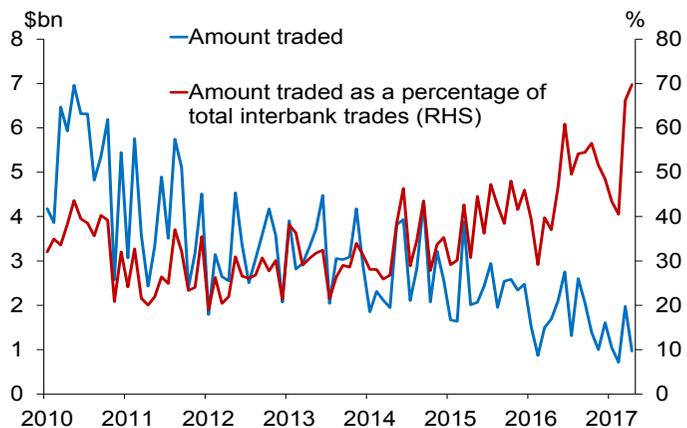
Source: NZClear, NZFMA, RBNZ calculations.

April 2017. Interbank and BKBM rate set turnover have also fallen at a similar pace to the decline in the wider market.

Another important metric to consider is the volumes traded between banks inside and outside the BKBM rate set. Ideally, both trades occurring inside and outside the rate set should reflect the underlying market. While we do not have the data to compare pricing of trades inside and outside of the rate set window, we can compare the relative amount of trading that has occurred inside and outside the rate set over time. A rising proportion of trades occurring outside the BKBM rate set creates the risk that the BKBM rates are becoming less representative of the market overall, thereby affecting the credibility of the benchmark.

The absolute amount of interbank volume traded outside the BKBM rate set each month has fallen over time, from as high as \$7 billion in May 2010 to only \$1 billion in April 2017 (figure 4). However, while trades outside the rate set have fallen, trading inside the rate set window has declined even more. This can be seen when considering the interbank

**Figure 4**  
**Monthly interbank bank bill volume not traded at the BKBM rate set**



Source: NZFMA, NZClear, RBNZ calculations.

bank bill trades outside the BKBM rate set as a percentage of total interbank trades. Between 2010 and 2014, the percentage traded outside the BKBM rate set averaged about 30 percent, with the BKBM rate set being the main point of liquidity for the market. However, since 2014, the percentage traded outside the BKBM rate set has trended higher, rising as high as 70 percent, although this can be volatile month-to-month.

Trading between banks that occurs outside the BKBM rate set can be for a number of reasons, including to:

- sell off-the-run bills (bills that do not correspond to one of the BKBM rate set buckets at the time);
- sell bills of a specific bank to free up credit limits (banks have to be able to accept a range of different banks' bills during the rate set); and
- to facilitate a switch of bank bills, which cannot be done as a part of the BKBM rate set.

## Box 1

### Closing rates

A related issue that has seen considerable developments recently has been closing rates in the New Zealand market. Closing rates refer to rates published at the end of each trading day by the NZFMA for a range of instruments, including New Zealand government bonds, non-government bonds, and other derivatives. It is arguable whether these closing rates meet the definition of a benchmark based on the IOSCO guidelines, but regardless they play an important part in the functioning of New Zealand's financial markets. They provide market participants with guidance of where market instruments are priced at the end of the day, allowing for more accurate revaluations and assessments of the market. This is particularly important to the funds management industry, including for Kiwisaver funds, which rely on closing rates to revalue their portfolios each day.

Starting in March 2017, a new framework for the calculation and publication of closing rates was implemented by the NZFMA. This followed a year of consultation and development with key stakeholders. The work was triggered by concerns about the reliability of the previous methodology, which involved domestic banks manually contributing indicative prices for a large number of instruments. In addition, some banks began to pull out of these submissions, in part owing to legal concerns similar to those in the BKBM area, which added to concerns about reliability.

The new framework was developed with the IOSCO principles in mind, although the small size of the New Zealand market and sometimes

illiquid instruments means that the closing rates are not strictly based on actual trades. This can still be interpreted as consistent with the IOSCO principles, which allows for benchmarks to be adapted to local market conditions. Instead, for New Zealand government bonds, the data are sourced from the Bloomberg platform, where the four large domestic banks provide two-way prices at and in the lead up to 4:30pm. These quoted prices are for specifically sized packages, and would be executable with third parties. The NZFMA captures these quotes, and if they meet certain specifications, such as a minimum of two acceptable bids and offers, an average mid-rate is calculated and later published. There is also a range of contingencies should the quotes not be available at 4:30pm.<sup>†</sup> Similar changes have been made for closing rates in non-government bonds and other derivatives, although there are some differences in calculations and methodology reflecting the differences in the underlying markets.

We see these changes in methodologies to closing rates as a positive step forward, and the application of the IOSCO principles should help to improve market confidence in the measures. Given these changes have been implemented only recently, the quality and consistency of the closing rates should continue to be monitored closely, with any issues arising being brought to the relevant NZFMA committee for further consideration.

<sup>†</sup> For more details on the closing rates and how they are sourced and calculated, see New Zealand Financial Markets Association (2017).

These factors help to explain the reasons why not all trading will occur in the rate set window. However, unless the proportion of this activity to other trading has changed significantly over time, it does not explain the trend increase in relative trading volumes occurring outside the rate set.

### *Why have volumes been falling?*

To find out why bank bill volumes have trended lower over recent years, and why the decline has been even greater in the BKBM rate set process, we drew on discussions with a range of market participants and other experts. Participants identified two key factors behind the decline in volumes:

- changes in global and domestic regulation; and
- a change in subsidiary bank behaviour following investigations into manipulation by the major banks in Australia of its short term interest rate benchmark, the Bank Bill Swap Rate (BBSW).

### *Regulation*

Regulations were seen as having had a significant structural impact on the overall bank bill market. First, as discussed earlier, the Core Funding Ratio regulations saw banks become less reliant on short-term funding such as bank bills and move towards more stable sources of funding such as longer-term bonds and alternative deposit facilities. The reduced supply of bank bills has contributed to the lower market turnover, although the peak impact was in 2011 and 2012 when the regulations were introduced. Bank demand for bank bills has also been affected, further contributing to the decline in volumes traded. Market contacts noted that the duration of liquid asset portfolios has been extended, with

less credit limit now available for shorter-term instruments such as bank bills.

In addition, changes in global regulations and the market environment saw a number of global banks pull back from more peripheral markets and focus on their core business. As a result, three large international banks have all withdrawn from participating in the domestic BKBM rate set process since 2011, and have also significantly reduced their activity in the New Zealand market overall.

### *Investigations of market manipulation in Australian interest rate benchmark*

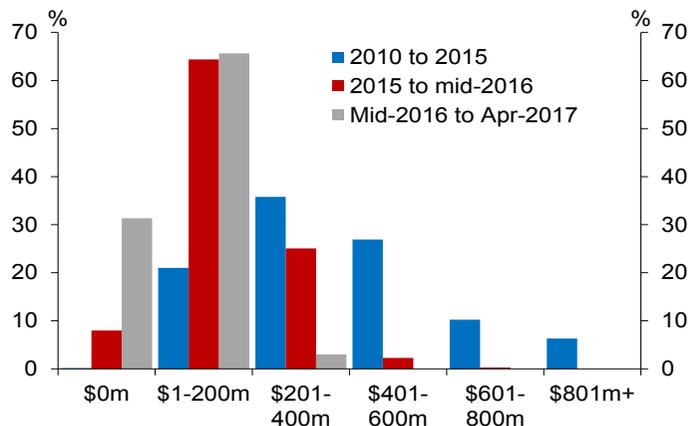
In 2012 the Australian Securities and Investments Commission (ASIC) started investigating allegations of manipulation of the Australian short-term interest rate benchmark, the Bank Bill Swap Rate, or BBSW. It later launched legal action against ANZ, Westpac, and National Australia Bank (the parent bank of BNZ) in 2016.

Our discussions with market participants noted that that the legal action in the Australian market resulted in a behavioural change in New Zealand banks. Domestic banks participating in the BKBM rate set have become more risk averse in response to legal action abroad. As a result, they have scaled back significantly the volume and scope of trading during the rate set window – over and above the general decline in volumes due to the regulatory changes noted above.

### *Is the lower turnover in the market a problem?*

The steady decline in volumes of bank bill traded in the wholesale market overall, and within the BKBM rate set window, raise some cause for concern. A less liquid market could result in more volatility in BKBM

**Figure 5**  
**Percentage of days where BKBM rate set volume falls into value bucket**



Source: NZFMA, RBNZ calculations.

rates, with a greater likelihood that individual transactions could move BKBM rates on a daily basis. BKBM rates may be seen as being less representative of the 'going price' given the increased percentage of trades in the bank bill market occurring outside the BKBM rate set relative to history.

A further illustration of the risk to the integrity of the BKBM benchmark is the increased number of days where no trades occur at the BKBM rate set. Prior to 2015, almost all days saw transactions occur during the rate set. However, from 2015 to mid-2016, the number of days with no turnover at the rate set increased to 8 percent, before rising further to 31 percent between mid-2016 to April 2017 (figure 5). The current BKBM framework will still generate benchmark rates using two-way prices ('bid' and 'offer' rates) submitted to brokers by the banks. However, benchmark rates are ideally based on actual transactions as reflected in the IOSCO and FSB best-practice principles.<sup>13</sup> Should the trend of a

<sup>13</sup> In addition, market contacts indicate that a declining number of banks are consistently providing bid and offer rates at the rate set, creating additional risks to the integrity of the BKBM benchmark if they were to withdraw from providing prices.

greater proportion of days with no trades continue, market participants may start to lose confidence in the robustness and accuracy of the BKBM published rates.

### *What can be done to increase volumes?*

Based on discussions with market participants, there appear to be no easy solutions to significantly increase trading volumes in the BKBM rate set process. However, there may be some ways to increase trading at the margin. These include:

- to provide better clarity around acceptable trading practices at the BKBM rate set;
- to make it a requirement of participation as a Prime Bank that two-way prices are provided at the rate set; and
- to widen the rate set window significantly to capture transactions of most, or all market participants.

From discussions with banks, it was noted that the main way to increase volumes traded at the BKBM rate set in the near term would be to obtain greater clarity around acceptable trading practices. Following the legal action against banks in Australia for potential manipulation of the BBSW, banks have become more risk averse, and require more legal certainty around what constitutes acceptable practice during the rate set, before they resume full participation. The NZFMA have been working with the banks and the regulator, the Financial Markets Authority, to better clarify these principles to ensure banks can more confidently participate in the market. This consultation has been positive and there have been early signs of more activity at the BKBM rate set in June.

An option that may have merit is making it compulsory for the Prime Banks to provide two-way pricing at the rate set. This is similar to a suggestion made by the Council of Financial Regulators (CFR) in Australia regarding changes to the structure and calculation of the BBSW.<sup>14</sup> If this were to come into force, we would prefer this to be enforced through the NZFMA, rather than new regulation from the RBNZ. While this would not necessarily drive more trading, at the very least it would provide a more robust backstop in the number of bid and offer rates used when no transactions are made at the BKBM rate set. The downside is that it may lead to some smaller banks pulling out of the rate set altogether, hindering turnover further. Nevertheless, early discussions suggest there is some appetite for this option.

A longer-term option to consider would be the inclusion of all transactions of a minimum size that occur during the rate set, including transactions by non-Prime Banks. This is also being considered in Australia. This would require further investigation and consultation, although it is likely there would be little appetite from institutional investors for such a move in a New Zealand context. Similarly, another option would be to widen the BKBM Trading Window significantly beyond the current two minutes, perhaps encompassing the entire trading day. Banks looking to trade bank bills would not be able to avoid the window, and all interbank transactions would be included in the BKBM rates (although it could include transactions with other investors if decided). Positively, we would know the underlying market is being represented. However, we would consider this as only a last-case option given the downsides of this approach. For instance, the BKBM rates would be a lot less timely, making it more difficult to use in other contracts. In addition, it would be more difficult to interpret BKBM rates if bank bill rates change

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<sup>14</sup> See Council of Financial Regulators (2016) for a full report on the CFR's recommendations for the BBSW.

significantly over a day. Nevertheless, should the credibility of BKBM diminish owing to few or no transactions occurring at the rate set, this could be a way to ensure rates continue to be generated that are based on actual transactions.

### *Alternative benchmarks*

While significant progress has been made in recent years to increase the robustness and confidence in LIBOR and similar measures based on bank funding costs, work has also been done on looking for alternative benchmarks. In particular, extensive work has investigated the viability of 'risk free' benchmark rates. These differ from LIBOR as they would not include a credit risk component. Given LIBOR currently has a near monopoly in the pricing of the bulk of the world's interest rate derivatives, it is seen as valuable to look at alternatives, some of which could be used alongside or replace LIBOR.

A number of countries are conducting research and consultation into alternatives, with different solutions proposed depending on specific market environments. In the United States, the Alternative Reference Rates Committee (ARRC) was formed in 2014 and consists of representatives from 15 large global interest rate derivative dealers, the Federal Reserve, and United States Treasury. Currently the committee has identified two strong alternatives to LIBOR, including the Overnight Bank Funding Rate and overnight general collateral repurchase rate.<sup>15</sup> Further work is being done before any decisions are finalised.

Similar work is being done in other jurisdictions. In Europe, authorities are looking to further strengthen the Euro Overnight Index Average (EONIA), an already viable and actively used nearly-credit-risk-free

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<sup>15</sup> See The Alternative Rates Committee (2016) for more detail on these rates.

reference interest rate. Other possible rates are also being investigated. Japanese officials are investigating possible benchmarks using the Uncollateralised Overnight Call Rate, as well as repo rates. In the United Kingdom, the Bank of England has launched a reform of the Sterling Overnight Index Average (SONIA) rate to be used as a risk-free benchmark. This process will result in the Bank of England becoming the administrator for the calculation and publication of the rate and the inclusion of a wider range of transactions. These reforms are aimed to be finished by April 2018. In Australia the Reserve Bank of Australia (RBA) is working with ASIC and the Australian Financial Markets Association to develop a risk-free benchmark. In May 2016 the RBA started publishing a Cash Rate Total Return Index, which members of the public can use as a benchmark with a risk-free rate of return.<sup>16</sup>

### *Alternative benchmarks in New Zealand*

At this stage, no significant work is under way investigating an alternative benchmark to BKBM in New Zealand. The majority of market participants we spoke to thought that the BKBM remained a good benchmark for the New Zealand environment and thus thought there was little urgency to find an alternative. However, several banks noted that they thought developing a risk-free benchmark would be a good idea, and that OIS would likely be the best option, albeit noting the difficulties of changing longer-term derivative contracts to a different benchmark rate. It was also acknowledged that it is still appropriate for a number of derivative contracts to include a bank credit risk component, so a risk-free rate would not be the best benchmark for all situations.

<sup>16</sup> More details on the progress on alternative benchmarks in different countries can be found in Financial Stability Board (2016).

The Bank sees merit in further investigation of alternative benchmarks in New Zealand. While it is unlikely that BKBM will be replaced completely or quickly, it may be beneficial to have an alternative rate to be used when risk-free rates would be more appropriate. OIS rates have been suggested as a possibility in the New Zealand context, but further analysis is needed.<sup>17</sup>

## 4 Conclusion

This *Bulletin* article has discussed the importance of financial market benchmarks and recent developments in this area. Benchmarks are used for a wide variety of reasons and help to improve the functioning and efficiency of markets.

Regulators are implementing significant reform to improve benchmark reliability, transparency and governance. These reforms are required following the erosion in trust in benchmarks after the LIBOR scandal, where a number of international banks manipulated benchmark rates for their own benefit. These reforms are ongoing.

Significant work has also been undertaken in recent years to improve the reliability, transparency, and governance in New Zealand's key short-term interest rate benchmark, BKBM. The NZFMA has carried out this work and has generally brought BKBM in line with the guiding IOSCO and FSB principles.

<sup>17</sup> Overnight indexed swaps (OIS) are a special type of interest rate swap. They are typically much shorter term than a regular interest rate swap (from about six weeks up to about one year), and the floating leg is reset overnight rather than the usual quarterly timing. In New Zealand, the reference rate is the Official Cash Rate (OCR). OIS contracts are considered to have much less credit risk than standard interest rate swaps. For more information see Shareef (2013).

Despite improved processes, there are growing concerns about the significant declines in turnover during the rate set window, although in part this reflects declines in turnover in the bank bill market more broadly. The falling volumes traded at the BKBM rate set have raised concerns that the benchmark rate may not accurately represent the underlying market and thus is becoming less reliable.

Discussions with market participants and other experts identified two key reasons for the declining volumes at the rate set: changing regulations and a change in subsidiary bank behaviour following the ASIC investigations into BBSW manipulation in Australia.

While the BKBM process is robust, the declining volumes at the BKBM rate set, and growing number of days where no trades occur, increases the risk that the BKBM rates do not reflect the underlying market. There are no easy solutions to increase the volumes at the BKBM rate set, but a number of options may increase trading at the margin and warrant further investigation. There is also merit in the investigation of alternative benchmarks in New Zealand, similar to that taking place overseas.

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