Bridging the Textbook Gaps on How the RBA Implements Monetary Policy

Kellie Bellrose*

December 2018

One of the most commonly asked questions by educators has been about how the Reserve Bank of Australia (RBA) implements monetary policy. In particular, they are interested in understanding how closely the actual process of monetary policy implementation matches the typical textbook explanation. Practice differs from theory and there are some gaps in the explanations provided by the typical textbook. This article aims to bridge these gaps and provides a stylised but more comprehensive explanation of the process.

Background

The RBA, the nation’s central bank, is responsible for setting and implementing monetary policy in Australia. The Reserve Bank Board sets the target for the nation’s policy interest rate (known as the cash rate) in the Australian cash market – the market in which banks lend and borrow money from each other overnight. The RBA ensures that the cash rate remains consistent with the target the Board has set as part of the monetary policy decision. Changes in the cash rate flow through to other interest rates in the economy, influencing economic activity and ultimately inflation.1

It is commonly described in textbooks that a policy interest rate is managed by a nation’s central bank through the use of open market operations (OMOs).2 These operations involve the central bank buying and selling bonds (typically government bonds) to inject cash into and withdraw cash from the financial system to influence the cash rate.

In Australia’s case, this is true – but in practice there is more to the story. Essentially, in Australia, OMOs are used to manage the supply of cash (or liquidity) so that it can meet demand and ensure that the cash rate remains at its target. This is done on a daily basis – regardless of whether there is a change to the cash rate target – and is often referred to as ‘liquidity management’. However, when the RBA does change the target for the cash rate, this is achieved by shifting something known as the ‘policy interest rate corridor’.

* Kellie Bellrose wrote this work while with the Public Access & Education Team. The article builds on the Explainer that has been published on ‘How the Reserve Bank Implements Monetary Policy’ and draws heavily on forthcoming work by Chris Becker in Domestic Markets Department. The author would like to acknowledge colleagues who contributed to this work, particularly Jacqui Dwyer, Marion Kohler, Ellis Connolly, Tim Atkin and Tanya Livermore.

1 Because the cash rate acts as a key reference rate, a change to the cash rate has a strong influence over other interest rates in the economy, such as deposit and lending rates for households and businesses. These changes to interest rates, in turn, affect economic activity and inflation. For more information, see the RBA’s Explainer: The Transmission of Monetary Policy.

2 OMOs involve the buying and selling of bonds each day in the ‘open market’ through a competitive auction process.
This article reconciles how the RBA actually implements monetary policy with standard textbook descriptions by explaining the workings of the policy interest rate corridor and the use of OMOs to manage the supply of cash (liquidity) and keep the cash rate within this corridor and at target.

Some Things You Need To Know

The functioning of the Australian cash market

The *Australian cash market* is the market for overnight loans between banks. The interest rate in this market is called the cash rate.

After each meeting of the Reserve Bank Board, a target is set for the cash rate that reflects the Board’s monetary policy decision. Because the cash rate is the RBA’s operational target for monetary policy, it is often referred to as the ‘instrument’ of monetary policy.

The RBA’s Domestic Markets Department is tasked with maintaining conditions in the Australian cash market to ensure that the cash rate target is achieved. This is done on a daily basis by managing the supply of cash. In the context of the Australian cash market, ‘cash’ refers to the Exchange Settlement (ES) balances that banks hold in ES accounts with the RBA in order to make payments to each other and the RBA.⁵

There are four key aspects of the Australian cash market that are commonly referred to by standard textbooks when describing the implementation of monetary policy:

- **Price** – the interest rate in the Australian cash market for overnight loans, known as the cash rate.
- **Quantity** – the quantity of ES balances (cash) which are used by banks to make payments to each other and the RBA.
- **Demand** – the demand for ES balances (cash) from banks. The source of this demand stems from banks needing to make payments. This is done through debiting/crediting their ES accounts. The RBA estimates the demand for ES balances each day.
- **Supply** – the supply of ES balances (cash) managed by the RBA to meet demand and ensure that the cash rate is consistent with the Board’s target.

Understanding the Implementation of Monetary Policy

What does the typical textbook say?

Typical textbook analysis uses simple demand and supply curves to define how the central bank implements monetary policy. Figure 1 shows demand and supply in the overnight cash market (i.e. the cash used by banks to settle payments with each other, with this form of cash also known as liquidity). The demand curve is downward sloping and intersects with the supply curve to give the price of cash – the cash rate ($r$). The supply curve is often depicted as vertical, because the central

---

⁵ ES balances are equivalent to cash being held on deposit with the RBA and are used by financial institutions to settle transactions between themselves, the RBA or its clients.
The central bank has control over the supply of cash.\textsuperscript{4} Shifts in the supply of cash are determined by the central bank through its use of OMOs to either inject or withdraw cash from the financial system.

The typical textbook explains that if the central bank wanted to lower the cash rate, it would do so by injecting cash into the system, increasing the supply and quantity of cash available from \( S_1 \) to \( S_2 \) (Figure 2). This in turn would place downward pressure on the cash rate (from \( r \) to \( r_2 \)) to reach a new equilibrium. Conversely, if it wanted to increase the cash rate, it would reduce the supply of cash from \( S_2 \) to \( S_1 \). This would place upward pressure on the cash rate (from \( r \) to \( r_1 \)). (See Figure 3 for a summary of the relationships.)

Typical textbook analysis shows that the shift of the supply curve for cash is achieved through OMOs. When the central bank buys bonds from banks and provides cash (in return for the bonds) it increases the supply of cash in the market. When the central bank sells bonds to banks and receives cash (in return for bonds), it reduces the supply of cash in the market.

However, there are gaps in this analysis which are important for understanding how the RBA implements monetary policy in practice.

\textsuperscript{4} The supply curve for cash is vertical because the central bank determines the level of ES balances and no one else is legally able to create such cash. In other words, the central bank is responsible for setting the total quantity of ES balances available to market participants, who then trade (or redistribute) this cash amongst themselves.
What actually happens?

Typical textbook analysis captures most aspects of the Australian cash market (price, quantity, demand and supply), but critically omits the role of the policy interest rate corridor.

What is the policy interest rate corridor and why is it important?

The policy interest rate corridor is defined by a floor and a ceiling around the cash rate target in the Australian cash market. The floor is the RBA’s deposit rate, which is the cash rate less 0.25 percentage points on any excess ES balances banks deposit at the RBA. The ceiling is the RBA’s lending rate, which is the cash rate plus 0.25 percentage points on any ES balances banks borrow if they need to cover shortfalls.

Figure 4 provides a stylised model of the Australian cash market by including the policy interest rate corridor. Banks have no incentive to borrow at interest rates higher than the RBA’s lending rate (the ceiling), so there are no transactions above the corridor. And they have no incentive to accept a deposit rate lower than the one the RBA offers (the floor) – so there are no transactions below the corridor. All market activity is contained within the corridor.

Furthermore, those banks that have excess ES balances are always willing to deposit their cash with other banks at a higher rate than the RBA’s deposit rate (the floor of the corridor) to earn a higher return. At the same time, those that need to borrow in the Australian cash market seek a rate that is lower than the RBA’s lending rate (the ceiling of the corridor). Consequently, the price of transactions gravitate toward the cash rate target in the middle of the corridor.

Figure 4

The Australian Cash Market

Demand in the cash market can and does move around. Should there be any shift in demand for cash (ES balances), the RBA responds by managing the supply of cash so that it remains consistent with the cash rate target. In other words, the RBA attempts to manage liquidity to shift the supply curve so that it intersects the demand curve at the cash rate target. Figure 5 shows how the cash rate can be maintained at its target by responding to an increase in demand by increasing supply (with both curves shifting to the right). On the other hand, Figure 6 shows that to keep the cash rate at target, a decline in demand is responded to by reducing supply (with both curves shifting to the left).
The important point is that in practice, changing the supply of cash through OMOs is done to *keep the cash rate at target* on a daily basis – not to change the target after a monetary policy decision.

**So how is the cash rate target changed?**

After the announcement by the Reserve Bank Board to change the target cash rate, the RBA resets the policy interest rate corridor around the new target cash rate. In essence, the existence of the policy interest rate corridor does all the work.

**But how does this happen?**

If the cash rate target is lowered as part of the monetary policy decision, the RBA’s deposit rate and lending rate are adjusted so that the entire policy interest rate corridor shifts lower (Figure 7). The incentives for banks to trade within the new corridor remain, and transactions gravitate to the middle...
of the corridor (the new cash rate target). This is because banks want to borrow at rates lower than the RBA’s lending rate (the ceiling) and make deposits at rates higher than the RBA’s deposit rate (the floor). Because of this, the new cash rate target is achieved without the need for the RBA to conduct any OMOs.

In practice, the market moves automatically, and immediately, to the new cash rate target. The process is reinforced by the RBA’s credibility in managing the supply of cash in the market and has fostered a convention for almost all transactions to occur at the cash rate target. As shown in Graph 1, since the early 2000s there has been little deviation of the cash rate from its target.
A Closer Look at Open Market Operations

OMOs are used to keep the cash rate at target on a daily basis.

Typical textbook analysis generally describes the central bank’s OMOs as the direct buying and selling of government bonds. When the central bank buys bonds it injects cash into the financial system (as banks’ ES accounts are credited with cash in return for bonds).\(^5\) When the central bank sells bonds, it withdraws cash from the financial system (as banks’ ES accounts are debited to pay for bonds).

This process is correct. However, there is more to OMOs.

The RBA typically conducts OMOs on a daily basis. The RBA announces the value of cash it intends to inject or withdraw from the financial system, the type of transaction and its duration as part of an auction process.

There are three types of transactions which the RBA typically conducts as part of its OMOs:

1. **Bond purchases or sales.** The RBA buys or sells bonds in exchange for ES balances – cash. As a result, these transactions change the supply of cash in the market.

2. **Repurchase agreements (Repos).** The RBA uses repurchase agreements. A repo is a transaction that occurs in two parts. In the first part the RBA might lend a bond to a bank and receive ES balances (cash) in exchange, resulting in a decrease (drain) in supply of ES balances on that day. In the pre-arranged second part, at an agreed price and date in the future, the RBA receives the bond back and returns the ES balances (cash) to the bank, resulting in an increase (injection) in the supply of ES balances on that day.

   In the opposite case – commonly referred to as a ‘reverse repo’ – the RBA commences the transaction by borrowing a bond and providing ES balances (cash) to the bank, resulting in an increase (injection) in supply of ES balances. The second leg of this transaction involves the RBA returning the bond to the bank and receiving ES balances (cash) back, resulting in a decrease (drain) in the supply of ES balances on that day. (See the comparison in Figure 8.)

3. **Foreign exchange swaps.** The RBA also engages in foreign exchange swaps. A foreign exchange swap is similar to a repo. The main difference is that, instead of bonds, foreign currency (e.g. US dollars or Japanese yen) is used in the transaction.

Of the three types of transactions, **reverse repos** are the most commonly used by the RBA in their OMOs (typically each day); not outright purchases/sales of government bonds, as is commonly described by textbooks. This is because the RBA mostly injects cash into the market to cover ES balance shortfalls and their flexibility allows the RBA to manage liquidity on two separate days, using the one tool.\(^6\) Repos give the RBA the flexibility to manage the supply of cash in the market (liquidity) and smooth the effects of large transactions between banks and the RBA or the government – such as tax and social welfare payments – that can have a material effect on the total amount of cash in the market.

---

\(^5\) In the bank accounts held at the RBA are the RBA’s own electronic currency called ES balances (which is essentially like cash). Banks make payments between each other by debiting and crediting ES balances. For example, if Bank A wanted to pay Bank B, it would do this through ES balances – Bank A’s account would be debited and Bank B’s account would be credited.

\(^6\) There is limited government debt on issue in Australia, making it difficult for the RBA to conduct liquidity management using outright transactions. As a result, there tends to be a reliance on repos and foreign exchange swaps.
market (or ‘system liquidity’). To help manage liquidity, the RBA forecasts cash movements to inform its decisions about when to ‘unwind’ repos.

**Figure 8: Repurchase Agreements**

<table>
<thead>
<tr>
<th>Repo*</th>
<th>Reverse repo*</th>
</tr>
</thead>
<tbody>
<tr>
<td>First leg: RBA <strong>lends</strong> bonds out and <strong>receives</strong> cash (drains)</td>
<td>First leg: RBA <strong>borrows</strong> bonds and <strong>provides</strong> cash (injects)</td>
</tr>
<tr>
<td>![Diagram of Repo]</td>
<td>![Diagram of Reverse repo]</td>
</tr>
<tr>
<td>Second leg: RBA <strong>receives</strong> bonds back and <strong>returns</strong> cash (injects)</td>
<td>Second leg: RBA <strong>returns</strong> bonds and <strong>receives</strong> cash back (drains)</td>
</tr>
</tbody>
</table>

* From the viewpoint of the RBA. Sell bonds with agreement to repurchase them at a future date, or buy bonds with a commitment to return them at a future date.

Source: RBA

In practice, the RBA uses OMOs – primarily through repos – to manage the supply of cash in the market (or liquidity) so that the RBA meets demand and is consistent with the cash rate target.

**Wrapping Up**

The RBA’s implementation of monetary policy is an area of confusion for professional economists, commentators and educators alike, particularly in reference to how closely the actual process aligns with the standard textbook explanations. The two main gaps in typical textbook explanations relate to:

1) *The omission of the policy interest rate corridor.* The corridor is key to how the RBA implements monetary policy, particularly a change in monetary policy, as it encourages banks to trade ES balances at the target cash rate.

2) *The use of open market operations.* Textbooks often link OMOs with achieving a change in the cash rate when, in practice, the RBA uses OMOs to manage the supply of cash to keep the cash rate at its target.

In summary, the market automatically trades at the new cash rate target following a change to monetary policy. This is achieved by the policy interest rate corridor, which resets around the new cash rate target, and banks have no incentive to trade outside of this corridor. Given the automatic adjustment to the cash rate target, there is no need for additional OMOs. OMOs are instead used by the RBA to manage the supply of cash (liquidity) in the market on a daily basis as part of its liquidity management practices.

This information can be viewed at a glance in the accompanying table ‘The Reality of Monetary Policy Implementation’.

Reserve Bank of Australia
19 December 2018
At a Glance: The Reality of Monetary Policy Implementation

<table>
<thead>
<tr>
<th>Understanding the implementation of monetary policy</th>
<th>Actual Implementation Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical Textbook Analysis – demand/supply curve</td>
<td>Policy interest rate corridor is key.</td>
</tr>
<tr>
<td>- Changes in the cash rate are associated with changes in the quantity of cash in the financial system.</td>
<td>- RBA offers standing facilities which pay/charge banks the cash rate +/- 25 bps.</td>
</tr>
<tr>
<td>- Central bank increases or decreases the supply of cash.</td>
<td>- Corridor:</td>
</tr>
<tr>
<td></td>
<td>o A ceiling and floor boundary for the supply/demand curve.</td>
</tr>
<tr>
<td></td>
<td>o Represents a range within which banks have an incentive to trade ES balances amongst themselves.</td>
</tr>
</tbody>
</table>

### The Cash Market

![Price vs. Quantity graph](image)

#### The Australian Cash Market

![Policy Interest Rate Corridor graph](image)

#### Cash rate change

**Typical Textbook Analysis**

1) Central bank changes the quantity of system cash to change the cash rate.

- Injects or withdraws supply of cash to put downward or upward pressure on the cash rate.
- The shift in supply curve is achieved through OMO.
- If central bank buys bonds (and gives cash), it increases the supply of cash.
- If central bank sells bonds (and receives cash), it reduces the supply of cash.
- This requires additional buying or selling of bonds through OMOs.

**Actual Implementation Process**

1) Quantity of cash does not change.

- After a policy rate decision, the interest rate corridor is reset around the new target rate.
- The market will simply move to the new rate without the RBA having to change the supply of ES funds.
- No incentives to borrow or lend outside the corridor.
- Gravitation of market forces to the centre of the band.
- Market convention that banks automatically trade at the new target cash rate following a policy change.
<table>
<thead>
<tr>
<th>2) Central bank conducts OMOs to implement a change in the cash rate.</th>
<th>2) Additional OMOs are not necessary for a change in the cash rate.</th>
</tr>
</thead>
<tbody>
<tr>
<td>- After a change in the cash rate the central bank conducts OMOs to change the amount of system liquidity and influences the market to trade at the new target cash rate.</td>
<td></td>
</tr>
<tr>
<td>- The amount of liquidity supplied is determined by the policy rate decision.</td>
<td></td>
</tr>
<tr>
<td><strong>RBA OMOs</strong></td>
<td><strong>OMOs are used to supply cash and keep the cash rate at target</strong></td>
</tr>
<tr>
<td><strong>OMOs are used to change the cash rate, including after a policy rate change.</strong></td>
<td>- OMOs are conducted every day through auction.</td>
</tr>
<tr>
<td>- Three types of transactions: outright purchases; repos and reverse repos; foreign exchange swaps.</td>
<td>- Reverse repos are the most common tool.</td>
</tr>
<tr>
<td>- On most days, the RBA injects cash into the market by buying bonds under reverse repo.</td>
<td>- The total amount of system liquidity is only changed by payments going to and from the government (such as tax and social welfare payments).</td>
</tr>
<tr>
<td>- The RBA gauges how these transactions will change the supply of ES funds in the banking system each day and uses OMOs to smooth the liquidity effects.</td>
<td></td>
</tr>
</tbody>
</table>