

The Road to Australian Dollar Funding

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Abstract

A key feature of Australia's financial system is that nearly all liabilities are denominated in, or hedged into, Australian dollars. A pre-condition for this state of affairs is that investors are willing to hold Australian dollar-denominated assets. Investor confidence in Australian dollar assets is supported by Australia's sound institutional framework, history of positive macroeconomic outcomes, and well-functioning financial system. Australia's journey to funding in its own currency spanned nearly a century and involved various costs. Today, these funding arrangements confer substantial benefits to the Australian economy, including by reinforcing the same positive economic, financial and institutional outcomes that made Australian dollar funding possible in the first place.

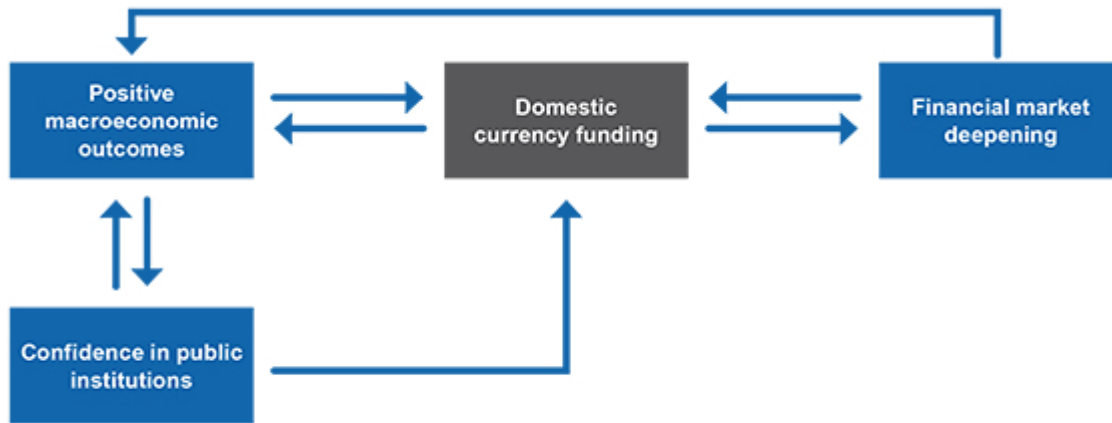
Introduction

Nearly all debt and equity liabilities of Australia's governments, corporations and banks, including – crucially – those owed to foreigners, are denominated in, or hedged into, Australian dollars (Graph 1).^[1] This includes all Commonwealth and state government debt, which is issued entirely in Australian dollars; Australia's equity liabilities, which are also wholly denominated in Australian dollars; and the bulk of debt issued by banks and other corporations, which is either denominated in Australian dollars or hedged using derivatives.^[2] The small share of liabilities that are denominated in

foreign currency are likely to have natural hedges, such as foreign currency export earnings or foreign currency-denominated assets (Berger-Thomson and Chapman 2017).

Australia is part of a select group of countries for whom long-term, domestic currency financing of governments and private entities is the norm. These are mostly advanced economies, but also include several emerging market economies. While these countries do not have the 'exorbitant privilege' of the United States, their ability to fund in their own currency confers considerable economic benefits at little cost.^[3]

Figure 1: Positive Feedback Loop



Source: RBA

Domestic Currency Funding, Economic Growth and Financial Development Are Mutually Supportive

Australia benefits from a positive feedback loop between domestic currency funding and institutional, economic and financial market development (Figure 1). As discussed below, domestic currency funding, together with the floating exchange rate, improves macroeconomic outcomes in Australia, which in turn supports domestic currency funding by encouraging further investment in Australian financial assets. Positive economic outcomes also support public trust in, and the maintenance of, sound institutions and

public policy frameworks, which in turn support confidence in Australian dollar assets. Moreover, domestic currency funding itself is self-perpetuating: as financial transactions between foreign and domestic investors increase, capital market depth also increases, which encourages the development of hedging markets, which in turn facilitates a further increase in financial transactions (Lowe 2017). The strength of these positive feedback loops is evidenced by the fact that, once firmly attained, there are few – if any – examples of a country losing the ability to cost-effectively borrow in its own currency.^[4]

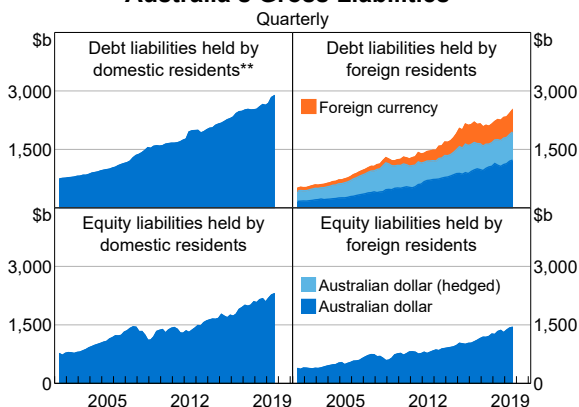
Funding in Australian Dollars Requires Confidence in Australia’s Institutions, Economy, Financial Markets and Banking Sector

To reach the point where widespread funding in domestic currency is feasible, several pre-conditions must be met:

- investors must be willing to hold assets domiciled in Australia
- investors must be willing to hold assets denominated in Australian dollars
- there must exist well-functioning capital and hedging markets, and sound domestic financial institutions, to facilitate the creation and exchange of domestic currency assets.^[5]

Graph 1

Australia’s Gross Liabilities*



* Includes the liabilities of the banking, non-financial corporate and government sectors, held (directly or indirectly) by domestic households and the rest of the world; hedge ratios inferred from ABS Foreign Currency Exposure surveys

** May exclude some foreign currency-denominated debt liabilities not held with intra-group counterparties

Sources: ABS; RBA

These pre-conditions are relevant for domestic as well as foreign investors. Domestic agents will prefer to primarily hold domestic currency assets, as their future consumption will be largely in domestic currency. However, in the face of high inflation or extreme currency depreciation, they may prefer to hold foreign currency assets as insurance. Such preferences are often seen in countries with a history of default and high inflation, such as a number of countries in Latin America. Foreign investors do not have a pressing need to hold Australian dollars but, provided those pre-conditions are met, may be attracted to Australian dollar assets if they can earn favourable risk-adjusted returns.

Establishing Australia's country credibility

Investors will only provide funding where they have a reasonable expectation that their claim can and will be met. Australia is one of only a handful of countries where the sovereign government has never defaulted on its foreign debts.^[6] As a result, the Australian Government has developed a high level of trust in its commitment to repay its debts. Much of this trust was built by experiencing several large external shocks without defaulting, particularly during the Great Depression.

Investors must also have confidence that a financial claim on a public or private entity can be enforced. Such confidence is aided by the existence of sound institutions, particularly legal and judicial systems. Other institutional arrangements, such as sound corporate governance practices, accounting frameworks and bankruptcy procedures, also help to enhance investor confidence, particularly with respect to private sector entities. Overall, studies have found that sound legal and political institutions are associated with larger domestic currency bond markets, less foreign currency debt and better economic performance in general.^[7] Australia is widely regarded as having had high-quality institutions for much of its modern history.^[8]

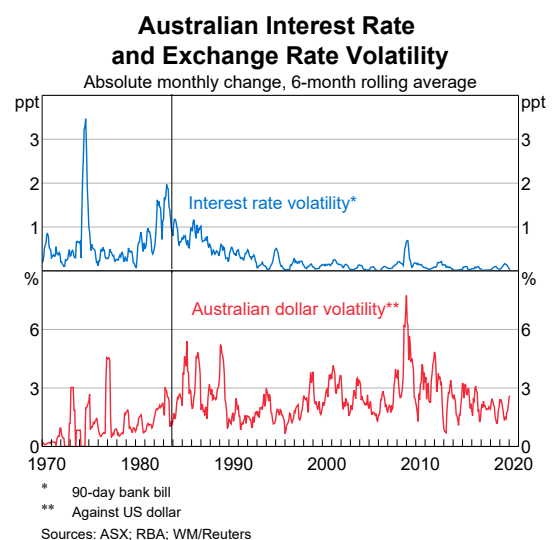
More broadly, other things being equal, investors will also tend to prefer countries with a stable macroeconomic environment, because it reduces both the variance of returns and the likelihood of large negative returns (Burger and Warnock 2007).

In Australia, macroeconomic stability has been promoted by sound frameworks for fiscal and monetary policy, particularly following the move to a floating exchange rate in the 1980s and inflation targeting in the 1990s, as well as a sound regulatory framework that has promoted financial stability (Stevens 2013) (Graph 2). These frameworks contributed to Australia's relatively strong performance during the major financial crises of the 1990s and 2000s, and have supported lower volatility in output and inflation over recent decades.

Establishing Australia's currency credibility

Inflation and currency depreciation can also be a source of losses for investors. This is true for both domestic investors, who face a loss of real purchasing power, as well as foreign investors, whose investment may be worth less in their home currency. Thus, for countries wishing to fund in their domestic currency, there are benefits from demonstrating that inflation can be kept low and stable in the face of shocks and that the currency trades in line with fundamentals. This reduces the scope for authorities to use devaluation opportunistically, and allows the exchange rate to act as a shock absorber, moderating macroeconomic outcomes. Consistent with this, monetary policy credibility is associated with larger domestic currency bond markets and less reliance

Graph 2

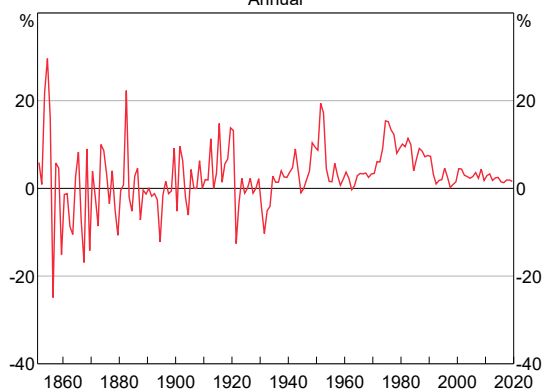


on foreign currency debt (Burger and Warnock 2006).

In Australia, inflation has been moderate for much of the nation's recent history, although this was not always the case. In colonial times, consumer price inflation was unstable, with annual price changes sometimes exceeding 20 per cent (Graph 3). High and variable inflation has also featured, on occasion, in the post-war period. Even so, annual inflation has averaged only 4 per cent since the beginning of the 20th century, and where there has been high inflation, it has usually coincided with high inflation in the rest of the world (Caballero, Cowan and Kearns 2005). Since the introduction of inflation targeting in 1993, inflation has been low and stable, consistent with the Reserve Bank's goal of achieving an annual inflation rate of around 2–3 per cent over time.

Australia's exchange rate is market determined. Indeed, the Australian dollar is viewed as one of the most freely floating currencies globally (IMF 2019). Australia's currency was floated in 1983. In the decade that followed, the exchange rate was somewhat volatile, and the Reserve Bank used both market transactions and changes in interest rates to reduce significant misalignment in the value of the currency.^[9] Over time, volatility has declined and intervention in the exchange rate is now rare.

Graph 3
Consumer Price Inflation*
Annual



* Sydney Retail Price Index from 1850–1900, C Series Retail Price Index from 1901–48, and Consumer Price Index from 1949–2019
Sources: ABS; Commonwealth Bureau of Census and Statistics; RBA

Establishing capital markets

The development of a domestic government bond market is a key early step towards domestic currency funding.^[10] A domestic government bond market allows the government to fund in domestic currency. With less foreign currency exposure, the monetary authorities can float the exchange rate with less risk that a depreciation will tighten financial conditions. This reduces the need to intervene in the currency, supporting currency credibility, while also allowing the exchange rate to act as an automatic stabiliser. Once the capital account is open, a liquid government bond market acts as a simple and low-risk introduction for foreign investors to a country and its currency, and, over time, can encourage them to hold a wider array of domestic currency assets. A market-based government bond market also helps to establish a risk-free yield curve, which is essential for developing an efficient hedging market.

The development of Australia's domestic government bond market began during World War I. Prior to the war, most of Australia's debt was issued by colonial or state government bodies in London, denominated in British pounds and purchased by non-residents (Graph 4).^[11] When the London market closed during the war, the Commonwealth Government began to issue significant volumes of domestic currency debt in the Australian market to Australian residents. Domestic issuance jumped again during World War II as budget deficits rose and increased further in the decades that followed, in part supported by regulations that required financial institutions to hold government securities (Grenville 1991). By the late 1970s, almost all government debt was being issued domestically to Australian residents in Australian dollars (Graph 5).^[12]

The financial reforms of the 1980s sparked the beginning of foreign inflows into Australian Government bonds. It also marked the beginning of the internationalisation of the Australian dollar as a currency for funding and investment more generally.^[13] Initially, foreign investors were attracted by the high rates of interest available on Australian debt, and then continued to invest as Australian dollar assets became widely accepted as

an investment class. More recently, many foreign central banks have begun to invest a small share of their foreign exchange reserves in Australian Government bonds. Reflecting these developments, foreign ownership has risen steadily, peaking at nearly 80 per cent in the early 2010s (Graph 6).^[14]

The reforms of the 1980s also sparked a dramatic increase in both the demand for, and supply of, Australian dollar funding to the private sector, facilitating the development of Australia’s corporate bond and equity markets. Prior to the reforms, regulation of banks and capital flows ensured that Australian banks and businesses were mostly funded in Australian dollars by Australian residents (Black *et al* 2012).^[15] Since deregulation, the stock of bonds on issue by Australian corporations has increased from a negligible amount to around

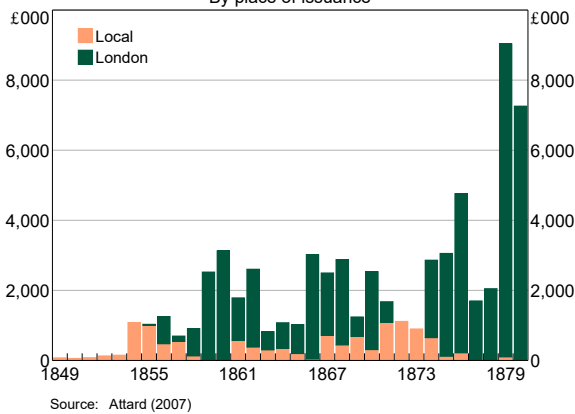
50 per cent of GDP, while the amount of equity on issue has risen from 30 per cent to about 100 per cent of GDP (Graph 7). Much of this supply was met by demand from foreign residents, with foreign ownership rising to about 40 per cent of Australian equities and two-thirds of Australian corporate bonds by the early 2000s (Black and Kirkwood 2010).

The role of hedging markets and sound institutions

Currency hedging markets increase the scope for private entities to fund in domestic currency by allowing exchange rate risk to be separated from funding and investment decisions.^[16] Borrowers

Graph 4

Colonial Government Debt Issuance
By place of issuance



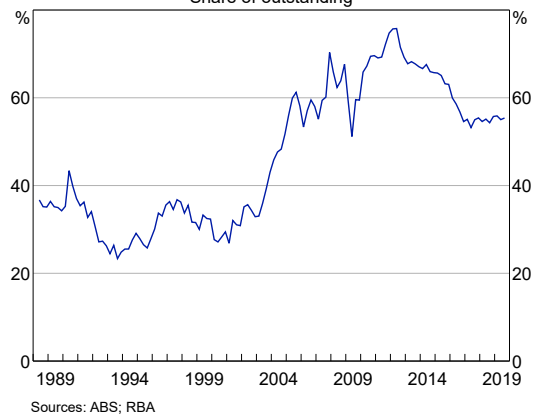
Graph 5

Australian Government Debt on Issue in Australia*
Share of total government debt on issue



Graph 6

Non-resident Ownership of Australian Government Bonds
Share of outstanding



Graph 7

Australian Financial Markets
Securities outstanding, per cent of GDP

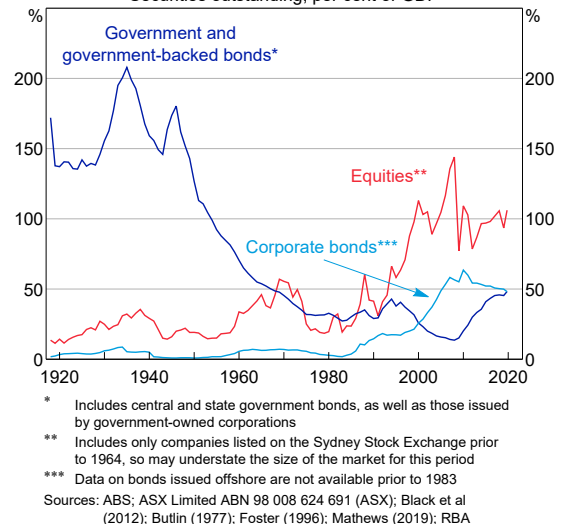


Table 1: Estimates of Foreign Currency Risk Transferred using Derivatives^(a)

A\$ billion, as at 31 March 2017

Transferred by:	
Australian banks and non-financial corporations	425
Acquired by:	
Other Australian residents	98
Non-resident issuers of A\$ debt ^(b)	215
Other non-residents ^(c)	112

(a) Numbers may not sum due to rounding

(b) Assumes all long-term non-government securities issued in Australia (Kangaroo bonds, A\$188 billion) and half of long-term Australian dollar securities issued offshore by non-residents (Eurobonds, \$A55 billion) are swapped into foreign currency

(c) Residual after subtracting Kangaroo bonds and Eurobonds on issue

Sources: ABS; RBA

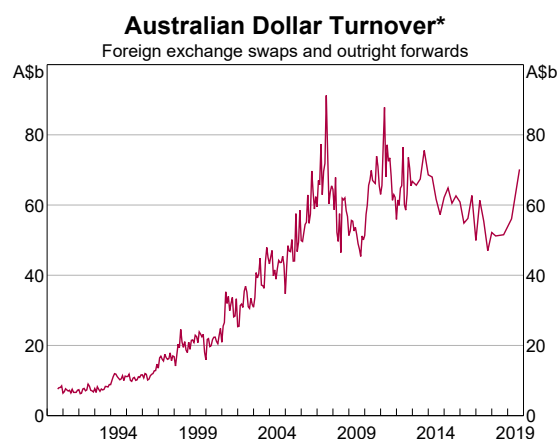
can then access international capital markets without bearing exchange rate risk, including small businesses and households which rely on banks for their debt funding. Without currency hedging markets, Australian banks, which raise a portion of their funding in foreign currency, would either have to lend in Australian dollars and assume exchange rate risk directly, or pass on the exchange rate risk to borrowers by lending in foreign currency. Instead, currency hedging markets allow banks to pass on their exchange rate risk to other parties. These parties may be domestic participants with an opposing currency position to those of the Australian banks, such as superannuation funds seeking to diversify into foreign assets without incurring exchange rate risk. They may also be non-residents, including those that have issued Australian dollar-denominated bonds in the onshore (Kangaroo) or offshore markets, as well as foreign investors seeking to take on Australian dollar risk (Debelle 2006). Though subject to considerable uncertainty, estimates of these transfers are provided in Table 1.

More generally, currency hedging markets provide a mechanism for an economy to acquire insurance from external providers against events that cause a depreciation of the exchange rate (Caballero *et al* 2005). Without such markets, the vulnerability of the financial system and economy to shocks can increase. As a result, the government may need to provide insurance in the form of a fixed exchange

rate backed by ample foreign exchange reserves, which can be costly.

In Australia, it took time for deep and liquid hedging markets to develop after the exchange rate was floated. Development was spurred, in part, by the increase in Australian dollar volatility that accompanied the float, as well as the need to hedge the interest rate and foreign exchange risks associated with the increase in foreign currency borrowing that accompanied deregulation (Graph 8). Today, Australian dollar hedging markets are widely viewed as deep and liquid and capable of efficiently transferring exchange rate risk around the financial system.

The banking system plays a critical role in this process. Banks raise most of Australia's offshore and

Graph 8

* Average daily turnover for the month of the RBA Turnover Survey; data are monthly to January 2013, quarterly to April 2018, and semi-annual thereafter

Source: RBA

foreign currency debt and are typically the counterparty to entities acquiring Australian dollar exposure via hedging markets. Accordingly, well-capitalised banks, with robust risk management practices and regulatory oversight, are critical to this arrangement. Australia's banks are among the highest-rated in the world, with capital ratios likely well within the top quartile of equivalent banks internationally.^[17]

The role of external events

Sometimes, economic or financial shocks have helped re-orientate funding towards domestically issued, domestic currency instruments. For instance, in Australia's case, the closure of international markets during the world wars acted as a catalyst for the government bond market to develop. Another example is the rise in net capital inflows over the late 1970s and early 1980s. This contributed to the opening of the capital account and the floating of the Australian dollar, which set the stage for the development of Australia's capital and hedging markets. The introduction of compulsory superannuation also encouraged the development of domestic capital and hedging markets. Finally, the high inflation episode of the late 1980s contributed to the establishment of a credible framework for monetary policy, which was important for encouraging investment in Australian financial assets.

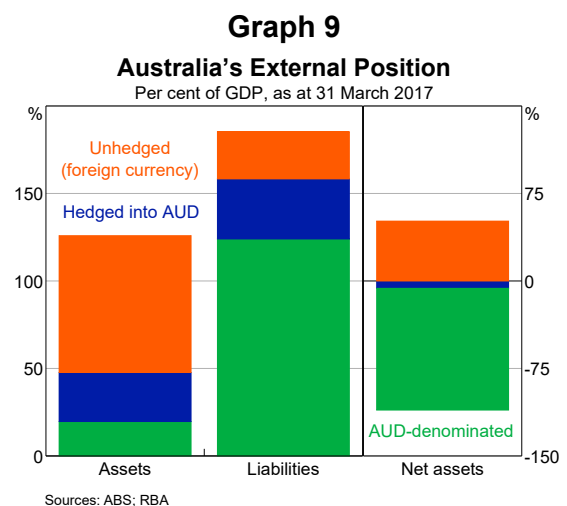
Funding in Domestic Currency Confers Considerable Benefits to the Economy ...

Funding in domestic currency has several benefits for the Australian economy. Most importantly, it allows the exchange rate to be a shock absorber (DeBelle 2019). If Australian entities funded their Australian dollar assets with unhedged foreign currency, then a depreciation of the exchange rate would increase the amount of Australian dollars needed to service their debts. Funding in domestic currency eliminates this adverse 'financial channel' and instead allows a depreciation to stimulate the economy through the 'trade channel'.^[18] In fact, because Australia's foreign currency liabilities are largely hedged, while Australia's foreign currency assets are largely unhedged, depreciations of the

exchange rate increase the Australian dollar value of foreign currency assets relative to foreign currency liabilities, thereby reducing Australia's overall net foreign liability position (Graph 9).

Funding in domestic currency also helps the Reserve Bank to implement monetary policy, promote financial system stability and manage Australia's foreign exchange reserves:

- Because the vast bulk of Australian liabilities are denominated in, or hedged into, Australian dollars, and thus tied to Australian interest rates, the Reserve Bank is able to more effectively influence financial conditions in Australia (Kent 2018). Were this not the case, public or private entities could have sizable unhedged foreign currency borrowings, and their cost of funding would be more directly affected by interest rates abroad. Moreover, the Reserve Bank might otherwise need to respond to a monetary tightening abroad, for example, to prevent a depreciation of the exchange rate from tightening domestic financial conditions.^[19]
- Because Australian banks effectively fund in Australian dollars, the Reserve Bank can act as the lender of last resort in times of crisis by extending Australian dollar liquidity. For example, during the global financial crisis, the Reserve Bank provided Australian dollar liquidity to Australian banks when offshore funding markets were disrupted. This was only possible because Australian banks required Australian



dollars, not foreign currency, unlike some banks in parts of Europe and Asia.^[20]

- Funding in Australian dollars enables the Reserve Bank to hold smaller foreign exchange reserves than may otherwise be the case, because domestic borrowers do not need to be insured against large currency mismatches. This is beneficial because Australia's foreign exchange reserves have historically yielded less than domestic securities (Vallence 2012).

Australia's ability to fund in domestic currency includes the ability to fund by issuing Australian dollar-denominated equity. Studies have found that equity is generally a more stable source of funding and, in the case of foreign direct equity, can reduce the risk of sharp capital flow reversals ('sudden stops').^[21] The servicing costs of equity also tend to fall in bad times, whereas the servicing costs of debt remain fixed (and can even increase). This can help cushion the economy in times of financial stress.

... but Also Entails Some Costs.

Although there are many benefits associated with funding in domestic currency, the transition has not been free of costs. In Australia, many of these costs were paid in the immediate period after the financial system was deregulated and the capital account was liberalised, and have since dissipated. Other costs, such as the premium Australian entities pay to swap foreign currencies for Australian dollars, remain a feature of the Australian financial system. However, these costs are small relative to the considerable benefits of funding in Australian dollars.

Transition costs

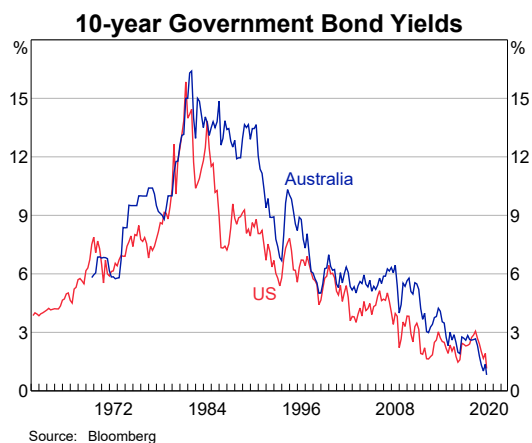
For some time after the financial reforms of the early 1980s, financial markets applied a risk premium to Australian assets relative to other major economies. Yields on 10-year Australian Government bonds, for instance, were high relative to those of the United States (Graph 10). In large part, this reflected the expectation that inflation would be higher and more uncertain in Australia than in the rest of the world. The Commonwealth Government had also yet to prove its credibility under the more open and

transparent tender system for issuing government debt (Battellino and Plumb 2011).

Nevertheless, the high returns on offer during much of the 1980s and 1990s encouraged foreign investment in Australian dollar securities. Over time, risk premiums decreased, particularly following the adoption of inflation targeting in the 1990s. This was supported by Australia's performance during the inflationary episode of the mid 1990s and the Asian Financial Crisis, which demonstrated the effectiveness and credibility of Australia's economic policy framework, especially its framework for monetary policy.^[22]

Transitioning to a deregulated and liberalised financial system also involved a number of other costs. Countries often experience a financial crisis after liberalisation, as the risk management practices of banks and regulators are initially underdeveloped. In Australia, lending standards declined over the late 1980s and borrowing using commercial property as collateral increased. This resulted in large losses for many banks when there was a sharp correction in that market in the early 1990s recession (Kent and Lowe 1997). In addition, it took time for market participants to adjust to – and hedge – the higher exchange rate volatility associated with the floating exchange rate regime. For instance, surveys at the time suggest that more than half of Australian importers and manufacturers had essentially no hedging in place in the year after the Australian dollar was floated (Becker and Fabbro 2006). Some non-financial firms also took out unhedged Swiss franc loans in the mid 1980s, only

Graph 10



to incur significant losses when the Australian dollar more than halved in value against the Swiss franc between 1985 and 1986.^[23] In the end, these episodes were a salutary lesson for Australian businesses, banks and regulators and contributed to the strengthening of risk management and hedging practices.

Steady-state costs

Australia continues to pay a modest premium to borrow in Australian dollars in two main ways. First, risk-free rates in Australia have historically been higher than those of the major international currencies (although this gap has narrowed in recent years). These higher interest rates have reflected structural factors, such as Australia's higher potential growth rate.

Second, for entities raising Australian dollar funding in the domestic corporate bond market, the small size of the domestic market relative to offshore markets typically results in higher bond spreads for Australian dollar debt issued domestically. Alternatively, Australian banks and firms can issue foreign currency debt in the much larger and more liquid offshore bond markets, where terms and pricing are generally more favourable, and hedge the currency exposure using cross-currency interest rate swaps. The cost of hedging the foreign currency risk is reflected in the basis swap spread Australian borrowers pay to receive Australian dollars. Historically, this spread has been small but positive, reflecting excess demand for Australian dollars in the cross-currency swaps market. These additional costs – the higher spread in the local bond market and cost of hedging offshore issuance – are broadly similar, having averaged around 20 basis points over the past 5 years (Graph 11). This outcome is unsurprising, given that domestic funding and (hedged) offshore funding are partial substitutes.

Footnotes

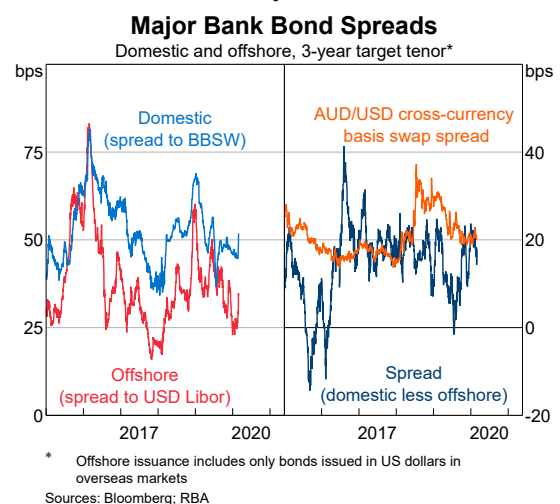
[*] The authors are from International Department, and thank Julie Guo, Isabel Hartstein, Maxwell Sutton and Zhan Zhang for their valuable assistance.

In addition to debt, companies raise funds in Australian dollars by issuing equity. Although some amount of equity is necessary to protect against losses, its loss-absorbing qualities also make it a relatively expensive form of funding compared with debt and internal funding. A substantial share of Australia's external liabilities are in the form of equity – more so than many other advanced economies – which results in significant payments to non-residents and contributes to Australia's net income deficit.

Conclusion

The ability to consistently and cost-effectively borrow in domestic currency confers considerable benefits to an economy. Only a limited number of countries have reached such a point, and have often required many years to establish the necessary institutional, economic and financial arrangements. Australia's journey spanned a number of decades, and involved a mixture of good institutions, good policy decisions and, at times, good luck. Today, own-currency borrowing supports positive economic and financial outcomes in Australia, which in turn reinforces Australia's ability to fund in its own currency. ✎

Graph 11



[1] In this article, we use the gross debt and equity liabilities of the banking, non-financial corporate and government sectors. To avoid double counting, we exclude intermediated liabilities within those sectors, such that all liabilities are (directly or indirectly) owed to Australian

- households or the rest of the world. Foreign currency hedging data are from the Australian Bureau of Statistics (ABS) Foreign Currency Exposure survey.
- [2] Equity raised offshore by Australian entities is recorded by the ABS as Australian dollar funding, because the entity is domiciled in Australia and its valuation (market or book) is in Australian dollars. Several large Australian companies are dual-listed on overseas stock exchanges, but those liabilities represent the equity liabilities of foreign companies domiciled overseas, and therefore are not foreign currency liabilities for Australia.
- [3] The term ‘exorbitant privilege’ was coined by Valéry Giscard d’Estaing in the 1960s, then the French Minister of Finance (Treasurer). It reflects the fact that the United States can borrow at reduced rates of interest because of the US dollar’s status as the international reserve currency. As a consequence, the United States earns more income on its (higher yielding) foreign assets than it pays in interest on its foreign liabilities, despite having significant net foreign liabilities. See, for instance, Gourinchas and Rey (2005) and Curcuru, Dvorak and Warnock (2010).
- [4] The collapse of Tsarist Russia and the Austro-Hungarian Empire in 1917 and 1918, respectively, are possible examples, but both involved a complete reconfiguration of political institutions.
- [5] See Caballero *et al* (2005).
- [6] The others are mainly Anglophone and Nordic countries (e.g. the United States, Canada, New Zealand, Denmark, Finland and Norway; see Reinhart and Rogoff 2009). For more on Australia’s (lack of) default history, see Caballero *et al* (2005).
- [7] See, for instance, Acemoglu, Johnson and Robinson (2005), Bordo, Meissner and Redish (2005) and Burger and Warnock (2006).
- [8] For instance, Australia has consistently been among the 10 highest ranked countries in the *Economic Freedom of the World Index*, which rates countries on, among other things, the quality of their government, legal system, property rights and regulatory system. For further discussion, see Macfarlane (2004), Bordo *et al* (2005) and Belkar, Cockerell and Kent (2007).
- [9] See Macfarlane (1993) and Stevens (2013).
- [10] See Eichengreen and Hausmann (1999), Bordo *et al* (2005), and Bordo (2006) for more on the importance of domestic bond markets. For a recent and comprehensive discussion of the symbiotic relationship between economic growth and financial markets, and the factors that support financial market development more generally, see BIS (2019).
- [11] Australia’s currency was effectively pegged to the UK pound during this period, which reduced exchange rate risk for foreign investors. The Australian pound was introduced in 1910 and pegged to the UK pound (under the gold standard). The Australian dollar was introduced in 1966. The dollar moved through several regimes, including pegs to the UK pound, the US dollar, and a basket of currencies, before being floated in 1983 (Debelle and Plumb 2006).
- [12] The Commonwealth Government’s last overseas issuance was in 1987. Focus then shifted to onshore issuance. Virtually all outstanding Commonwealth Government debt has been denominated in Australian dollars since 2004. For a comprehensive discussion of foreign currency borrowing by the Australian Government, see Australian Office of Financial Management (AOFM) (2004). For a more expansive history of Australia’s Government debt market, see Bordo *et al* (2005), Caballero *et al* (2005) or Belkar *et al* (2007).
- [13] A currency is said to be ‘internationalised’ if it is used as an invoicing currency for international trade, in cross-border flows of funding and investment, and as a reserve currency held by central banks. While most of Australia’s international trade continues to be invoiced in foreign currencies, the Australian dollar has gained widespread acceptance as a currency for offshore funding and investment, including, to an extent, as a minor reserve currency. See Lowe (2014), Debelle (2016) and Lowe (2017) for further discussion.
- [14] Another important reform over the late 1970s and early 1980s was the move to a market-based tender system for determining government bond prices. Previously, the government set the yield on securities to be issued and the market determined the volume (with any shortfall met by issuing Treasury Bills to the Reserve Bank). That was reversed under the tender system, with the government setting the volume of securities to be issued and the market determining the yield. See AOFM (2011).
- [15] Prior to the 1980s, foreign investment in Australian financial assets was significantly constrained: foreigners held less than 1 per cent of domestically issued Australian Government bonds and less than 10 per cent of Australian corporate bonds (Black *et al* 2012).
- [16] Hedging markets themselves do not confer currency credibility. Rather, they are a mechanism by which foreigners with confidence in the domestic currency can acquire exposure to it.
- [17] See RBA (2019).
- [18] Kearns and Patel (2016) find that the financial channel partly offsets the trade channel in emerging market economies (where unhedged foreign currency borrowing is prevalent), but is weaker in advanced economies.
- [19] Nonetheless, foreign monetary policies can still influence Australian financial conditions. For instance, an easing in foreign monetary policy can place upward pressure on the Australian dollar, which is contractionary for the Australian economy. Easier monetary policies abroad can also narrow global risk premiums, including for Australian

borrowers (Rey 2013). See Jacobs (2019) for further discussion.

- [20] To alleviate a shortage of US dollar liquidity during the global financial crisis, central banks around the world established temporary swap lines with the US Federal Reserve, enabling them to provide US dollar liquidity in their respective markets in exchange for local currency. For more on US dollar swap arrangements between central banks, see RBA (2008).
- [21] See Levchenko and Mauro (2007), Kose *et al* (2009) and Catão and Milesi-Ferretti (2013). The literature offers mixed conclusions, however, about the optimal mix of funding for advanced economies. See, for instance, Becker and Noone (2009).
- [22] See Debelle (2018).
- [23] See Becker and Fabbro (2006), Battellino and Plumb (2011) and Ballantyne *et al* (2014).

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