Central Bank Holdings of Australian Dollars

According to recent media reports, an increasing number of central banks have added Australian dollars (AUD) to their foreign currency reserves. This note draws on publicly available information (including central bank Annual Reports) and anecdotal evidence to identify which central banks (and affiliated finance ministries) hold AUD. Timely, reliable information is quite difficult to come by, and central bank reports generally do not provide information on the currency composition of their reserves. Nevertheless, our best guess is that of the 71 central banks surveyed, 16 currently hold AUD, 18 possibly hold AUD and 21 do not. We were unable to uncover sufficient information to gauge whether any of the remaining 16 central banks in our sample hold AUD.

Of the 71 central banks investigated in this note, the following was ascertained regarding AUD holdings in foreign currency reserves:

- 16 central banks have publicly reported that they hold AUD (Table 1). However, this information is typically based on Annual Report data – in most cases, for 2011 – so any recent changes in reserve composition will not be reflected.
    - 6 reported the actual share of AUD in their reserve holdings, which ranged from 0.4 to 8.0 per cent.
    - The remaining 10 explicitly included AUD within an "other currencies" category, or otherwise acknowledged that AUD are held in reserves.

- 18 central banks appear to hold AUD, even though they have not reported this officially (Table 2). These include central banks that have been reported by the media to have invested in AUD (including Germany) and those that report a sizeable "other currencies" category but do not specify which currencies are included.

- 21 central banks (including the Fed, ECB, BoJ, BoE and Bank of Canada) do not hold AUD (Table 3). These central banks have either provided the full composition of their foreign currency reserves or made statements regarding which foreign currencies were included in their reserves, with no reference to the AUD.

- For the remaining 16 central banks, we have been unable to uncover sufficient information on the currency composition of the reserves (Table 4).

Table 1: Central Banks Holding AUD

Region	Country	Date	AUD Holdings
Asia	Hong Kong	2011	Reference to AUD in reserves
Europe	Belarus	2010	Reference to AUD in reserves
Europe	Czech Republic	2011	5.3 per cent of reserves
Europe	Georgia	2011	Reference to AUD in reserves
Europe	Finland	2011	0.4 per cent of reserves
Europe	Iceland	2011	0.5 per cent of reserves
Europe	Macedonia	2012	Reference to AUD in reserves
Europe	Poland	2010	8.0 per cent of reserves
Europe	Russian Federation	2012	Reference to AUD in reserves
Europe	Slovak Republic	2011	Reference to AUD in reserves
Europe	Slovenia	2011	Reference to AUD in reserves
Europe	Sweden	2011	3.8 per cent of reserves
Europe	Switzerland	2012	Reference to AUD in reserves
Other	Brazil	2012	3.1 per cent of reserves
Other	Chile	2011	Reference to AUD in reserves
Other	Kazakhstan	2012	Reference to AUD in reserves

Table 2: Central Banks Possibly Holding AUD

Region	Country	Evidence of AUD Holdings
Major economy	China	Anecdotal evidence*
Major economy	France	Anecdotal evidence*
Major economy	Germany	According to media reports*
Asia	India	Large “Other Currencies” Category
Asia	Indonesia	According to media reports*
Asia	Israel	According to media reports*
Asia	Malaysia	Large “Other Currencies” Category*
Asia	Philippines	Large “Other Currencies” Category
Asia	Singapore	Diversified range of FX assets*
Asia	South Korea	According to media reports*
Asia	Thailand	According to media reports*
Asia	Vietnam	According to media reports
Europe	Austria	Anecdotal evidence*
Europe	Lithuania	Large “Other Currencies” Category
Europe	Romania	Large “Other Currencies” Category
Other	Jordan	Large “Other Currencies” Category
Other	Peru	Large “Other Currencies” Category
Other	South Africa	Large “Other Currencies” Category

* The Dealing Room believes these countries hold AUD reserves

Table 3: Central Banks Not Holding AUD

Region	Country
Major economy	Canada
Major economy	European Central Bank
Major economy	Japan
Major economy	United Kingdom
Major economy	United States
Asia	New Zealand
Europe	Denmark
Europe	Hungary
Europe	Ireland
Europe	Italy
Europe	Latvia
Europe	Luxembourg
Europe	Malta
Europe	Moldova
Europe	Netherlands
Europe	Norway
Other	Armenia
Other	Colombia
Other	Mexico
Other	Morocco
Other	Tunisia

Table 4: Central Banks with Unknown Foreign Currency Reserves	
Region	**Country**
Europe	Belgium
Europe	Bulgaria
Europe	Croatia
Europe	Cyprus
Europe	Estonia
Europe	Greece
Europe	Portugal
Europe	Spain
Europe	Turkey
Europe	Ukraine
Other	Argentina
Other	Costa Rica
Other	Ecuador
Other	Egypt
Other	El Salvador
Other	Uruguay

Market Analysis Section
3 August 2012

From:
Sent: Monday, 13 August 2012 10:20 AM
To:
Cc:
Subject: RE: Central Bank Holdings of Australian Dollars [SEC=UNCLASSIFIED]

Hi

We've been unable to uncover any official announcements from these Middle Eastern countries regarding their holdings of Australian dollars. However, based on their relatively large holdings of FX reserves and the media reports below, we would classify UAE, Saudi Arabia, Qatar and Kuwait as countries possibly holding AUD. The composition of Iran's FX reserves, on the other hand, would most likely be classified as "unknown"

We will follow this up with

http://press/summary/views/external/pdf/00157368852/

http://blogs.wsj.com/dealjournalaustralia/2012/06/14/germany-is-late-to-the-aussie-bond-party/

Regards,

| Analyst | Market Analysis, International Department
RESERVE BANK OF AUSTRALIA | 65 Martin Place, Sydney NSW 2000
| w: www.rba.gov.au

From:
Sent: Tuesday, 7 August 2012 8:45 AM
To:
Cc:
Subject: RE: Central Bank Holdings of Australian Dollars [SEC=UNCLASSIFIED]

Thanks, and

Very useful. Did you looks at the Middle East and SWF? (There is an article on page 3 of the AFR if you haven't seen it yet.)

From:
Sent: Friday, 3 August 2012 5:47 PM
To:
Cc: ID Market Analysis
Subject: Central Bank Holdings of Australian Dollars

According to recent media reports, an increasing number of central banks have added Australian dollars (AUD) to their foreign currency reserves. This note draws on publicly available information (including central bank Annual Reports) and anecdotal evidence to identify which central banks (and affiliated finance ministries) hold AUD. Of the 71 central banks surveyed, 16 currently hold AUD, 18 possibly hold AUD and 21 do not. We were unable to uncover sufficient information to gauge whether any of the remaining 16 central banks in our sample hold AUD.

Regards,

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| w: www.rba.gov.au

Media Monitors
STAY CONNECTED

Australian Financial Review
Tuesday 7/8/2012
Page: 3
Section: General News
Region: Australia Circulation: 70,518
Type: National
Size: 180.01 sq.cms.
Frequency: MTWTFS

Brief: RBA_MENT

Leave $A alone, says Coalition

Joanna Heath and **Jacob Greber**

The federal opposition has signalled it opposes the Reserve Bank of Australia intervening in currency markets to weaken the dollar, preferring to let market forces determine its value.

Former RBA board member Warwick McKibbin wrote in yesterday's *Australian Financial Review* that the central bank should consider printing money to stem demand from foreign central banks for Australian dollars.

Shadow Treasurer Joe Hockey said last night: "I respect Professor McKibbin, but I don't necessarily agree with everything he says."

His comments coincide with more evidence of foreign appetite for the Australian dollar, as a new set of wealthy central bank buyers emerges and the currency moves close to $US1.06. The *Financial Review* has learnt that Abu Dhabi, Qatar and Kuwait have invested in Australian dollar-denominated assets through their sovereign wealth funds and foreign exchange reserves.

Abu Dhabi's sovereign wealth fund, known as the Abu Dhabi Investment Authority, is estimated to be worth $US627 billion and is the second-largest sovereign wealth fund in the world after China's.

According to one trader familiar with the region, the three states have accelerated purchases of alternative assets such as the Australian dollar since the European sovereign debt crisis began. Australian government bonds were popular because of their relatively high yield compared with other developed nations.

The group had been invested in the Australian dollar market "for a very long time" and had been "building up over the years", the trader said.

In addition, Warren Buffett's Berkshire Hathaway revealed in its latest quarterly report on Friday that it had purchased AAA-rated Australian government debt as part of the backing for its insurance arms.

Although the size of the investment is not known, the report stated: "Investments in obligations issued or guaranteed by Germany, the United Kingdom, Canada, Australia and the Netherlands represent approximately 80 per cent of the investments in foreign government obligations."

The Middle Eastern states follow Kazakhstan, Germany, Vietnam, the Czech Republic, Switzerland and Russia in buying Australian dollar-denominated assets whenever the currency has a temporary dip, helping to keep the dollar elevated.

The RBA is not expected to adjust rates when it meets later today, but its commentary will be closely analysed to gauge the bank's sentiment on the high dollar.

The currency yesterday hovered close to $US1.057 after hitting a four-month high of $US1.0583 last week.

Mr McKibbin's proposal has received support from fellow ex-RBA board member Adrian Pagan and economist Barry Hughes. "The explanation is that people are going for the safe haven – the AAA with positive interest rates," Mr Hughes said.

Deloitte Access Economics director Chris Richardson has also given his qualified support to the idea.

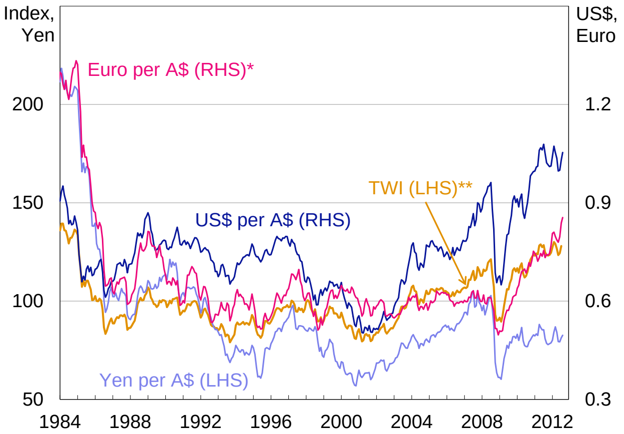
McKibbin sticks to call, page 13 ■
Editorial, page 46 ■

Is The Australian Dollar Overvalued?

The A$ is around its highest level since 1985 in nominal TWI terms and its highest level since 1974 in real TWI terms.

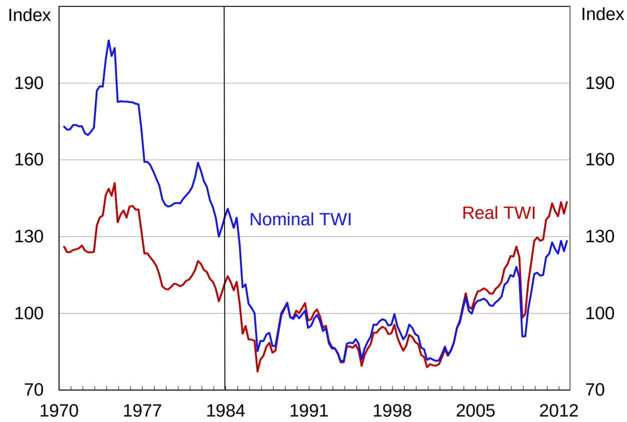
- Against the US$ and RMB, the A$ is 5-6 per cent below its post-float highs (reached in July 2011 and April 2011, respectively);
- Against the euro, the A$ is at its highest level since the euro's inception.

Australian Dollar



* Deutsche Mark splice for observations prior to 1999
** Indexed to post-float average = 100
Sources: Bloomberg; RBA; Thomson Reuters; WM/Reuters

Australian Dollar TWI
Post-float average = 100



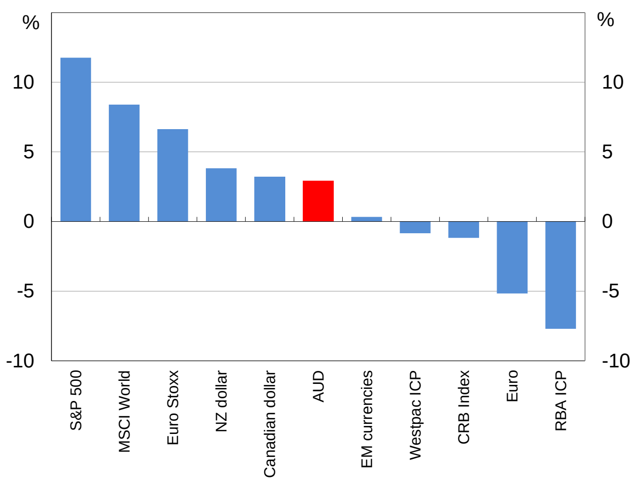
Sources: ABS; RBA; Thomson Reuters; WM/Reuters

Currently, the high A$ is probably a bit above the level justified by fundamentals, given the recent decline in the terms of trade and deterioration in the global economic outlook.

However, it is not clear that the A$ is substantially overvalued:

- The terms of trade still remain high, despite having fallen by "more than 10 per cent" (as characterised in the *SMP*) from their Sep Q 2011 peak (more updated projections suggest a 15 per cent fall to Sep Q 2012). Note that this fall has been exacerbated by the unwinding of the effect of natural disasters on Australian export prices (most notably coal prices).
- The recent experience of the A$ is not unique. It has performed roughly in line with comparable currencies (NZD, CAD) and has modestly underperformed global equity markets over 2012 to date, notwithstanding the euro's depreciation and declines in global commodity prices.

Australian Dollar and Other Assets*
Over 2012 to-date



*Against US dollar or in US dollar terms, except for EuroStoxx

Most models that we tend to focus on suggest the A$ could be 4-15% overvalued (Table 1, graphs for RBA models).

- In the RBA models, the exchange rate lies within or just outside a 1 standard deviation (st dev) band around the 'equilibrium' estimate. All are within 2 st devs but the nature of exchange rate modelling is such that a +/- 2 st dev band is very wide.
- The results can differ according to model specification and sample period, but none point to substantial overvaluation (particularly given the uncertainty regarding such estimates).
- RBA's models are based on the long-run relationship between the real exchange rate and the terms of trade, and usually also the real policy rate differential with the G3.
  - Model 1 – from 1971 – A$ is 19-23% *under*valued. This highlights the sensitivity of the results to the sample period used.
  - Model 2 – from 1986, the preferred model – A$ is 4-6% *over*valued. (Note – expected growth differentials and relative risk premia may not be adequately captured by the variables already included in the model. The latter issue may be particularly problematic of late).
  - Model 3 – from 2002 – A$ is 12-13% *over*valued. The coefficients are more heavily influenced by short term shocks – such as the transitory terms of trade spike in 2011 – which foreign exchange rate markets may have 'looked through'. Accordingly, the standard deviation band is also wider.
- Some other external models (e.g. those produced by the IMF and The Economist's Big Mac Index) also suggest the real exchange rate is slightly overvalued.
- The Economist Intelligence Unit's Worldwide Cost of Living Index suggests it is currently 47 per cent more expensive for executives to live in Sydney than in New York. This may be interpreted as an overvaluation of the exchange rate, as it appears to be an absolute PPP-type measure using comparable baskets. However, the index is largely comprised of non-tradeable prices that can diverge permanently across economies and therefore cannot be interpreted as an estimate of 'fair value'. Furthermore, New York appears to be a relatively cheap city by this measure and the 47 per cent figure would be smaller if a wider comparison was made.

Table 1: Models of the Australian Dollar -- Summary

	Estimated exchange rate valuation		
	Under/over—valuation	Per cent deviation	Standard deviations
RBA Models			
Terms of trade only			
From 1971 (Model 1)	Under	19*–23	1.1–1.2
From 1986	Over	4–6*	0.5–0.9
From 2002	Over	12	1.4
Adding real interest rate diff$^{\Delta}$			
From 1986 (Model 2)	Over	4–6*	0.5–0.9
From 2002 (Model 3)	Over	13	1.4
External Models			
IMF Models	Over	5–15	-
Big Mac Index (PPP model)	Over	8	-

Δ Model from 1971 assigns the wrong sign to the real interest rate differential coefficient and is therefore omitted

* Indicates result for model including a dummy variable capturing the portfolio shift in demand for A$ denominated assets from 2000–2002

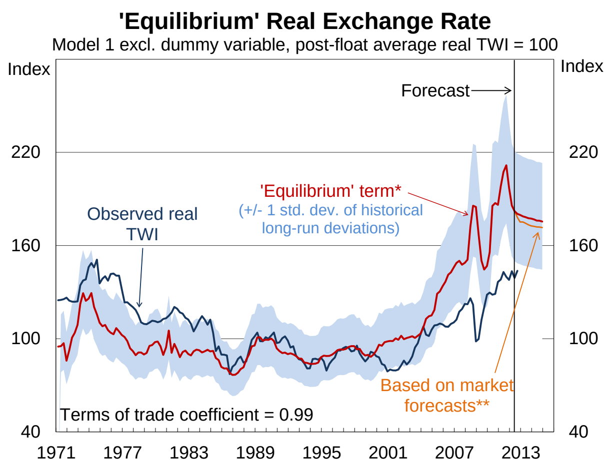
- **The Treasury**, in its recent Roundup article on the Australian dollar, reported an *over*valuation range of 11-35% (see Attachment). However they conclude the following regarding these estimates:

  *'Thus, while estimates suggesting that the real exchange rate is above its medium-to-long term equilibrium may provide information about the likely direction of the exchange rate over an extended period of time, **they need not imply that its current level is undesirably high, nor that intervention is warranted**.'* (our emphasis)

RBA forecasts suggest the equilibrium exchange rate could be around 1–4% lower in two years' time (but still well within a 2 standard deviation band of the current exchange rate).

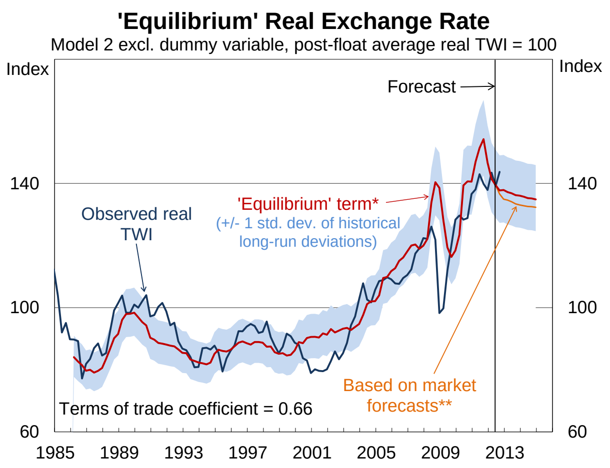
- The forecasts reflect projected further declines in the terms of trade. While expectations should already be reflected in the current level of the exchange rate (or incorporated in expectations about domestic versus foreign inflation), it is unclear how much these expectations are already incorporated in the current estimate of the equilibrium.
- These forecasts could provide a more long-run view about the equilibrium exchange rate, which is potentially more comparable with other models (PPP, some IMF models) that take a more long-run approach.

Model 1



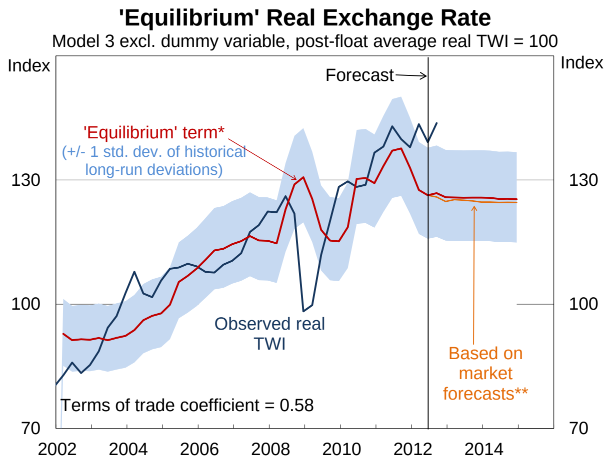
* forecast based on RBA forecasts
** Market forecasts of the terms of trade and the cash rate

Model 2



* forecast based on RBA terms of trade forecast and constant cash rate
** Market forecasts of the terms of trade and the cash rate

Model 3



* forecast based on RBA terms of trade forecast and constant cash rate
** Market forecasts of the terms of trade and the cash rate

ATTACHMENT: Treasury Roundup Article

The Treasury reported an *over*valuation range of 11-35% based on estimates of the long-run equilibrium for the exchange rate. Note:

- These estimates exclude cyclical and, in the case of the PPP models, even structural factors (whereas the RBA estimates are based on more current fundamentals that include cyclical elements)
  - Treasury notes there are '*many reasons to question the validity of PPP-based estimates*'.
- The results for the IMF models shown below are quite dated – October 2011. The most recent IMF results are for June 2012 and are given in our table above.
  - Furthermore, Treasury notes the IMF results are not statistically significant and do not '*take into account cyclical divergences in economic activity and relative interest rates*'.

Table 1: Estimates of the AUD exchange rate relative to equilibrium

Institution	Date	Measure	Method	Overvaluation (%)
Bloomberg	Jun-12	AUD/USD	PPP (consumer prices)	30.12
	Jun-12	AUD/USD	PPP (producer prices)	27.87
OECD	Jun-12	AUD/USD	PPP	35.41
IMF —	Oct-11	REER	Macroeconomic Balance	11
Article IV			External Sustainability	19.4
			Equilibrium real exchange rate	16.4

Note: Bloomberg and OECD estimates use exchange rates as of 14 June 2012.
Source: Bloomberg and IMF.

Quotes from the article:

On intervention:

'Even if sterilised intervention was effective in lowering the exchange rate, the same problem of incompatible policy objectives would still arise. If the central bank continued to target inflation, it would need to offset the stimulatory effect of the lower exchange rate by raising interest rates, which would in turn tend to push the exchange rate back up. This is why decisions on intervention are appropriately a matter for the RBA.' p52

'While the RBA does not take a completely 'hands off' approach to the exchange rate, it nowadays intervenes only during periods of market dysfunction (RBA 2011).' p52, footnote 9. (Note the referenced RBA Bulletin article only stated that we had recently intervened because of market dysfunction, but was careful not to make any policy statements about why we may or may not intervene in the future. Last year's Annual Report was similarly cautious in its wording, noting that foreign exchange intervention 'tends to be specific to the particular episode'. This year's Annual Report says 'the Bank retains discretion to intervene to address dislocated markets and gross misalignments of the exchange rate'.)

'As the current challenges faced by the Australian economy are quite different to those faced by the Swiss, there is no coherent reason for the RBA to follow the lead of the SNB and lower the value of the AUD. While the SNB's approach is consistent with its mandate given its circumstances, adopting the same approach here would raise fundamental conflicts with the RBA's inflation target.' p56, Box 2

'As such, calls for Australia to shift away from its long-standing policy approach and take action directed at lowering the value of the AUD are misplaced. Rather than helping the economy, the available options are likely to be either ineffective or result in greater macroeconomic instability. The combination of flexible inflation-targeting monetary policy and a floating exchange rate has served Australia well in delivering macroeconomic stability through a range of shocks over the past two decades. There is no coherent reason to believe that it is inappropriate for current economic circumstances.' p57

Specifically on monetary policy:

'Should the exchange rate become too high for macroeconomic purposes, this will be reflected in rising spare capacity and, ultimately, declining inflation. In these circumstances we could expect that monetary policy would be eased, putting downward pressure on the exchange rate. Hence, the appropriate remedy for an excessively high exchange rate is already available within the existing inflation-targeting framework.' p51

On fiscal policy:

'The substantial fiscal consolidation currently under way, totalling 4½ per cent of GDP between 2009-10 and 2012-13, is already helping to moderate upward pressure on the AUD. Achieving a substantially lower exchange rate through this avenue would therefore require a much larger fiscal contraction than is appropriate given the global economic environment currently facing Australia.'

Market Analysis
International Department
17 August 2012

Financial Account

In contrast to the previous nine quarters, when net capital inflows to the public sector averaged 3.3 per cent of GDP, net flows were close to zero in the June quarter, reflecting:

– An outflow of 0.7 per cent of GDP to the General Government sector (Graph 5); and

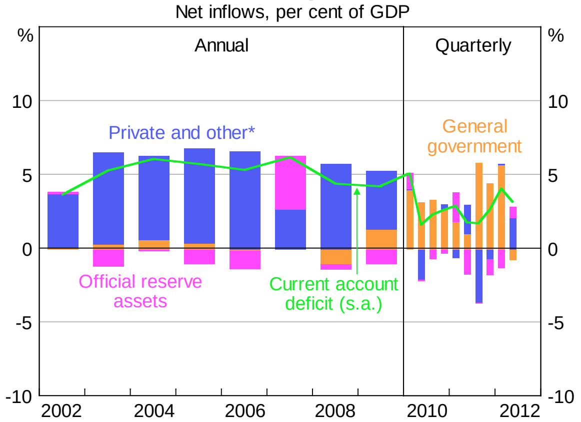
The net outflow of capital from the general government sector may have been affected by a number of factors. While there was a small net maturity of Commonwealth Government securities (CGS) in the June quarter, a large bond matured and another large bond became due for maturity within a year's time (which is a trigger for some investors – including some central banks - to roll out of these positions). This may have contributed to the capital outflow if foreign ownership of these bonds was particularly high and/or the holdings were not rolled over into new positions.[2]

Despite the net outflow of capital from the general government sector, the total stock of foreign holdings of government securities increased during the quarter, owing to positive valuation effects associated with the fall in bond yields. Overall, foreign ownership of CGS fell slightly to 76.1 per cent in the June quarter (from 76.5 per cent in the March quarter).

Graph 4

Australian Capital Flows

Net inflows, per cent of GDP

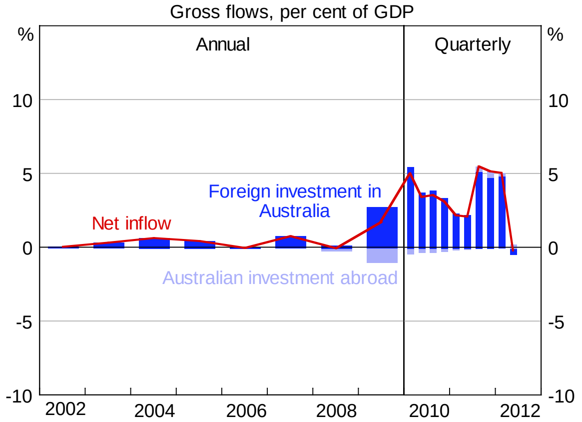


* Assumes all direct investment is private. Includes state government and public corporations, and adjusted for the US dollar swap facility in 2008 and 2009.
Sources: ABS; RBA

Graph 5

General Government Portfolio Debt Flows*

Gross flows, per cent of GDP



* Excludes State government and public corporations.
Sources: ABS; RBA

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[2] One possible scenario is that some of the proceeds from these bond maturities or bond sales might have been held in cash prior to being reinvested

/ Market Analysis / International Department
/ Financial Conditions Section / Economic Analysis Department
4 September 2012