RESERVE BANK OF AUSTRALIA

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Summary of Request	The following publication: Title: The Sahm Rule: A Recession Indicator for Australia Authors: Calvin He and Tom Rosewall. Date: 16 January 2020
Notes/context to any specific documents released:	N/A.

THE SAHM RULE: A RECESSION INDICATOR FOR AUSTRALIA[1]

The Sahm Rule is a simple and timely recession indicator based on the unemployment rate. For the United States, the Sahm Rule signals a recession when the three-month moving average of the national unemployment rate increases by a ½ percentage point or more relative to its low during the previous 12 months. We consider the Sahm Rule for Australia and judge that a threshold of ***¾ percentage point*** *is more appropriate.*

The Sahm Rule

Detecting recessions in real time is difficult. For example, lags in data releases mean that policymakers could not confirm the economy is in a technical recession (two consecutive quarters of negative GDP growth) for up to nine months from the start of the recession.[2]

Claudia Sahm recently proposed a rule to help detect recessions, the Sahm Rule. Based on monthly movements in unemployment, the Sahm Rule has correctly detected every recession in the United States since the 1970s as identified by the NBER, with no false positives. The Sahm Rule was initially designed as a trigger for automatic fiscal stimulus, but the rule has desirable properties that make it useful for broader application. First, as aforementioned, the Sahm Rule has no false positives in detecting US recessions. Second, the focus on *changes* in the unemployment rate accounts for changes in the NAIRU. Third, it is timely as unemployment data is released monthly and only a few weeks after the reference month.

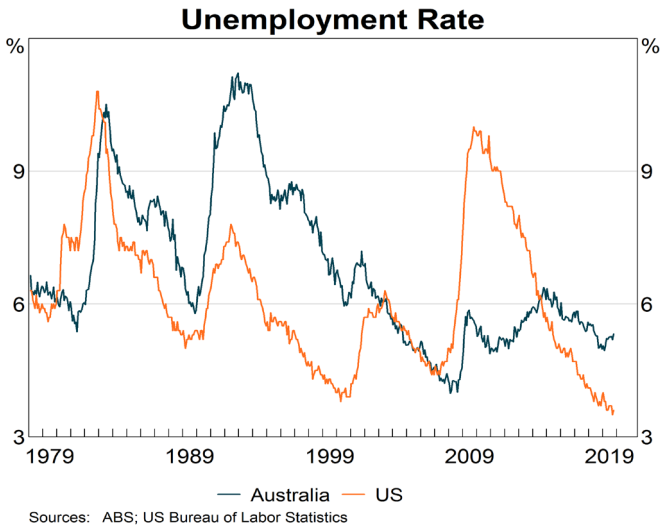
For the US, the Sahm Rule signals a recession when the three-month moving average of the national unemployment rate rises by a ½ percentage point or more relative to its low during the previous 12 months.[3] We adjust the Sahm Rule for the Australian economy. We judge that a **¾ percentage point** increase in the three-month moving average of unemployment relative to its low during the previous 12 months (the *Sahm Difference)* to be more appropriate for Australia.

Unemployment in Australia and the US

The timing of cycles in the unemployment rates of Australia and US are broadly similar, but the extent of upswings vary (**Error! Reference source not found.**). Australia's unemployment rate increased by much more than the US unemployment rate in the early 1990s recession, while the dot com bust and Global Financial Crisis saw much larger increases in the US.

To apply the Sahm Rule to Australia, we use real-time monthly national unemployment data from the ABS, sourced from The University of Melbourne's Real-time Macroeconomic Database for vintages 1982M3 to 2017M4 and directly from the ABS for 2017M5 to 2019M11.[4]

Graph 1



We follow the original Sahm Rule and use the three-month moving average of the unemployment rate. Changes in the three-month moving average are quite persistent in both countries whereas monthly changes in the Australian unemployment rate have no persistence.

1 We would like to thank name redacted and name redacted for their useful comments and suggestions. Thanks to name redacted for helping to add the Sahm Rule to GERTRUDE. Also thanks to Luci Ellis, Anthony Brassil, James Holloway, Peter Tulip and name redacted for initially providing comments which led to this note.

2 This could be even longer after accounting for data revisions.

3 The Sahm Rule for the US is available on FRED.

4 For earlier vintages where the ABS did not publish the full time-series of the unemployment data every month any previously known data is used with the assumption that there was no revision to the data.

There is no widely recognised recession timing for Australia equivalent to the NBER Business Cycle Dating Committee for the US. As a result, greater judgement is required when identifying Australian recessions, informed by economic commentary from the Reserve Bank and other sources.

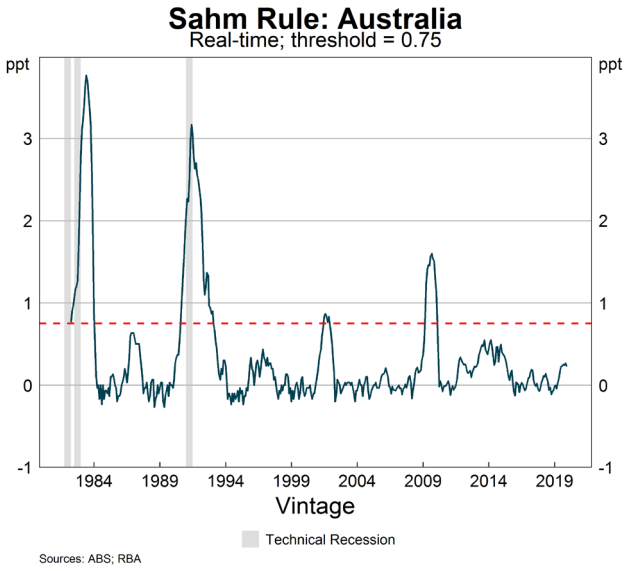
Why ¾ percentage point?

We judge that a ¾ percentage point increase in the three-month moving average of unemployment relative to its low during the previous 12 months is a more appropriate threshold for Australia (Graph 2). This is supported by an evaluation of the performance of the threshold and a consideration of the statistical properties of the Australian time series. The ¾ percentage point threshold would have detected the technical recessions in the early 1980s and 1990s. The dot com bust of 2001 and the Global Financial Crisis would also be classified as (mild) recessions, consistent with broader interpretations of recessions in Australia including previous commentary from the Bank.[5,6]

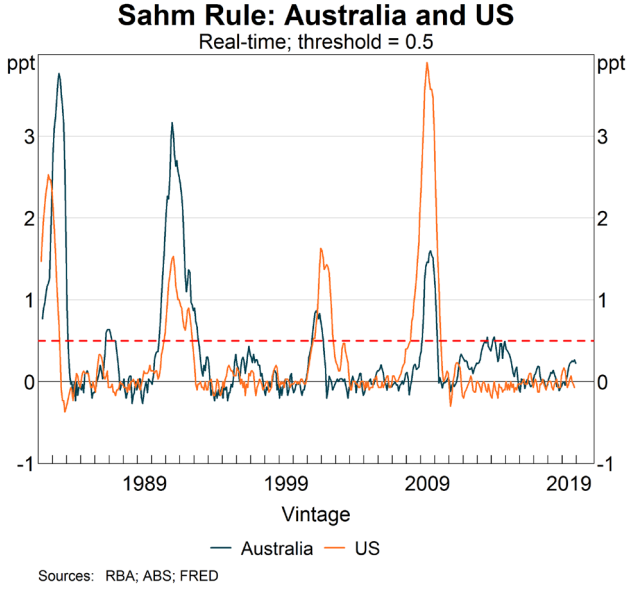
Our primary rationale for increasing the threshold is based on an ex-post evaluation of the performance of the threshold in identifying recessions in a timely and accurate manner. Using the Sahm Rule with the same threshold as the US for Australia (½ percentage point) would generate false positives of recessions (Graph 3). Specifically, this threshold would suggest that Australia entered recession in late 1986 and late 2013. Though both these periods included slowdowns in economic activity, we do not judge that these slowdowns were prolonged or large enough to warrant classifying them as recessions.

A higher threshold could be justified as changes in Australia's unemployment rate are less persistent than changes in the US unemployment rate, especially in the past two decades (based on AR-1, AR-3 and AR-6 configurations). This suggests that when unemployment rises in Australia it has historically reverted to the mean more quickly relative to the US.

Graph 2



Graph 3



Discussion and further research

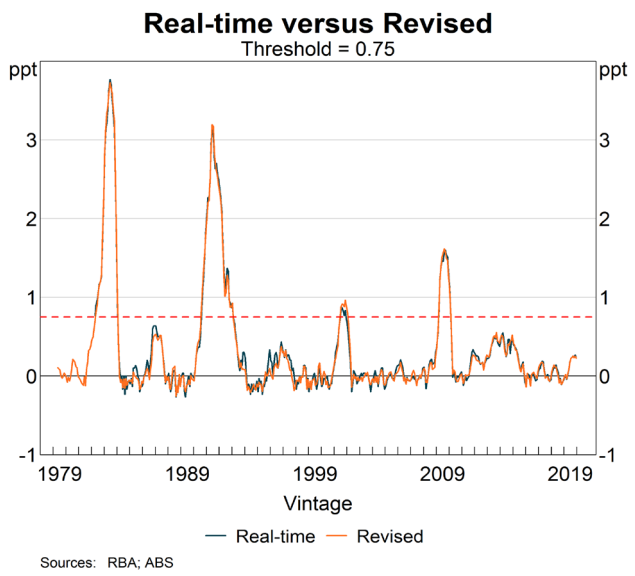
The Sahm Rule provides a timely and simple indicator for economic recessions. The large recessions of the early 1980s and 1990s were identified by the rule ahead of the confirmation of two negative quarters of GDP growth. The Rule also identifies the downturns in 2000 and 2008 as (mild) recessions. Also, comparing the real-time data and revised data shows that at no point over the sample would the real-time calculation have produced a false positive relative to revised data (Graph 4).

5 In 2014, Governor Stevens remarked (in response to a question) "*I think but for the vagaries of quarterly national accounting we might well have called the end of 2000 a recession. And we would have called the end of 2008 one, in fact I would call it that. A brief one.*" Economic Possibilities, Address to the CEDA Annual Dinner Melbourne, November 2014.

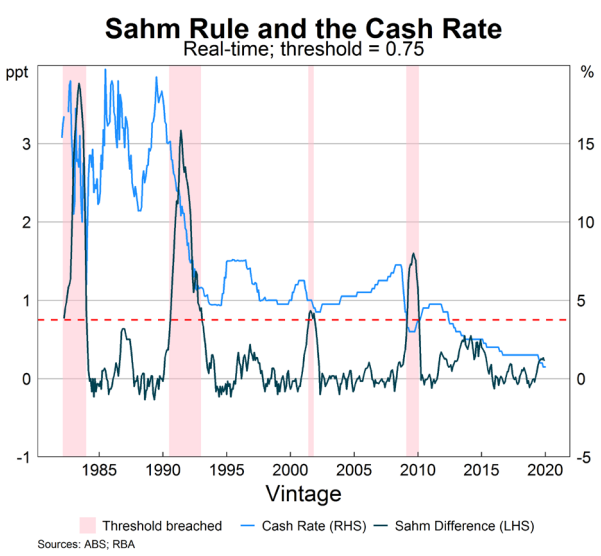
6 Bishop, Gustaffson and Plumb (2016) also classify these periods as 'downturns'. They use a similar rule where downturns are identified if there is an increase in the unemployment rate of at least 1 percentage point over a period of less than twelve months.

RBA easing cycles have corresponded to increases in the Sahm Difference (Graph 5). Moreover, these easing cycles have commenced before the threshold of ¾ percentage point is breached. This is unsurprising given that the Sahm Rule is a recession indicator, rather than a measure of economic slack. A similar trend is also observed in the US. Although the Sahm Rule does not present any 'new' information to monetary policymakers, its timeliness could increase confidence in the near-term assessment of the economy and increase the strength of the policy response. In fact, Sahm initially proposed her rule be used as a way to automatically trigger stimulus payments to households to help shorten recessions (Sahm 2019). The simplicity of the rule could also aid communication with the general public.

Graph 4



Graph 5



The Sahm Rule focuses on changes in unemployment, however labour market adjustment could also occur across other dimensions. Specifically, Australia's labour market appears to adjust more across the intensive margin (hours) rather than the extensive margin (Bishop, Gustafsson and Plumb 2016). This suggests that the unemployment rate may not fully capture the extent of negative shocks on the Australian economy. Further work applying the Sahm Rule to broader labour market measures, such as the underutilisation rate, could possibly better capture the full extent of negative shocks. For geographic variation, further calibration and judgement would need to be applied to create rules for specific states.[7] However, Claudia Sahm does not recommend applying her threshold directly to US state-level data.[8]

The Sahm Rule is now on GERTRUDE and can be found here.

Calvin He & Tom Rosewall
Economic Research & Households and National Accounts
16 January 2020

7 Cowgill (2019) applies the Sahm Rule using a ½ percentage point threshold for Australia and the states.
8 See twitter post here.

Bibliography

Bishop J, L Gustafsson and M Plumb (2016), 'Jobs or Hours? Cyclical Labour Market Adjustment in Australia', RBA Research Discussion Paper No 6.

Sahm C (2019), 'Direct Stimulus Payments to Individuals', Policy Books - Recession Ready: Fiscal Policies to Stabilize the American Economy.

Replication Files

Replication files can be found in TRIM (general) or on TFS (ER access).

Calculations

Let u_t represent the unemployment rate in month t. Define a moving average of unemployment between t and $t-h$ as:

$$\bar{u}_{t:t-h} = \frac{u_t + u_{t-1} + u_{t-2} \ldots + u_{t-h}}{h+1}$$

Using the above notation, the three-month moving average of unemployment would be:

$$\bar{u}_{t:t-2} = \frac{u_t + u_{t-1} + u_{t-2}}{3}$$

Let the *Sahm Difference* be the difference between the three-month average of unemployment and its low over the previous 12 months:

$$Sahm\ Difference = \bar{u}_{t:t-2} - \min\{\bar{u}_{t-1:t-3}, \ldots, \bar{u}_{t-13:t-15}\}$$

We adjust the Sahm Rule for Australia as when Sahm Difference is equal to or greater than ¾ of a percentage point:

$$Sahm\ Difference \geq 0.75$$

Threshold breach dates

Table 1: Threshold breach dates [(a)]

Threshold = 0.75

Real-time date	1982M3 – 1983M12	1990M7 – 1992M12	2001M6 – 2001M10	2009M2 – 2010M1
Revised date	1982M4-1983M12	1990M7-1992M12	2001M6-2001M12	2009M2-2010M1

(a) Reference dates. To obtain the vintage date minus one month from each date.
Sources: ABS; RBA