

Box 1 Revisions to the composite leading and coincident business cycle indicators

Various factors require the sporadic reassessment of the component time series included in the composite business cycle indicators of the South African Reserve Bank (the Bank). These include, inter alia, structural changes in the economy, the identification of new economic indicators or the discontinuation of existing indicators. The Bank previously revised the composition of the composite leading business cycle indicator in 2007¹ and that of the composite coincident² and lagging business cycle indicators in 2004.³ It has since become necessary to effect a few minor revisions to the composite leading and coincident business cycle indicators. The purpose of this box is to briefly discuss these revisions.

The composite coincident business cycle indicator

The five component time series included in the composite coincident business cycle indicator have been retained unchanged. However, changes made to the composite coincident business cycle indicator were related to two other aspects. Firstly, historical revisions to the underlying data and weighting structure within some component time series were incorporated. Secondly, the long-term trend of the composite coincident business cycle indicator was adjusted. Regarding the first aspect, the following changes were incorporated:

- The industrial production component time series comprises the physical volume of manufacturing production, the physical volume of mining production and the quantity of electricity generated, each seasonally adjusted and weighted according to that sector's contribution to gross domestic product. The relative weights of the three constituent indicators were revised historically to 2005, resulting in a marginally revised industrial production index from January 2005 onwards.
- Statistics South Africa (Stats SA) recently improved the *Quarterly Employment Statistics* survey by implementing a new sample drawn from the 2013 business sampling frame. This resulted in a structural break in the component series that measured total formal non-agricultural employment in the second quarter of 2013, as well as in revisions to the quarterly changes in the indicator. This component indicator was statistically linked by the Bank to obtain a smooth time series, which was then incorporated into the composite coincident business cycle indicator.
- Recent data revisions to the indicator that measures the utilisation of production capacity in the manufacturing sector were also incorporated in the composite coincident business cycle indicator.

The final step in the compilation methodology of the composite coincident business cycle indicator was to adjust its long-term trend to match the long-term trend in real gross value added in the economy at basic prices, excluding agriculture. During the 2007 revisions, the long-term trend in the composite coincident business cycle indicator outpaced that in the non-agricultural real gross value added for the period considered at the time. The long-term trend in the composite coincident business cycle indicator was therefore adjusted downwards to match the long-term trend in the non-agricultural real gross value added.

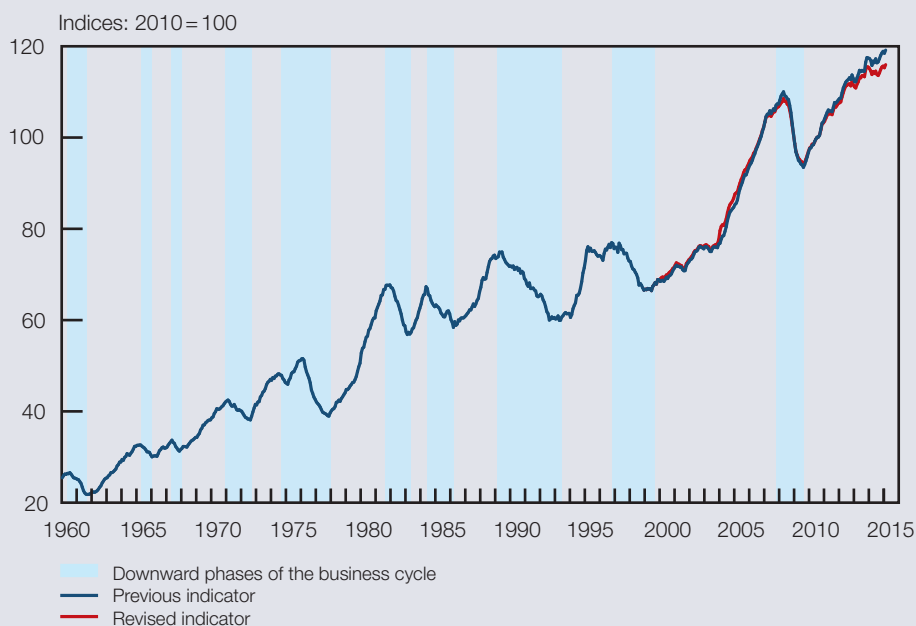
Since the end of 2009 – the start of the most recent upward phase in the business cycle – the growth trend in the composite coincident business cycle indicator has outpaced the growth trend in real non-agricultural gross value added by a slightly bigger margin than before. This can largely be attributed to a much slower growth trend in real non-agricultural gross value added after the 2008–09 recession than during the preceding upward phase in the business cycle. In addition, the growth trend in the composite coincident business cycle indicator was supported by exceptionally strong public-sector employment growth, coupled with strong growth in the real value of new vehicle and retail trade sales over this period. The long-term trend in the composite coincident business cycle indicator was thus adjusted downwards by a slightly larger margin than before.

All of the changes discussed above were incorporated into the composite coincident business cycle indicator and the revised composite coincident indicator was linked to the historical composite coincident indicator in January 2000 (see figure on the next page). Importantly, these revisions did not result in any changes to the turning points in the composite coincident business cycle indicator.

- 1 J C Venter, 'Revisions to the composite leading and coincident business cycle indicators', text box on page 15, *Quarterly Bulletin* No. 244, June 2007, Pretoria: South African Reserve Bank.
- 2 J C Venter and W S Pretorius, 'Note on the revision of composite leading and coincident business cycle indicators', *Quarterly Bulletin* No. 231, March 2004, Pretoria: South African Reserve Bank.
- 3 J C Venter, 'Note on the revision and significance of the composite lagging business cycle indicator', *Quarterly Bulletin* No. 234, December 2004, Pretoria: South African Reserve Bank.



Composite coincident business cycle indicator



The composite leading business cycle indicator

Similar to the composite coincident business cycle indicator, changes to the composite leading business cycle indicator were aimed at achieving two objectives. The first objective was to align the composite leading business cycle indicator more closely to domestic real economic developments. Secondly, the long-term trend of the composite leading business cycle indicator was adjusted to reflect that in the composite coincident business cycle indicator.

In order to achieve the first objective, three changes were made to the composite leading business cycle indicator:

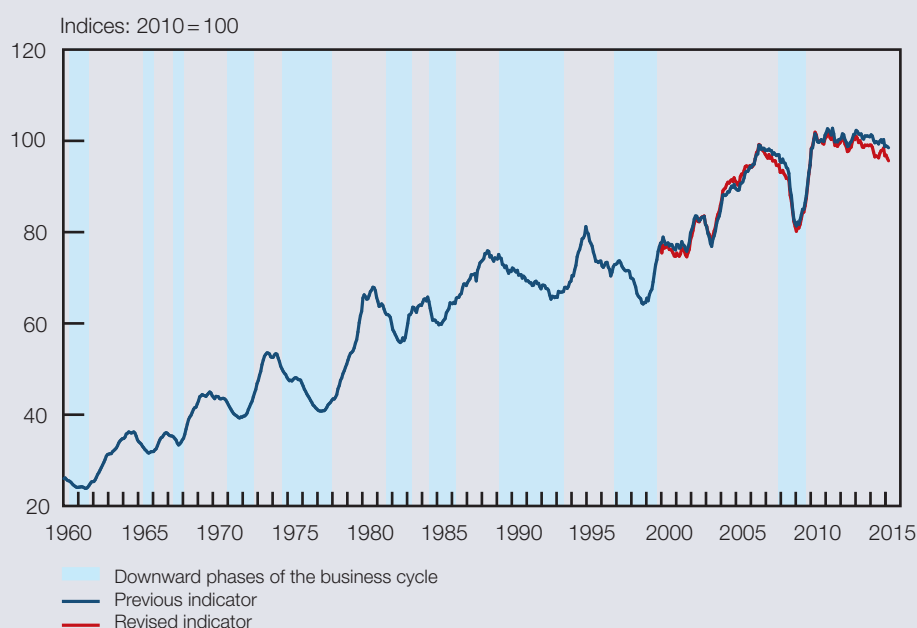
- The index representing the prices of all classes of shares traded on the JSE Limited (JSE) was discarded as one of the component time series of the composite leading business cycle indicator. Since the early 2000s, there appears to have been an increasing disconnect between domestic share price movements and the performance of domestic real economic activity. This was largely the result of a number of dual-listed companies increasingly dominating the market capitalisation on the JSE. As such, the share price component in the composite leading business cycle indicator failed to lead the most recently identified business cycle peak (November 2007). In addition, driven by the prolonged period of very accommodative global monetary policy measures following the global financial crisis, domestic share prices rose notably in recent years, increasingly reflecting global developments rather than domestic real economic developments.
- Improvements were made to the component series representing the twelve-month percentage change in the composite leading business cycle indicator of South Africa's main trading-partner countries. The scope of this indicator was broadened to reflect the changing composition of South Africa's export trading partners. As such, the composite leading business cycle indicators of four additional trading-partner countries were included in the index, namely China, India, Spain and Australia. All the countries previously represented were retained, that is, the United States, the United Kingdom, Japan, Germany, France, Italy, the Republic of Korea and Taiwan.
- The weights within the component series representing the prices of a basket of South Africa's main export commodities, denominated in US dollar terms, were updated to more accurately reflect the export share of each commodity included in the index.

The selection of component time series to be included in the composite leading business cycle indicator was primarily based on their timing relation with the business cycle, in particular their ability to consistently provide early signals of possible turning points in the business cycle. A number of the component time series included in the composite leading indicator are therefore of a stationary nature, with no discernible long-term trend. As such, the inherent long-term trend of the composite leading business cycle indicator has no significant economic meaning, as the trend often changes when changes are made to the composition of the indicator. In order to keep the long-term trend in the composite leading business cycle indicator more stable over time and also to provide it with a more meaningful long-term trend, the leading indicator's inherent long-term trend was adjusted to match that of the composite coincident

business cycle indicator. Since the long-term trend in the composite coincident business cycle indicator was adjusted downwards during the current round of revision, the trend adjustment of the composite leading business cycle indicator also had to be amended slightly.

The changes discussed above were all incorporated into the composite leading business cycle indicator and the revised indicator was linked to the historical composite leading indicator in January 1999, shown in the figure below. Although these revisions did not result in changes to the turning points in the composite leading business cycle indicator, the decrease in the revised leading indicator was more pronounced throughout 2007, providing a clearer signal of the downward phase in the business cycle that commenced in December 2007. In addition, the moderate downward trend displayed by the leading indicator over the past two years is now slightly more pronounced, providing a somewhat clearer signal of the recent slowdown in domestic economic activity.

Composite leading business cycle indicator



The table below lists the eleven component time series now included in the composite leading business cycle indicator, the five component time series included in the composite coincident business cycle indicator and the seven component time series included in the composite lagging business cycle indicator.

Component time series of the composite business cycle indicators

Leading indicator	Coincident indicator	Lagging indicator
Job advertisement space in the <i>Sunday Times</i> newspaper: percentage change over twelve months	Gross value added at constant prices, excluding agriculture, forestry and fishing	Cement sales (in tons)
Number of residential building plans passed for flats, townhouses and houses larger than 80m ²	Total formal non-agricultural employment	Value of non-residential buildings completed at constant prices
Interest rate spread: 10-year government bonds less 91-day Treasury bills	Value of retail and new vehicle sales at constant prices	Ratio of gross fixed capital formation in machinery and equipment to final consumption expenditure on goods by households
Real M1 money supply (deflated with CPI): six-month smoothed growth rate	Industrial production index	Ratio of inventories to sales in manufacturing and trade
Index of commodity prices (in US dollar) for a basket of South African-produced export commodities	Utilisation of production capacity in manufacturing	Nominal labour cost per unit of production in the manufacturing sector: percentage change over twelve months



Component time series of the composite business cycle indicators (continued)

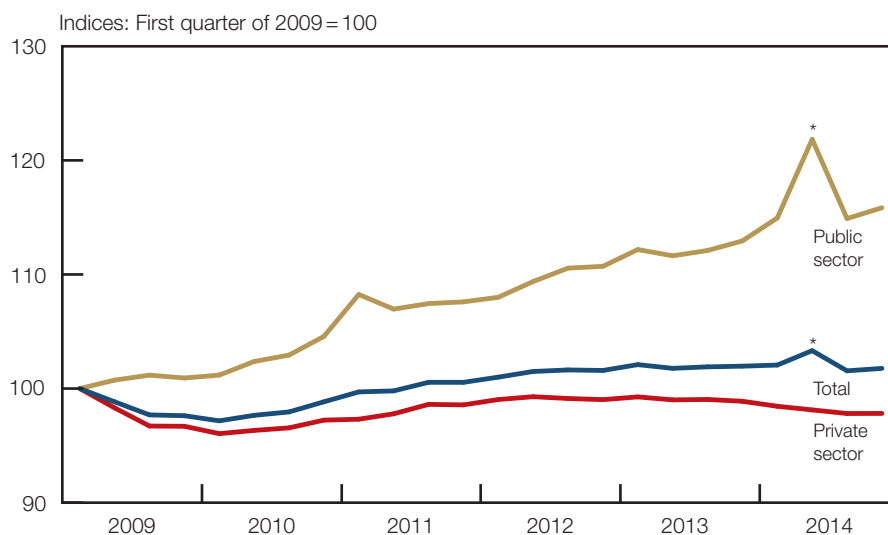
Leading indicator	Coincident indicator	Lagging indicator
Composite leading business cycle indicator of South Africa's major trading-partner countries: percentage change over twelve months		Predominant prime overdraft rate of banks
Gross operating surplus as a percentage of gross domestic product		Ratio of consumer instalment sale credit to disposable income of households
RMB/BER Business Confidence Index		
Net balance of manufacturers observing an increase in the average number of hours worked per factory worker (half weight)		
Net balance of manufacturers observing an increase in the volume of domestic orders received (half weight)		
Number of new passenger vehicles sold: percentage change over twelve months		

Employment

Consistent with the acceleration in output growth in the fourth quarter of 2014, the level of formal non-agricultural employment increased over the period. According to the *Quarterly Employment Statistics* (QES) survey undertaken by Statistics South Africa (Stats SA), the number of people employed in the formal non-agricultural sector of the economy increased by 0,8 per cent on a seasonally adjusted and annualised basis in the fourth quarter of 2014, representing a gain of 18 900 job opportunities and raising the level of formal non-agricultural employment to an estimated 8,97 million.² Stats SA recently improved the QES survey by implementing a new sample drawn from the 2013 Business Sampling Frame, which was enhanced by drawing on additional administrative sources. The new sample was introduced from the second quarter of 2013, resulting in an upward adjustment of roughly 0,5 million to the level of total formal non-agricultural employment. Nevertheless, formal non-agricultural employment growth moderated for a third successive year in 2014; the annual average growth rate slowed from 2,3 per cent in 2011 to 1,3 per cent in 2012, to 0,5 per cent in 2013 and a mere 0,2 per cent in 2014.

² The QES data reported in this section are seasonally adjusted unless stated to the contrary.

Formal non-agricultural employment



* Election-related outlier

