

Business cycles in South Africa from 2009 to 2013

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Introduction

The South African Reserve Bank (the Bank) had previously identified reference turning points in the cyclical movement of the South African economy for the period 1946 to 2009. These historic upper (peaks) and lower (troughs) turning points in the business cycle were discussed in various articles and notes published in earlier issues of the Bank's *Quarterly Bulletin*. In addition, the reference chronology of peaks and troughs in the South African business cycle is regularly published on page S-157 of the *Quarterly Bulletin*. The most recently identified trough in the business cycle occurred in August 2009.²

The purpose of this article is to identify a reference peak in the business cycle, following the trough in August 2009. The next section briefly describes the methodology applied by the Bank in identifying a reference turning point in the business cycle, including the business cycle definition employed by the Bank. This is followed by the statistical results obtained when applying the methodology in this study. A brief overview of macroeconomic events and developments between 2009 and 2013 is then presented, followed by a graphic comparison of movements in selected economic indicators during the three post-apartheid upward phases in the South African business cycle. The article concludes with the identification of the most recent upper reference turning-point date.

Methods used to determine reference turning points in the business cycle

The Bank determines reference turning points in the business cycle in terms of the *growth cycle* definition of business cycles and not in terms of the *classical* definition of business cycles. Classical business cycles refer to periods of absolute increase in aggregate economic activity, followed by periods of absolute decrease (contractions) in aggregate economic activity, i.e. recessions. However, growth cycles represent the fluctuations around the long-term growth trend of aggregate economic activity – so-called trend-adjusted business cycles. Therefore, the Bank's business cycle chronology represents reference turning-point dates that distinguish between upward phases – when the pace of growth in aggregate economic activity either matched or exceeded its long-term growth trend – and downward phases – when aggregate economic activity either contracted or increased at a slower rate than its long-term growth trend.

The Bank employs several statistical tools to establish whether a reference turning point in the South African business cycle has occurred. Firstly, the Bank's three *composite business cycle indicators* – leading, coincident and lagging – are continuously monitored for an early indication of a possible turning point in the business cycle. A composite business cycle indicator is compiled by integrating various economic indicators into a single index. The composite *leading* business cycle indicator currently combines 11 individual economic indicators which have historically preceded turning points in the business cycle. The composite *coincident* business cycle indicator combines five economic indicators which have historically coincided with turning points in the business cycle. Similarly, the composite *lagging* business cycle indicator incorporates seven economic indicators which have historically followed turning points in the business cycle.³

Once the composite business cycle indicators point to the likelihood that a turning point in the business cycle has occurred, two comprehensive diffusion indices are calculated. Similarly to the calculation of the composite business cycle indicators, the *current diffusion index* is compiled from the actual month-to-month symmetrical percentage changes⁴ in each of a number of

1 The author would like to thank the staff of the Business Cycle Analysis Division in the Economic Research and Statistics Department of the Bank, in particular Ms A Bosch, for valuable assistance in applying the statistical methods employed during this analysis.

2 Venter, J C. 2011 (June), 'Business cycles in South Africa during the period 2007 to 2009,' *Quarterly Bulletin* 260: 61–66. Pretoria: South African Reserve Bank.

3 For a discussion of the most recent revision to the composite business cycle indicators, including a list of the component indicators, see the text box in *Quarterly Bulletin* 276 (June 2015) on pages 14–17.

4 The month-to-month symmetrical percentage change (S) for a time series (X) is calculated as: $S_t = 200(X_t - X_{t-1}) / (X_t + X_{t-1})$ with t denoting the time period.



seasonally adjusted economic time series (in this study, 170 time series were analysed). These indicators represent diverse economic processes such as production, sales, employment, prices, monetary aggregates, and investment in the various sectors of the economy. The deviation of the current diffusion index from its long-term trend provides a quantitative measure for the cyclical movement in aggregate economic activity, with its turning points serving as a proxy for reference turning points in the business cycle.

In addition, the same 170 seasonally adjusted economic time series were used to calculate the *historical diffusion index*, which can be defined as a measure of dispersion of the changes in a number of time series. This index depicts the number of time series that are increasing (relative to each one's long-term trend) as a percentage of the total number of series considered. Therefore, an index value exceeding 50 indicates that the majority of time series considered was increasing in that particular month, implying that the economy was in an upward phase of the business cycle. Similarly, an index value below 50 indicates that the economy was in a downward phase of the business cycle in that particular month. Turning points in the historical diffusion index, which provide a proxy for reference turning points in the business cycle, therefore occur when the index passes through the 50-per-cent mark. In the construction of both the current and the historical diffusion indices, the sectoral contributions are weighted according to each sector's contribution to real gross value added in the economy.

The identification of a reference turning point in the business cycle is never simply reduced to a mechanical statistical exercise. In fact, the statistical tools described above seldom all point to exactly the same reference turning-point date. Consequently, various other macroeconomic indicators, as well as significant economic events and developments occurring near a possible turning point, have to be considered in order to identify the reference turning-point date.

Statistical results

Upon applying the statistical methods described above, the results reconfirmed that a definite upward phase of the business cycle commenced after August 2009 – the most recently identified reference trough in the business cycle. The results also indicated that a subsequent reference peak in the business cycle has already been reached.

The composite business cycle indicators

The composite leading business cycle indicator reached a trough in January 2009 – seven months before the most recent business cycle trough (see Graph 1 on next page). Subsequently, the leading indicator increased significantly up to April 2010 before effectively trending sideways for about two and a half years, reflecting an extended period of uncertainty in the South African economy. However, the leading indicator embarked on a distinct downward trend after November 2012, its most recent peak, signalling a possible slowdown in the growth rate of aggregate economic activity. Initially, the downward trend in the leading indicator was fairly muted before picking up pace after November 2014. Based on its historical relationship with the business cycle, the leading indicator pointed to a possible peak in the business cycle in the second half of 2013 or in the first half of 2014.

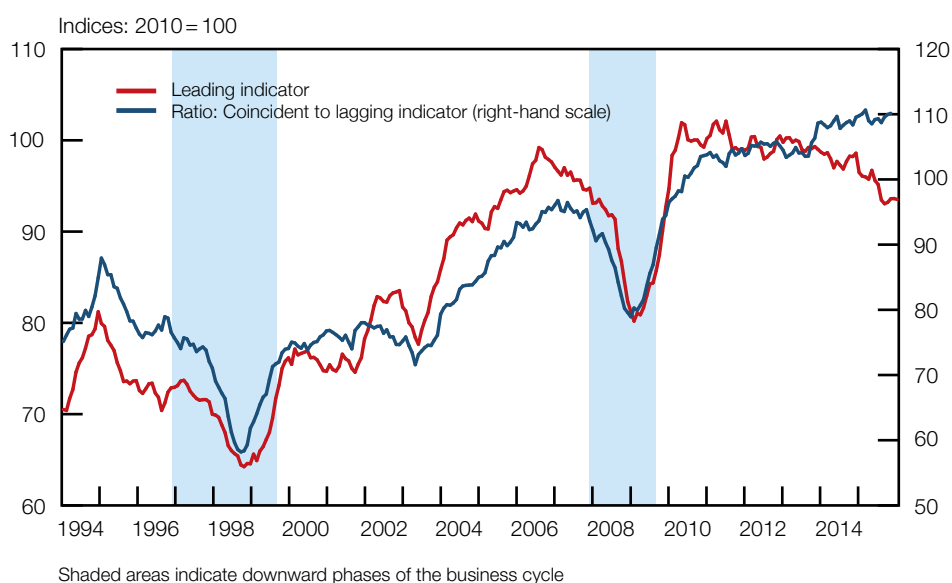
The ratio of the composite coincident business cycle indicator relative to the composite lagging business cycle indicator serves as an additional leading indicator of the business cycle.⁵ As depicted in Graph 1, movements in this ratio have historically been quite similar to those in the composite leading business cycle indicator, with both indicators reaching their most recent low points in January 2009. However, following an initial strong recovery and a subsequent period of sideways movement (similar to the leading indicator), the ratio did not decline in tandem with the leading indicator. Instead, it shifted upwards in the closing months of 2014 and then continued to trend sideways. The behaviour of the ratio since 2013 relative to that of the leading indicator illustrates a unique characteristic of the current business cycle: the reference peak identified in this study does not appear to have been brought about by endogenous factors that often occur during typical boom/bust cycles, such as over-investment, rapid

5 Venter, J. C. 2004 (December), 'Note on the revision and significance of the composite lagging business cycle indicator' *Quarterly Bulletin* 234: 70–76. Pretoria: South African Reserve Bank.



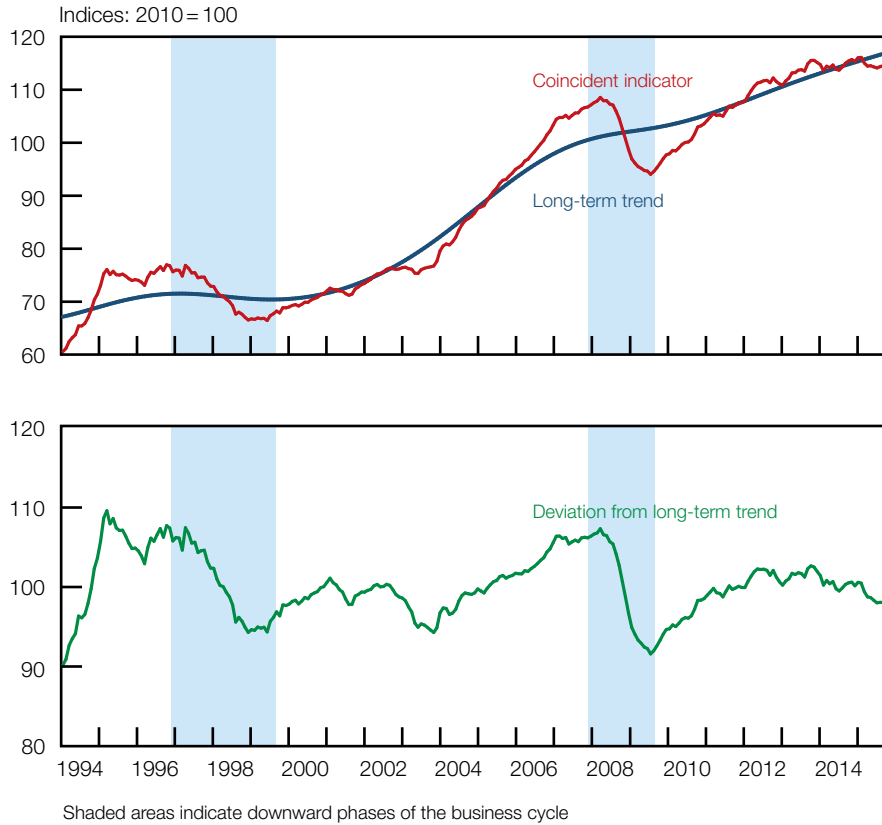
credit-driven growth in household consumption expenditure, or a brisk rise in unit labour costs. The composite lagging business cycle indicator incorporates component time series that largely reflect the build-up (or subsidence) of such endogenous cost pressures or imbalances in the economy. Therefore, during the latter part of a typical upward phase in the business cycle, the composite lagging business cycle indicator usually rises rapidly, dragging down the ratio of the coincident to lagging indicator. However, throughout the upward phase in the business cycle that commenced in September 2009, the lagging indicator has increased at a similar or slower pace than the coincident indicator, showing no signs of an overheating economy. In contrast, the decline in the composite leading business cycle indicator was brought about by falling business confidence, slowing global output growth and falling international commodity prices (both reflecting external demand) as well as slowing domestic demand (reflected in declining passenger vehicle sales and lower domestic manufacturing order volumes).

Graph 1 Composite business cycle indicators



The composite coincident business cycle indicator – expressed as the deviation from its long-term trend – moved broadly sideways during most of 2007 before reaching a peak in April 2008 (see Graph 2 on next page). The coincident indicator then fell notably to August 2009, followed by a protracted upward movement. Initially, the coincident indicator rose at a fairly brisk pace, but the growth rate in the coincident indicator slowed during each successive year after 2011 as the upward phase in the business cycle lost momentum. The coincident indicator has trended broadly sideways since the end of 2013, with the deviation from its long-term trend reaching an upper turning point in November 2013, suggesting that a reference peak in the business cycle may have been reached.

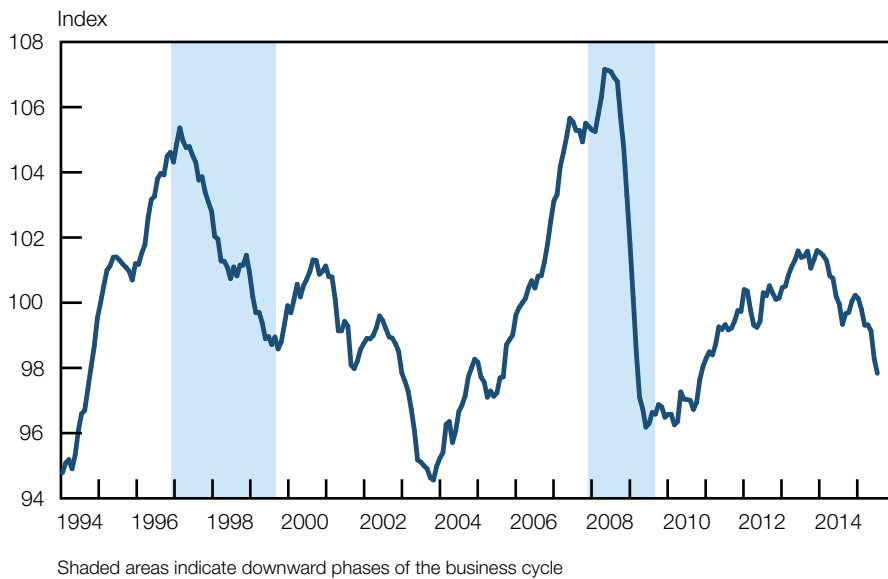
Graph 2 Composite business cycle indicators



The current diffusion index

The deviation of the current diffusion index from its long-term trend fell sharply during 2008 and reached a lower turning point in May 2009. Graph 3 shows that the indicator then increased for a few months before receding somewhat to February 2010. Subsequently, the trend-adjusted current diffusion index followed a sustained upward trend before levelling off in 2013, reaching a peak in November of that year and then decreasing notably.

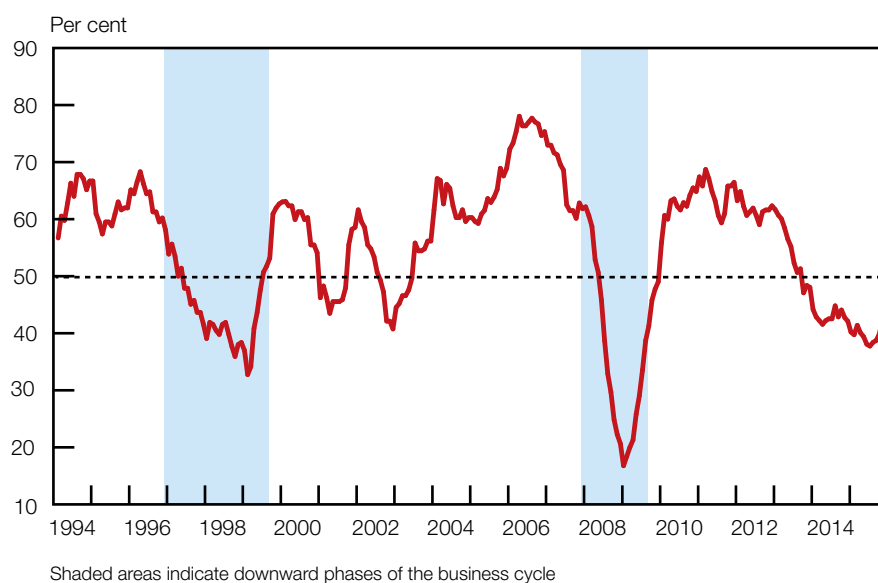
Graph 3 Current diffusion index: deviation from long-term trend



The historical diffusion index

As depicted in Graph 4, the historical diffusion index rose to above 50 per cent in December 2009, implying that the majority of the time series analysed increased from that month onwards relative to their respective long-term trends. The indicator rose briskly to just below the 70-per-cent mark in February 2011 before declining steadily thereafter. The historical diffusion index fell below the 50-per-cent mark in September 2013, implying that the number of economic time series decreasing (relative to their respective long-term trends) outnumbered those increasing from that month onwards – suggesting that a peak in the business cycle had been reached in August 2013.

Graph 4 Historical diffusion index



Macroeconomic events and developments

The severity of the previous downward phase in the South African business cycle – from December 2007 to August 2009 – was exacerbated by the global financial crisis. Likewise, the nature of the subsequent economic recovery that commenced in September 2009 was to a large extent influenced by the global financial crisis and its aftermath, including the global response to the crisis. Globally, monetary policy became extremely accommodative in 2009 and 2010, with short-term interest rates falling to historically low levels, particularly in advanced economies. International commodity prices more than halved from the third quarter of 2008 to the first quarter of 2009, and global consumer price inflation slowed markedly in 2009.

Throughout the global financial crisis, economic growth in some emerging-market economies, in particular China and India, remained fairly robust. Renewed strong demand for mining commodities from China in particular, taking advantage of the low price levels, led to an increase in international commodity prices from the middle of 2009, providing a much-needed fillip to commodity-exporting countries such as South Africa. Rising export volumes provided some growth momentum to the mining and manufacturing sectors, in particular in the second half of 2009 and into 2010. Aided by increased export demand, business confidence and capacity utilisation picked up from the fourth quarter of 2009. Confidence levels were also lifted by a recovery in share prices and residential property prices from the second quarter of 2009, while new vehicle sales started to increase at around the same time after contracting markedly for a period of almost three years.

Formal non-agricultural employment contracted severely during the downward phase of the business cycle and only started to recover from the second quarter of 2010. Employment losses occurred primarily in the private sector as the public sector continued to expand its staff complement in a contra-cyclical fashion throughout the downswing, with the pace of public-sector job creation merely slowing somewhat in 2009. Nevertheless, remuneration growth remained elevated in both the private and the public sectors between 2008 and 2010, aiding a slightly lagged recovery in household consumption expenditure from the first quarter of 2010. In fact, consumption expenditure by households grew briskly throughout 2010, assisted by a moderation in consumer price inflation, very high real remuneration increases as well as positive wealth effects following rising financial asset prices. Gross fixed capital formation (dependent on long-term investment decisions) contracted notably in 2009 and remained sluggish in 2010, responding to the upward phase in the business cycle with a significant lag. The delayed sharp contraction and subsequent lacklustre pickup in gross fixed capital formation was exacerbated by the completion of a number of large infrastructure projects that had been embarked upon in preparation for the hosting of the 2010 FIFA World Cup™ tournament.

Between 2010 and 2012, the global economy continued on an uneven recovery path as the fairly buoyant economic growth rates recorded in emerging-market countries stood in stark contrast to the pedestrian and hesitant recovery observed in most developed economies. Monetary policy in advanced economies remained extremely accommodative throughout this period, with short-term interest rates in a number of countries remaining close to the zero lower bound for a protracted period. In addition, unconventional measures collectively known as quantitative easing were continuously applied to bolster liquidity in financial markets. In many European countries, the quantum and cost of public debt raised fears about the sustainability of public finances, resulting in the economic crisis morphing into a sovereign debt crisis. Sovereign bond yield spreads in peripheral European countries rose dramatically over this period, particularly in Greece, leading to a succession of debt bailout and debt restructuring packages being extended to some of these countries by the European Central Bank and the International Monetary Fund. These economies had to resort to fiscal austerity measures in an effort to restore confidence and credibility, contributing to renewed economic recessions experienced in many European countries towards the end of 2011 and into 2012.

The flood of global liquidity created by the monetary policies pursued in advanced economies resulted in large capital inflows into emerging-market economies, leading to rising share prices and lower bond yields, also in South Africa. In addition to the glut in global liquidity searching for high yields, strong demand from China in particular led to sharp increases in international commodity prices in 2010 and 2011. However, from the fourth quarter of 2011 onwards, commodity prices embarked on a prolonged downward trend, initially weighed down by the lacklustre recovery in advanced economies, particularly in Europe, as well as slowing output growth in some emerging-market economies. Despite falling international commodity prices, international crude oil prices remained fairly elevated throughout 2012 and 2013, supported by fears regarding the security of oil supply following political turmoil and conflict in a number of countries in the Middle East and North Africa – the so-called Arab Spring. In subsequent years, however, the fall in international commodity prices was increasingly being attributed to the economic slowdown in China, associated with the rebalancing of Chinese economic growth away from infrastructure investment and towards consumption expenditure – requiring less commodity inputs.

Against this largely unfavourable and often turbulent global economic backdrop, output growth in the South African economy lost some momentum in the second half of 2011. Apart from global headwinds, the longevity of the upward phase in the business cycle was increasingly being hampered by a host of domestic structural supply-side constraints. These included the following:

- The rapidly escalating cost and declining reliability of the supply of electricity increasingly became a constraint to output growth in the South African economy as the upswing progressed. Large industrial energy users were initially requested to reduce their electricity consumption for a prolonged period, with more general electricity-supply disruptions occurring frequently in 2014 and 2015. In addition, the expected completion dates of two new large coal-fired power stations kept being pushed out further into the future.



- The upward phase in the business cycle was characterised by a marked deterioration in the labour relations environment as the incidence of protracted and disruptive labour strikes increased notably, often accompanied by intimidation and violence. Although the mining sector bore the brunt of these disruptions, a number of other economic sectors were also unsettled by industrial action between 2011 and 2014.
- Economic policy uncertainty in general and in the mining sector in particular contributed to the erosion of confidence in the South African economy. Initially, debate around nationalisation caused much uncertainty in the mining sector, with renewed doubt regarding the regulatory environment emanating from the delayed finalisation and clarity around the *Mineral and Petroleum Resources Development Act Amendment Bill*. More generally, broader economic policy documents such as the *National Development Plan* and the *New Growth Path* were perceived by some investors as conveying contradictory policy directions.
- More unique features of the economic upswing were the sustained low levels of business confidence and low rates of capacity utilisation that contributed to a lack of meaningful investment growth, by private business enterprises in particular. In the 25 quarters from the fourth quarter of 2009 to the fourth quarter of 2015, the RMB/BER Business Confidence Index rose above the neutral 50 level only on four brief occasions – unprecedented during previous upward phases in the business cycle.

Following a marked deceleration to around 3 per cent in September 2010, consumer price inflation quickened in 2011 and subsequently hovered around the 6-per-cent upper band of the inflation target range up to the end of 2014. Over this period, inflationary pressures emanated mainly from food prices and a fairly broad range of administered prices, in particular electricity prices, while wage settlements remained close to the 8-per-cent level throughout. Despite the continuous depreciation in the exchange rate of the rand up to the first quarter of 2014, subdued domestic demand conditions muted the pass-through to consumer price inflation. As such, the measures of underlying inflationary pressures accelerated at a very moderate pace, never exceeding the upper band of the inflation target range. Given these largely cost-push inflationary pressures, monetary policy stayed fairly accommodative throughout the upward phase in the business cycle, while remaining cognisant of slowing output growth; the Bank's repurchase rate was lowered aggressively from 12 per cent in 2008 to 7 per cent in 2009 and further to 5,5 per cent in 2010 before it was lowered again to 5 per cent in 2012 and kept at that level until the end of 2013.

In response to the initial sharp recovery in export volumes and the concomitant acceleration in output growth from the second half of 2009 and throughout 2010, formal non-agricultural employment picked up notably in 2010 and 2011. However, employment growth slowed again from 2012 onwards as private-sector employment growth in particular moderated markedly. In fact, formal private-sector employment contracted in 2013 and 2014, with job-shedding occurring mainly in the mining, manufacturing and construction sectors, while employment levels in the services sectors of the economy remained fairly static over the period. Private-sector firms, particularly in the goods-producing sectors of the economy, responded to the deteriorating labour relations environment, high wage demands and other input cost pressures (such as electricity) as well as ample spare capacity by reducing their staff complement. This lack of employment creation kept the increases in unit labour costs in check; unit labour cost inflation in the formal non-agricultural sector of the economy almost halved from around 10 per cent in 2009 to marginally above 5 per cent in 2013 and 2014.

Despite high nominal wage increases being negotiated throughout the upward phase of the business cycle, static employment levels and rising cost-push inflation began to erode the disposable income of households from 2012 onwards. This, in turn, resulted in a gradual slowdown in household consumption expenditure growth over the period. Private-sector credit extension started to pick up in 2010, but despite the historically low interest rate environment, growth in credit extension tapered off from 2012 onwards and remained fairly pedestrian compared to previous upward phases in the business cycle. The initial acceleration in credit growth was driven largely by a marked acceleration in general loans to the household sector – often referred to as unsecured lending – which peaked at around the 40-per-cent mark in mid-



2011 before receding notably. Many of these loans were extended to mine workers and faced repayment difficulties in the wake of the labour market turmoil that erupted in the mining sector shortly thereafter. Consumption expenditure on durable goods was to a large extent driven by new vehicle sales which increased notably in 2010 and 2011 before slowing somewhat and reaching a peak in mid-2013. As such, instalment sale credit grew fairly briskly until the third quarter of 2013 before slowing notably thereafter.

In contrast, following years of exceptional growth prior to the 2008-09 recession, growth in mortgage advances kept on slowing throughout the subsequent upward phase in the business cycle, weighed down by muted house price growth, slow gains in employment, a bottoming out in the number of residential building plans passed, and a tightening of lending criteria, such as the requirement of a larger deposit when purchasing a residential property. As such, residential construction activity remained rather depressed throughout the upward phase. However, total gross fixed capital formation started to pick up in 2011 after the establishment of the *Presidential Infrastructure Co-ordinating Commission* in an effort to speed up the alleviation of infrastructure bottlenecks in the economy. Although capital formation initially rose strongly in the agricultural, mining and manufacturing sectors, the private sector's contribution to overall investment growth dwindled as the upswing matured. As a result, growth in gross fixed capital formation was largely driven by general government and public corporations, notably Eskom and Transnet, particularly between 2012 and 2014. Over this period, private-sector investment got a fillip from a large number of renewable energy projects following a succession of independent power producer bid windows.

The subdued performance of the goods-producing sectors of the economy from 2011 onwards was reflected in the fairly pedestrian pace of expansion in export volumes over the period, exacerbated by a sustained deterioration in the terms of trade from about mid-2011 to the end of 2013 as South African export commodity prices decreased at a faster pace than import prices, in particular crude oil prices. Underpinned by relatively buoyant domestic expenditure on durable, semi-durable and capital goods, import volumes generally grew at a faster pace than export volumes over the period. This resulted in a persistent widening of the deficit on the current account of the balance of payments, amounting to more than 6 per cent of gross domestic product (GDP) in mid-2013. However, in 2013 and 2014 growth in the volume of imports slowed notably as domestic demand continued to moderate. The terms of trade improved significantly in 2014 as international crude oil prices plummeted in response to a further slowing of the economic growth rate in China as well as the increased supply and lower prices of shale gas. The deficit on the current account of the balance of payments subsequently narrowed to around 5 per cent of GDP at the end of 2014. In response to the improvement in the terms of trade, the exchange rate of the rand appreciated throughout 2014, following three consecutive years of continuous depreciation.

In addition to rising public-sector employment levels, government consumption expenditure rose at a brisk pace in 2011 and 2012 as the economic recovery was supported by a relatively expansionary fiscal policy stance. However, this resulted in national government's budget deficit rising to above 5 per cent of GDP in both the 2012/13 and the 2013/14 fiscal years, exacerbated by a rapidly rising public-sector wage bill. The structural supply-side impediments to economic growth mentioned earlier, together with the gradual worsening of the current-account deficit and the fiscal budget deficit, eventually led to South Africa's sovereign credit rating being downgraded twice by international ratings agencies, in 2012 and again in 2014, the first such downgrades since the dawn of a democratic South Africa in April 1994. The pace of expansion in government consumption expenditure slowed markedly in 2013 and 2014 as government embarked on a path of fiscal consolidation, contributing to the continued slowdown in gross domestic expenditure in the economy.

In the first half of 2014, the South African economy was hit by a five-month labour strike in the platinum-mining sector, resulting in a marked loss of mining output and, through linkages with the manufacturing sector in particular, in economic output in general. However, aggregate economic activity had already fallen below its trend rate of growth by then. The frequent occurrence of labour strikes and electricity-supply disruptions contributed to extreme volatility in

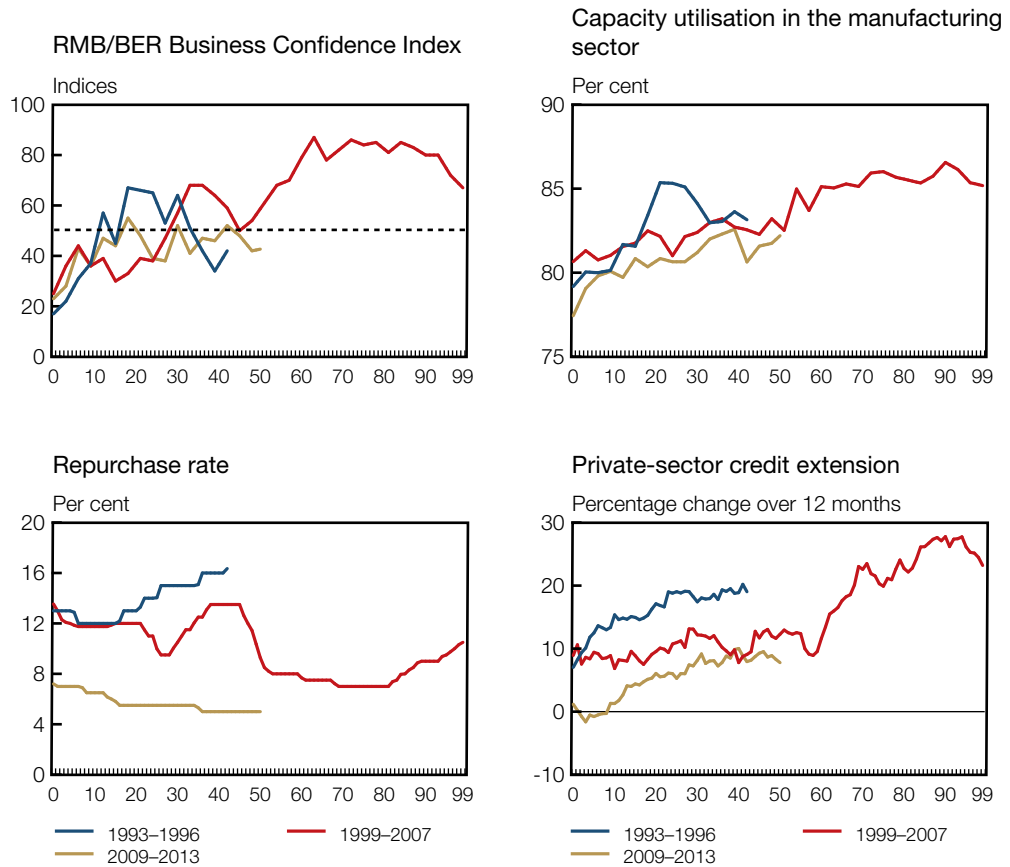


economic activity, visible in mining and manufacturing output in particular, from 2011 onwards. In addition to the volatile nature of output growth, it trended gradually lower from 2012 to 2015 as the weak global economy, domestic structural constraints and later also slowing domestic consumer demand all contributed to the demise of the upward phase in the business cycle.

Upward phase comparison

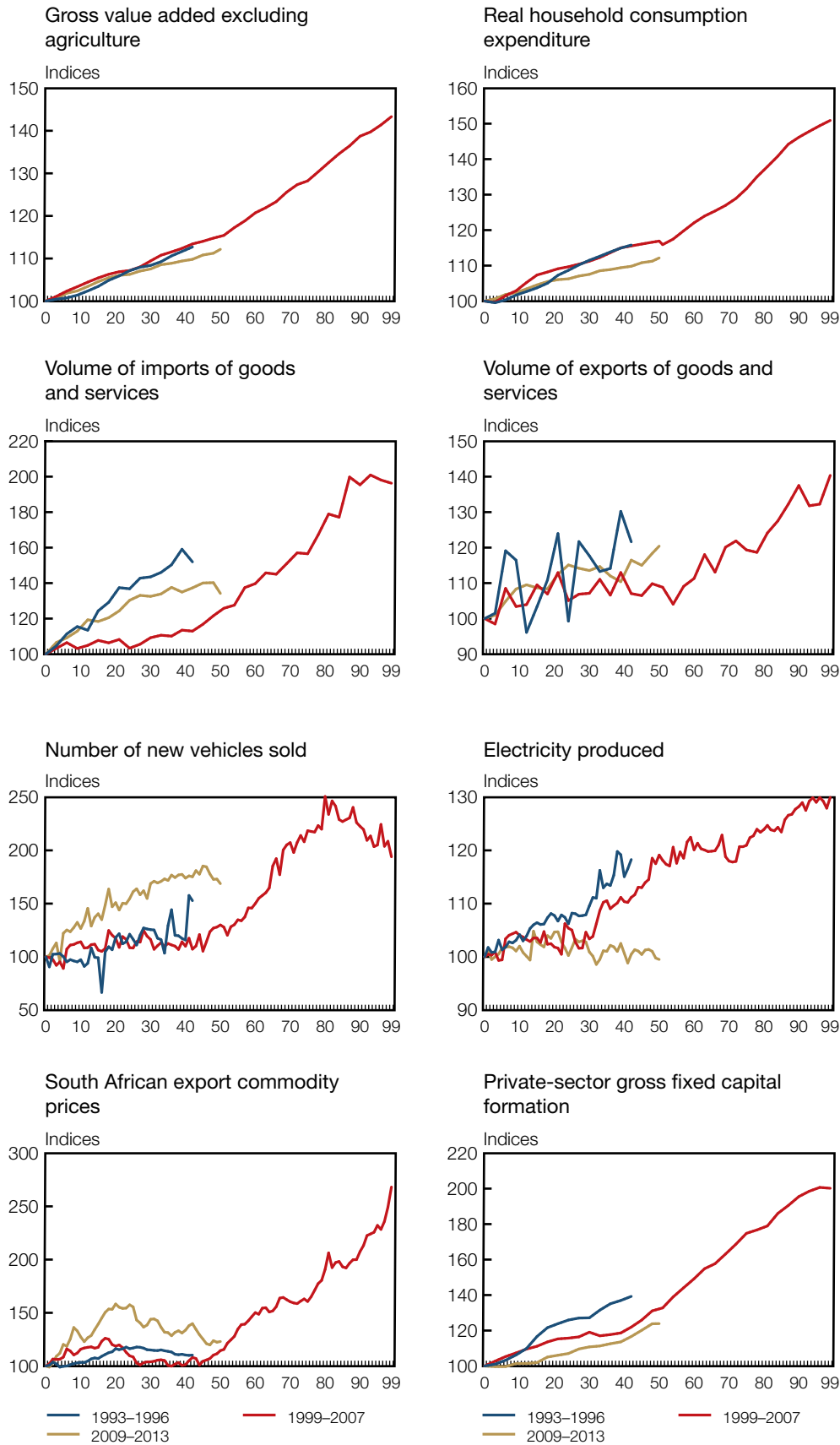
Graph 5 shows the movements of selected economic indicators during the most recent upward phase of the business cycle, as well as during the previous two post-apartheid upward phases, highlighting some of the distinct characteristics of the most recent upward phase in the business cycle.

Graph 5 Upward phase comparison of selected economic indicators



Similarly, Graph 6 compares the movement in a number of selected economic indicators over the three most recent upward phases in the business cycle. The data for each indicator were indexed to set the trough-month (preceding each upward phase) equal to 100.

Graph 6 Upward phase comparison of selected economic indicators



Conclusion

Following an initial acceleration in output growth, the most recent upward phase in the South African business cycle gradually lost momentum from 2012 onwards. The weak and uneven global economic recovery failed to provide any impetus to the domestic economic recovery. In addition, the upward phase was characterised by a number of structural supply-side constraints, the combination of which eventually took its toll and contributed to the demise of the upswing.

Although the statistical results show that the majority of analytical indicators points to a reference peak in the business cycle being reached in the fourth quarter of 2013, some indicators reached a peak earlier in the year. The composite leading business cycle indicator reached an upper turning point in November 2012, whereafter it has followed a sustained downward trend. The composite coincident business cycle indicator started to lose momentum from 2012 while the deviation from its long-term trend peaked in November 2013. Similarly, the deviation of the current diffusion index from its long-term trend reached an upper turning point in November 2013. The historical diffusion index pointed to an upper turning point in the business cycle being reached a few months earlier, in August 2013. While the quarter-to-quarter growth rates in real GDP and non-agricultural real GDP were erratic, they both reached recent peaks in the fourth quarter of 2013.

Having duly considered all the available information, the final reference date for the upper turning point in the South African business cycle was established as November 2013, with the most recent upward phase of the business cycle lasting 51 months.

