Business cycles in South Africa during the period 2007 to 2009

by J C Venter¹

Introduction

In previous studies of the business cycle in South Africa, as published in earlier issues of the *Quarterly Bulletin* of the South African Reserve Bank (the Bank), reference turning points in the cyclical movement of the economy were identified for the period 1946 to 2007. The most recently identified peak in the business cycle occurred in November 2007², ending a 99-month upswing, the longest upward phase of the South African business cycle on record.

This article addresses the identification of a lower reference turning point in the business cycle, following the peak in November 2007. The methods employed by the Bank in determining a reference turning point in the business cycle are discussed, followed by the statistical results obtained once these methods were applied to time series data. A brief synopsis of macroeconomic events and developments between 2007 and 2009 is then presented. In conclusion, the date of the lower reference turning point in the business cycle is identified.

Methods used to determine the reference trough in the business cycle³

Before describing the various statistical techniques used, it should be noted that the Bank analyses cyclical changes in the South African economy in terms of the growth cycle definition of business cycles. Growth cycles are defined as the fluctuations of aggregate economic activity around its long-term growth trend, that is, trend-adjusted business cycles. Therefore, the Bank's business cycle chronology represents a set of reference turning point dates that distinguish between upward phases – when the pace of growth in aggregate economic activity equalled 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. This reference chronology is published regularly in the Bank's *Quarterly Bulletin*.

Continual monitoring of the three *composite business cycle indicators* provided initial indications that a reference turning point in the business cycle may have occurred. A composite business cycle indicator is compiled by integrating various individual economic indicators into a single time series. The composite *leading* business cycle indicator usually changes direction six to twelve months before a turning point in the business cycle. Changes in the direction of the composite *coincident* business cycle indicator have historically *coincided* more or less with turning points in the business cycle. The composite *lagging* business cycle indicator usually changes direction only after a turning point in the business cycle has been reached. Similar to the composite leading business cycle indicator, in the past the ratio of the composite coincident business cycle indicator, in the business cycle. This ratio then serves as an additional leading indicator, as its turning points have historically correlated well with turning points in the composite leading business cycle indicator.⁴

Once the composite business cycle indicators signalled the possibility that a reference turning point in the business cycle may have been reached, two comprehensive diffusion indices were compiled. They were constructed from a total of roughly 200 seasonally adjusted time series covering economic processes such as production, sales, employment, income, investment, monetary aggregates and international trade, in the different sectors of the economy. The *current diffusion index* was compiled from the actual month-to-month symmetrical percentage changes in each of the total number of time series considered. The methodology is similar to that of the composite business cycle indicators. The deviation of the current diffusion index from its long-term trend provides a quantitative indication of the cyclical movement in aggregate economic activity.

1 The author wishes to thank N Maphalala, N Mahlo and A Bosch for valuable assistance in applying the statistical methods employed in this analysis.

2 J C Venter, "Business Cycles in South Africa During the Period 1999 to 2007", *Quarterly Bulletin* 253, Pretoria: South African Reserve Bank (September 2009): 61–69.

3 A more detailed discussion of the methodology is found in D J Smit and B E van der Walt, "Growth Trends and Business Cycles in the South African Economy, 1972 to 1981", *Quarterly Bulletin* 144, Pretoria: South African Reserve Bank (June 1982): 41–55.

4 J C Venter, "Note on the Revision and Significance of the Composite Lagging Business Cycle Indicator", *Quarterly Bulletin* 134, Pretoria: South African Reserve Bank (December 2004): 70–76.



The *historical diffusion index* is defined as a measure of the dispersion of the changes in a number of economic time series in a specific period, usually a calendar month. This index reflects the percentage of time series that are in an increasing phase (relative to each one's long-term trend) in any specific month. Thus, an index value exceeding 50 indicates that, relative to their long-term trends, the majority of time series considered is increasing in that particular month, implying that the economy is in an upward phase of the business cycle. Similarly, an index value below 50 indicates that the economy is in a downward phase of the business cycle. The historical diffusion index provides an indication of how widely a particular business cycle movement is dispersed throughout the economy. In the construction of both the current and historical diffusion indices, the sectoral contributions were weighted according to each sector's contribution to gross value added.

Statistical results

In applying the statistical methods described above, the results confirmed that a definite downward phase of the business cycle commenced after November 2007 – the most recently identified reference peak. The analysis also revealed that a reference trough in the business cycle had already been reached.

The composite business cycle indicators

The composite leading business cycle indicator reached a peak in July 2006, 16 months before the most recent upper turning point in the business cycle. Initially, the leading indicator decreased only moderately, with the downward trend becoming more pronounced towards the end of 2007 and throughout 2008. Subsequent to reaching a lower turning point in March 2009, the indicator rose significantly during the remainder of that year and surpassed its previous peak value in February 2010.

The ratio of the composite coincident business cycle indicator to the composite lagging business cycle indicator reached a peak in May 2007, six months before the latest reference peak in the business cycle. As depicted in Graph 1, the ratio then embarked on a downward trend similar to that in the composite leading business cycle indicator. The ratio reached a lower turning point in January 2009 – two months prior to the leading indicator – before increasing notably throughout 2009 and 2010. Based on their respective historical relationships with the business cycle, both the composite leading business cycle indicator and the ratio of the composite coincident business cycle indicator to the composite lagging business cycle indicator predicted a possible trough in the business cycle towards the second half of 2009 or in the first half of 2010.





After moving broadly sideways in 2007, the composite coincident business cycle indicator – expressed as the deviation from its long-term trend – reached a peak in November 2007. At first, the indicator continued its horizontal time path for a few months, but receded markedly after April 2008 and reached a trough in August 2009. The composite coincident business cycle indicator and the deviation from its long-term trend are portrayed in Graph 2.



Graph 2 Composite coincident business cycle indicator

The current diffusion index

Graph 3 shows that the deviation of the current diffusion index from its long-term trend displayed a decline in the first half of 2001, as well as another more pronounced decline in 2002 and 2003. These declines in the deviation-from-trend indicator, particularly the one in 2003, were







exaggerated by the pronounced rise in the index from 2004 onwards, thus raising the long-term trend throughout most of the upward phase. The resultant overestimation of the trend rate of growth during the first half of the upward phase resulted in overstatement of the downward movement in the current diffusion index's deviation from its long-term trend during the periods mentioned. The trend-adjusted current diffusion index reached a peak in July 2008, before dropping markedly and reaching a lower turning point in August 2009.

The historical diffusion index

The number of economic time series decreasing (relative to their respective long-term trends) outnumbered those increasing from May 2008, indicating that a downward phase in the business cycle had commenced. Subsequently, the historical diffusion index - shown in Graph 4 - declined to a level of around 22 per cent, before increasing rapidly to surpass the 50 per cent mark in September 2009, which implies that a trough in the business cycle had been reached in August 2009.



Historical diffusion index

Macroeconomic events and developments

The latter half of the upward phase of the business cycle that commenced in September 1999 was characterised by, among other things, exceptional growth in new vehicle and retail trade sales, high capacity utilisation, rapidly rising residential property prices, and strong growth in credit extension and, consequently, a marked increase in household debt levels. Throughout 2006 and 2007, domestic price pressures steadily mounted, as energy and food price increases were exacerbated by the exchange rate depreciation that occurred from April 2006. In this environment of robust demand growth and rising inflationary pressures, monetary policy was gradually tightened from June 2006 onwards. The sharp increase in consumer price inflation, coupled with consumers' high debt levels and rising debt-servicing costs, resulted in a slowdown in household consumption expenditure throughout 2007, particularly on durable goods. Against the backdrop of these developments, the upward phase in the business cycle came to an end and the South African economy eventually entered a downward phase of the business cycle in December 2007.

In 2007 and 2008, as the domestic economy lost its growth momentum, a number of extraordinary international economic developments resulted in a severe global financial crisis. Once the United States (US) housing market peaked in 2006, US mortgage bond defaults increased quickly, particularly in the riskier subprime segment of the market. Many global financial institutions,

particularly in the developed economies, were holding significant amounts of US mortgagebacked assets. These assets became increasingly difficult to trade in the financial markets, resulting in a loss of confidence in counterparties which, in turn, led to liquidity constraints in global credit markets and a decline in global share prices. Liquidity in the interbank markets suffered considerably and many financial institutions failed, some were taken over by other financial institutions, while others were bailed out by central banks and governments. Economic growth in developed economies had already been moderating throughout 2007, but these developments in global financial markets brought it to an abrupt halt. Output contracted notably towards the end of 2008 and into 2009, and a severe, synchronised global economic contraction ensued, often referred to in advanced economies as "the great recession", implying that it was the most severe global economic contraction since the depression of the early 1930s.

In South Africa a slowdown in consumer demand was registered during 2007 and in the first half of 2008, but output nevertheless kept growing at a fairly brisk pace throughout this period, in part due to robust demand for South African exports towards the end of 2007 and in the first half of 2008. In the first quarter of 2008, however, electricity supply interruptions led to a marked slowdown in output growth, as production in the electricity-intensive mining and manufacturing sectors contracted sharply. These production losses were partly recouped in the second quarter of 2008, resulting in a somewhat higher economic growth rate being recorded in that quarter.

The global recession that originated in the developed economies in the second half of 2008, amplified by the failure of Lehman Brothers in September of that year, spread rapidly to emerging-market economies. Most economies experienced outright contractions in output, while a slowdown in the rate of output growth was visible in others, notably India and China. The global recession was transmitted to developing countries, mainly through plummeting demand for their exports, resulting in sharp output contractions, falling commodity prices and confidence levels, and in employment losses. As a commodity-exporting country, South Africa was no exception.

Real gross value added by the non-agricultural sectors of the economy remained virtually unchanged from the second to the third quarter of 2008, before contracting for three consecutive quarters, starting in the fourth quarter of 2008. The decline in real value added was most pronounced in the mining and manufacturing sectors, as a result of the sharp drop in export and domestic demand. Real value added by the trade, transport and financial services sectors also declined, due to weak consumer demand. Final consumption expenditure by households still increased moderately in the first half of 2008, before contracting notably up to the second quarter of 2009, as heavily indebted consumers strained under rising debt-servicing costs. The contraction in household consumption expenditure was further exacerbated by sizable job losses that occurred in virtually all the sectors of the economy.

Although growth in real value added by the construction sector moderated notably in 2008, it remained positive, as real gross fixed capital formation continued to expand briskly. The moderation in output growth of the construction sector was primarily due to a loss of momentum in residential construction activity, as high building costs and rising interest rates caught up with developers. The pace of increase in residential property prices moderated throughout 2007 and such prices declined from the second half of 2008, after several years of exceptional growth. The decline in spending on residential property was more than compensated for by infrastructure expenditure by public corporations and general government. These infrastructure projects had been planned many years before the contraction in economic activity – many of them in preparation for the hosting of the 2010 FIFA World Cup[™] tournament – and their completion aided the government in maintaining a countercyclical fiscal policy stance throughout the economic recession. In fact, real consumption expenditure by government rose apace throughout the downturn in economic activity, with the public sector expanding its employment complement throughout this period.

From rather excessive levels reached during the latter part of the previous upward phase of the business cycle, growth in money supply and credit extension by banks moderated somewhat in 2007, before slowing more meaningfully in 2008 and 2009. While impaired advances increased notably and domestic banks' profits came under pressure, banks remained well capitalised and the domestic money market kept functioning normally without any liquidity flow disruptions. The South African financial system held up remarkably well throughout the global financial crises,

not least due to prudent banking supervision and exchange control regulations. Nevertheless, although the global financial crises did not specifically cause the downturn in the domestic economy, the resultant global economic recession most certainly affected the severity thereof.

Domestic consumer price inflation accelerated notably up to August 2008, before trending downwards during the subsequent two years. To combat the steep rise in inflation and inflation expectations, monetary policy was tightened further in the first half of 2008. As the global economic recession commenced, international commodity prices tumbled in the second half of 2008, with the primary drivers of high consumer price inflation – international oil and food prices – receding sharply. Inflation rates came down globally and central banks around the world reacted swiftly to the contraction in output by lowering policy rates to historically low levels, particularly in developed countries. In many advanced economies, notably the US, fears of deflation emerged and monetary policy became even more accommodating, with some central banks injecting huge amounts of liquidity into their financial markets – so-called quantitative-easing measures. In South Africa, the monetary authorities responded similarly by lowering the repurchase rate by 500 basis points between December 2008 and August 2009.

Throughout the global economic recession, economic growth in emerging-market and developing economies outperformed that in developed economies. This helped to facilitate an uneven and somewhat uncertain recovery in the global economy from the second half of 2009 onwards. China and India, in particular, maintained strong growth momentum. Robust demand from these countries led to a partial recovery in South African mining and manufacturing production early in 2009, with exports subsequently picking up notably in the second half of 2009.

In response to the sizeable monetary policy easing, improved business and consumer confidence, and notable increases in real salaries and wages, real final consumption expenditure by households rose again for the first time in the third quarter of 2009. Share prices have risen briskly since April 2009, bolstered by increased investor confidence and strong capital flows into South Africa. Although house prices declined further in the first half of 2009, they began to increase in the second half of that year and into the opening months of 2010. After remaining fairly flat throughout most of 2009, real retail trade sales grew briskly from December 2009 onwards and surpassed its previous peak level a year later, as consumers took advantage of benign inflation and relatively large increases in remuneration.

With the exception of the construction sector, economic activity picked up gradually in most sectors of the South African economy throughout 2010, and it became evident that a lower turning point in the business cycle had probably already been reached.

Conclusion

The marked reduction in interest rates, coupled with subdued consumer price inflation and aboveinflation wage increases, led to a recovery in consumer demand in the second half of 2009. Apart from the pick-up in domestic demand, robust demand from, among others, China and India, aided the recovery in output growth, particularly in the mining and manufacturing sectors.

The composite leading business cycle indicator reached a lower turning point in March 2009, before trending strongly upwards. The deviation of the composite coincident business cycle indicator from its long-term trend decreased considerably up to August 2009, before embarking on a gradual upward trend. In addition, the deviation of the current diffusion index from its long-term trend, and the historical diffusion index both indicated a trough in the business cycle in August 2009.

The available information was taken into consideration and the final reference date for the lower turning point in the South African business cycle was established as August 2009, with the most recent downward phase of the business cycle lasting 21 months. This is very similar to the average duration of all the previous downward phases in the Bank's business cycle chronology, which amounted to 201/2 months. It should be noted, however, that the downward phases occurring before 1970 were generally shorter in duration than those occurring after 1970. The average duration of the pre-1970 downward phases was only 121/2 months, while the post-1970 downward phases of the South African business cycle compares quite favourably to the post-1970 average.