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# Comment

# Factors limiting production – South Africa's experience[1]

| Abstract | Introduction | Recent developments | Final remarks | Appendices |
|---|---|---|---|---|

## Abstract

Like in almost all countries, there is a close relationship between aggregate supply and the business cycle in South Africa. However, the results of business tendency surveys (BTS) covering more than six decades indicate that the pandemic-induced lockdown affected supply beyond the usual business cycle parameters. The ratio of stocks to expected demand fell to its lowest level since 1980. The shortage of materials increased to the highest level ever. The availability of skilled labour has started hampering business activity in 2021, but its restraining impact is still noticeably less than during previous upturns. Sharp increases in input costs have begun to force firms to increase selling prices at a faster pace. Although selling prices are accelerating, their tempo of increase is still below that of 2002 and significantly below those of the high inflationary 1970s and 1980s.

## Introduction

The BER has been conducting business tendency surveys since 1954 (see Appendix A for a detailed description of how the BER conducts BTS in SA). In the late 1990s, the BER digitised all the time series since 1975. In 2021, the BER completed a project to also digitise the time series for the earlier period 1961 to 1974 from the archive. In addition, the BER computed additional composite indices of business climate, activity, inventories, price increases, employment and constraints by combining the results of the same variables across different sectors (see Appendix B). This produced long time series going back almost six decades, covering several business cycles. This, in turn, makes possible the tracking of variables over different stages of several business cycles.

Regarding the definition of the business cycle, the BER uses the South African Reserve Bank's (SARB's) definition and timing of upward and downward phases (SARB, 2022, S-164). The SARB applies a growth cycle definition to identify turning points. (See Anas & Ferrara (2004) for more information on the various business cycle definitions).

[1] Paper presented by George Kershoff at the 10th joint EC – OECD workshop on BCS, 13 October 2022

8 November 2022

Please refer to the **glossary on the BER's website** for explanations of technical terms.

The questions posed in BTS customarily cover activity, employment, price increases and constraints. Regarding constraints, some institutions ask participants to mark all items on a fixed list hampering their current activities. Others ask participants to rank them in order of most to least constraining. The BER, in turn, asks respondents to rate whether a variable has a “serious”, “slight” or “none at all” adverse impact on their current activities. The same variables have been covered since the inception of the surveys and include the shortage of skilled labour, the shortage of materials and insufficient demand.

In essence, all BTS questions measure the same phenomenon, namely the business cycle. This development corresponds with the tradition of compiling business cycle indicators where different variables are considered and attention is not attached exclusively to a single indicator. In the case of BTS, for instance, if activity picks up, then employment and price increases tend to also rise. In unison, inventories are prone to decline and constraints (such as shortages of materials and labour) become more severe. Collectively these different variables indicate that the economy is in an upswing. When more and more of these variables begin to weaken, the economy has probably reached an upper turning point.

This paper presents a simple study of how activity, inventories, constraints, employment and prices reacted to the COVID-19 lockdown in South Africa in 2020. To identify the impact of the lockdown, the response of these variables during and immediately after the lifting of the lockdown is contrasted with their typical behaviour over various business cycles over the past 60 years employing a graphical analysis.

Two aides are adopted to facilitate an easy understanding of the charts.

1. The horizontal line in the charts shows the long-term average. The average is calculated over the full period of the time series. The neutral level of the time series for the two measurement types, net percentage and percentage, is 50 or zero respectively. The long-term average (mean) is often not equivalent to this neutral level. In such cases, it is more useful to evaluate the results relative to such a long-term average than the neutral level.

2. Some series show erratic/volatile movements, i.e., the data jumps around quite a bit between consecutive quarters. In such cases, it is necessary to smooth these movements over a longer period to obtain a general trend. Three-quarter centred moving averages (3qcma) were selected so as to not disturb turning points too much, e.g., the moving average of 22Q1 is calculated as the average of 21Q4, 22Q1 and 22Q2, that of 22Q2 is calculated as the average of 22Q1, 22Q2 and 22Q3 etc. For the smoothed series to run up to the last unsmoothed data point, the last smoothed data point is only the average of two quarters, namely the previous and current quarters. The letter “s” is added to the legend entry to identify smoothed series.

The meaning and interpretation of the unit of measurement would not be a problem for the intended audience of this paper, as they are familiar with BTS. For those new to BTS, the unit of measurement of activity, inventories, price increases and employment is “net %”. For constraints, it is per cent. "Net %" denotes a change relative to a year ago and could vary between -100 and +100. Per cent denotes a level and could vary between 0 and 100.

## Developments in SA since the COVID-pandemic and lockdown in 2020

The lockdown in 2020 led to the steepest contraction in activity ever recorded in the survey's history of six decades (see Figure 1). The -80 net percentage recorded in the second quarter of 2020 far exceeds the -60 in the Global Financial Crisis (GFC) and the -40 during earlier downturns.

In April 2020, all firms supplying non-essential goods and services had to close for business to limit the movement of people and reduce the spread of the COVID-19 virus.

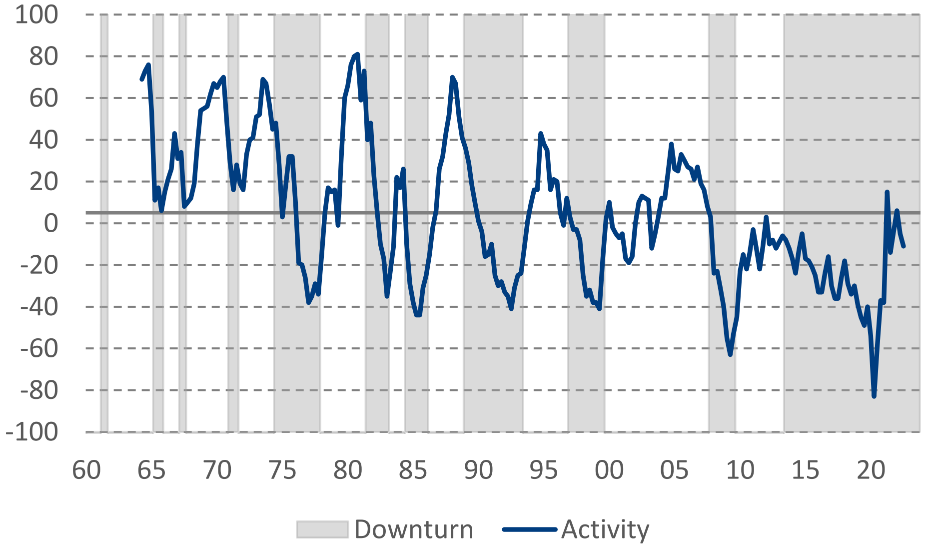
Towards the end of 2020 and throughout 2021, firms were permitted to reopen for business in a stepwise manner. As a result, activity bounced back strongly in the first half of 2021.

The recovery faltered in the second half of 2021 and beyond due to more adverse exogenous shocks, supply constraints and demand fluctuations.

The adverse shocks unique to South Africa include

- occasional electricity brownouts
- the political unrest that broke out in Gauteng and KwaZulu-Natal provinces (respectively contributing the most and third most to the country's GDP) in July 2021 following the incarceration of former president Zuma due to corruption, which led to looting, massive destruction of mainly retail properties, 300 deaths and a blockade of the main highway linking the country's primary port, Durban, to its main economic heartland, Gauteng
- a cyberattack that debilitated the country's ports for a few days
- in April 2022, the most severe flooding in decades in KwaZulu-Natal partially destroyed road, rail and port infrastructure.

Figure 1: Business activity (net %)




*Source: BER*

The most significant external shocks in this period are:

- the stimulus stemmed from the notable rise in the prices of South Africa’s key primary commodity exports, such as rhodium, iron ore, palladium, platinum, manganese and gold in 2021 and coal since 2022
- the dampening effect of the outbreak of the Russian-Ukrainian war in February 2022, which led to a significant increase in the price of oil and grain, as well as
- the concerted global monetary policy tightening since the beginning of 2022.

The supply constraints refer to:

- the long time that it took to crank up the steel and cement plants after the lockdown initially led to a shortage of steel and cement
- the lifting of the ban on alcohol sales that applied during the strictest phases of the lockdown and changes in consumer preferences led to temporary shortages of certain beer formats and glass bottles
- the worldwide disruption and scarcity of air and shipping cargo, as well as local rail freight transport, led to shortages of key intermediate inputs and final goods
- the international shortage of certain materials and components disrupted production, for instance, the shortage of computer (semiconductor) chips that curbed vehicle production.

Regarding demand fluctuations:

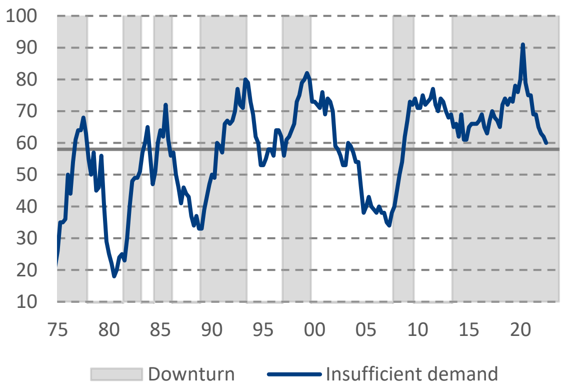
- more than one out of seven people lost their jobs in the formal sector of the economy in South Africa
- a small grant that the government paid to all adults without any income countered even more severe famine
- the spending patterns of the more affluent shifted from home renovations and durable goods in 2021 to clothing and services in 2022.

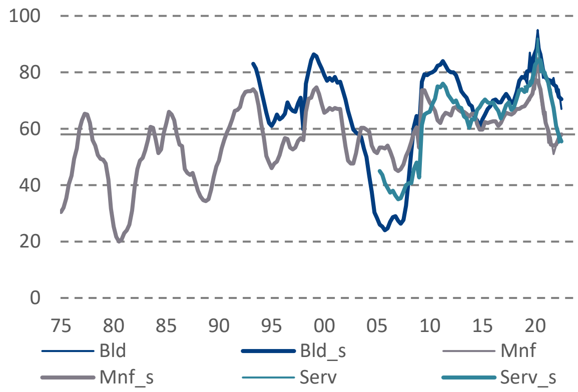
Usually, increased demand (mostly from consumers and in rare cases, fixed investment and exports) kick-starts cyclical upturns in South Africa. In the past, supply mostly responded smoothly to such demand revivals.

The smooth interplay that typically emerges between demand and supply when the economy recovers did not materialise when the economy “re-started” after the hard lockdown. Supply struggled much more than usual to satisfy demand due to scarring (i.e., the lockdown caused the permanent destruction of some production capacity) and other unusual reasons.

The “reopening” of the economy after the lockdown caused insufficient demand as a constraint to fall from its all-time high to a neutral level (see Figure 2). In 2022, insufficient demand no longer restricts but also does not encourage (in terms of the long-term average) activity in the manufacturing and other services (i.e., hotels, restaurants, transport, real estate and business services) sectors. In contrast, insufficient demand continues to hamper the building sector.

Figure 2: Insufficient demand (%)

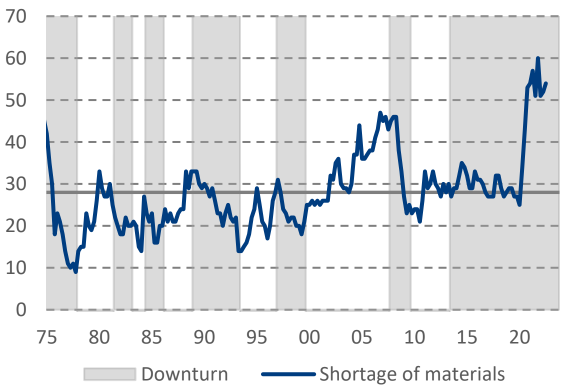


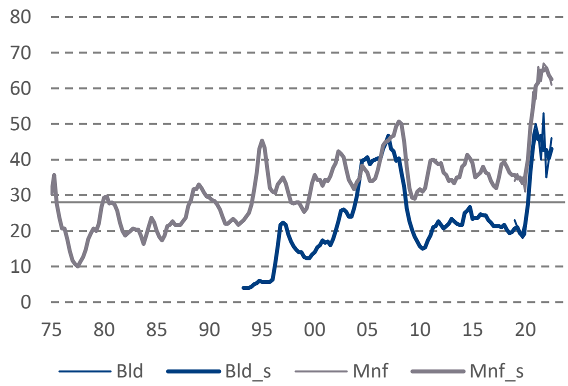




*Source: BER*

Never before has the shortage of materials (e.g., steel, cement, glass, computer chips) hampered business activity to such an extent than immediately after the hard lockdown (see Figure 3). At no previous cyclical peak has the shortage of materials been such a constraint. This time, however, transport and production disruptions increased the severity of the shortage of materials and not the abundance of demand as in previous cases.

Figure 3: Shortage of materials (%)

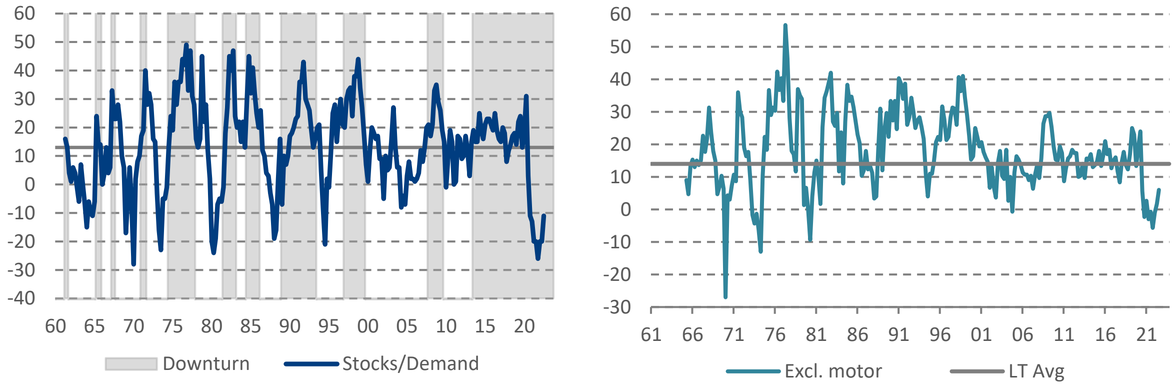



*Source: BER*

Shortly after the lockdown, inventories fell to their lowest level relative to demand since 1980 (see Figure 4). Historically, such low inventories only occurred at the height of a boom. Before these results, such low inventories were unthinkable given how globalised the world has become and the weak demand that remained in South Africa after the GFC. Once again, these results do not reflect the strength of demand, but the weakness of supply, specifically of motor vehicles.

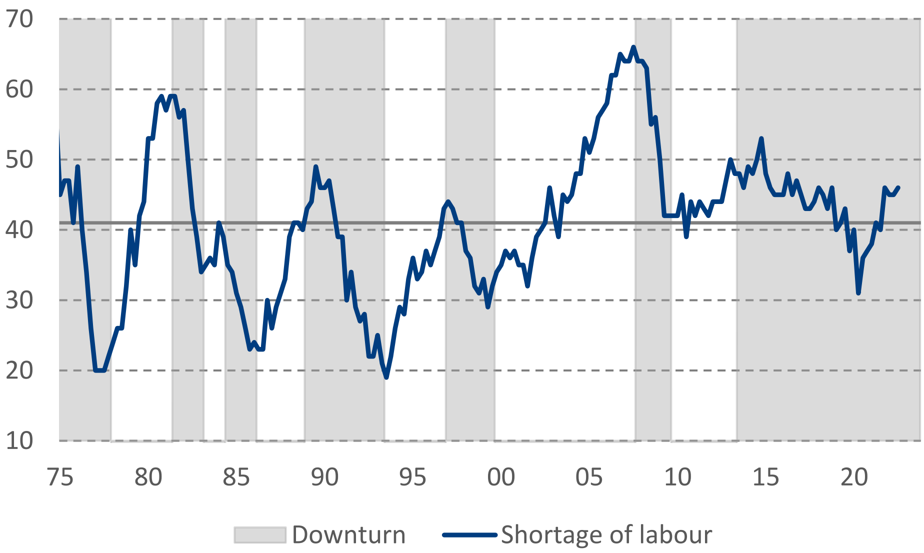
Figure 4: Inventories (net %)




*Source: BER*

After easing markedly during the lockdown in 2020, a shortage of skilled labour once again started hampering business activity in 2021 (see Figure 5). Nevertheless, at present, its restraining impact is still noticeably less than during previous upturns and probably compared to the situation in many other countries. However, the fact that it is a constraint at all in South Africa is bizarre given the record-high unemployment.

Figure 5: Shortage of labour (%)

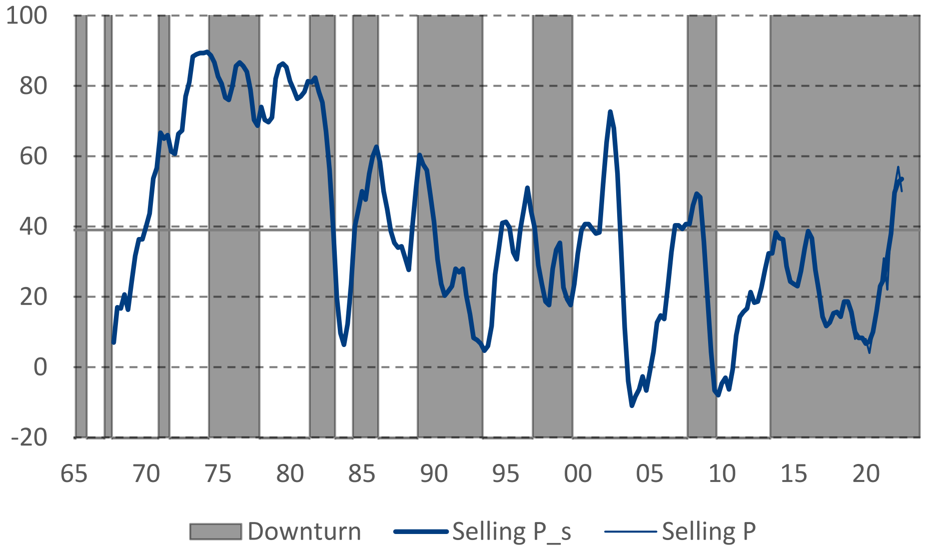



*Source: BER*

Although aggregate demand is still relatively weak in South Africa, sharp increases in input costs left businesses with no other choice than to increase selling prices (see Figure 6). As much as selling prices are accelerating in South Africa, the tempo of increase remained lower than that of 2002 and significantly lower than those of the high inflationary 1970s and 1980s.

Like many other countries, the supply shock of the higher oil and grain prices flowing from the Russian-Ukrainian war lifted prices once-off in South Africa. Compared to some other countries, prudent fiscal and monetary policy appear to have contained the upsurge in inflation in South Africa. The moderation in the rate of increase in selling prices in the third quarter of 2022 should be understood in this vein.

Figure 6: Rate of increase in selling prices (net %)




*Source: BER*

## Final remarks

Many of the BER's survey results set historic records during and immediately after the lockdown in 2020. These include activity, the insufficient demand constraint and the shortage of materials constraint. Inventories matched records achieved more than 25 years ago. Even though the increase in prices and shortage of skilled labour constraint also surged during this time, they did not match previous records.

The lockdown had a huge impact on the South African economy. We have no comparisons, as there were no lockdowns during previous pandemics (such as the 1918-20 Spanish flu, 1957-58 Asian flu and 1968-70 Hong Kong flu).

Although all the variables considered in this paper recorded values consistent with deep troughs and peak booms, their behaviour can, therefore, not be attributed to the standard drivers of business cycles.

George Kershoff

## References

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# Appendix A: Business tendency surveys (BTS) in South Africa

The BER conducted its first survey of the manufacturing and trade (i.e., retail, wholesale and motor trade) sectors in 1954. The sector coverage was expanded to the building sector in 1969. In 2005, an other services sector survey was started and the results are published since 2020. Hotels, restaurants, transport, real estate and business services make up the other services sector. They are denoted as "other" services to distinguish them from the retail, wholesale and motor trade sectors, which are also part of the services sector but included in the BER's composite business confidence (BCI) indicator.

Although the other services sector contributes a considerable 22% (2019) to GDP and employment, the BER does not include it in the BCI to safeguard its advanced business cycle signalling properties. The other services sector is not included in the BCI due to its lagging business cycle characteristics, i.e., it recovers/deteriorates later than the BCI sectors[2].

The harmonisation project of the Economic Affairs Division of the European Commission (EC), the expansion of the work of the Organisation for Economic Co-operation and Development (OECD) to non-member countries and the OECD's publication of a *Handbook of Business Tendency Surveys* in 2003 started establishing an international benchmark for business tendency survey (BTS) and consumer opinion survey (COS). The BER's survey method agrees with most of the recommended guidelines but deviates in a few cases. For instance, the BER does not use completely random sampling to put together the panel of participants, sample weights, a two-step weighting procedure, post stratification and imputation. Furthermore, the frequency of the BER's surveys is quarterly, the BER instructs respondents to compare the current situation with that of a year ago, includes a specific question to measure business confidence, and uses logarithmic transformed firm size weights. The non-response rate is high in South Africa even though the BER follows all recommendations to increase the response rate. The BER's survey results are quite volatile, also compared to those of the other BRICS countries (Kershoff, 2019: 279).

Table 1 shows the subsectors of each sector that the BER does not cover.

Table 1: Sector coverage

| Sector | ISIC code | Subsectors (with the corresponding ISIC code) not covered |
|---|---|---|
| Manufacturing | D | Petroleum (23) |
| Building and construction | F | Site preparation (451) |
| Wholesale trade | 51 | Petroleum (5141), precious stones (included in 5139) |
| Retail trade | 52 | Retail trade of 2nd hand goods & not in stores, repairs (524-6) |
| Motor trade | 50 | Repair of motor vehicles (502), automotive fuel sale (504) |
| Other Services<br>Catering & accommodation<br>Transport & communication<br>Real estate & business services | <br>H<br>I<br>K | Pipelines (603), air transport (62), airport & harbour operation (6303), postal services (6411), telecommunication (642), research & development (73), personal services (90, 92, 93) |

*Source: Kershoff, 2019: 281*

[2] Click **here** and **here** to watch short video clips on the other services survey.

The questionnaires cover seven types of variables, namely 1) the level of business confidence and change in business conditions, 2) the change in activity, 3) the change in employment, 4) the change in the rate of increase in prices and costs, 5) the change in profitability, 6) an assessment of current stocks relative to expected demand and 7) an assessment of the limiting impact of selected factors (e.g. a shortage of skilled labour or an insufficient demand) on business activity. In all cases where respondents must indicate the change in a particular variable, they are asked to report on the realised development in the current quarter and provide their expectations for the next quarter (Kershoff, 2019: 285).

Not all kinds of variables are covered in all the surveys. Only type 1 and 2 are covered in all the surveys. Type 3 is covered in all but the motor trade survey. Type 4 is not covered in the building and motor trade surveys, while type 5 is not covered in the manufacturing and motor trade surveys. Type 6 is only covered in the manufacturing, retail and wholesale surveys. Type 7, in turn, is only covered in the building, manufacturing and other services surveys (Kershoff, 2019: 285).

In line with the international best practice, all the BER's surveys, except for building, are weighted. In practice, each response is multiplied by a factor, which is calculated as the product of a firm size and a sector size weight (except for the motor trade, where there are no subsectors) (Kershoff, 2019: 288).

Except for business confidence and the constraints, all data is converted to net balances, i.e., the weighted (except for building) percentage of respondents indicating that a particular activity is "up" less the weighted percentage indicating "down" compared to the same period a year ago.

To calculate the constraint indices the answers of respondents rating a particular constraint as "serious" is weighted by 0.67%; those rating it as "slightly" by 0.33% and those rating it as "not at all" are discarded. The results are then multiplied by 100/67 = 1.49 to convert it to an index that can vary between 0 and 100 (Kershoff, 2019: 289).

# Appendix B: The wording of questions and the calculation of composite indicators

The composite indicators combine the results of the same question (variable) across different sectors. The combined results are calculated as the unweighted average of the results to the questions. In a few instances, the wording of the questions differs slightly among the sectors. However, they refer to the same phenomenon in the case of all composite indicator. Not all the questions start at the same time. The composite series starts with the sectors that are available and add others as they become available. For instance, if a question in the building and manufacturing sector started in 1995 and the other services sector only in 2005, the composite series is calculated as the average of the building and manufacturing sector between 1995 and 2004, and the average of building, manufacturing and other services since 2005. The average of the two sectors in the earlier period can be regarded as a good indicator of the average of all three given how closely they move together in the second period. The sectors that are available and included are specified per question below.

## Activity

Compared with the same quarter of a year, is …

1. building activity (since 1970Q4)
2. manufacturing production (volume) (since 1964Q2)
3. retail/wholesale/new vehicle sales (volume) (since 1964Q3)
4. other services: volume of business (since 2005Q2)

… in the current quarter up, the same or down?

## Employment

Compared with the same quarter of a year, is the number of people employed in the current quarter up, the same or down?

1. Building: since 2001Q2
2. Manufacturing: since 1968Q1
3. Retail and wholesale: since 1968Q1
4. Other services: since 2005Q2

## Inventories

In the current quarter, are current stocks of …

1. Manufacturing: current stocks of finished goods (since 1961Q2)
2. Retail, wholesale and new vehicle trade: current stocks (retail and wholesale since 1961Q2, motor trade since 1965Q2)

… relative to expected total demand too high, sufficient or too low?

## Selling prices

Compared with the same quarter of a year, is the rate of increase in …

1. Manufacturing: the average domestic selling price per unit of production (since 1967Q4)
2. Retail and wholesale: the average selling prices (since 1983Q1)
3. Other services: the average selling prices/fees charged (since 2005Q2)

… in the current quarter up, the same or down?

## Constraints

### *Shortage of materials*

In the current quarter, are …

1. Building: inadequate supplies of building materials (since 1993Q2)
2. Manufacturing: shortages of raw materials (since 1974Q2)

… seriously, slightly or not at all hampering your activities?

### *Insufficient demand*

In the current quarter, is insufficient demand …

1. Building: for building work (since 1993Q2)
2. Manufacturing: for your products (since 1974Q2)
3. Other services: (since 2005Q2)

… seriously, slightly or not at all hampering your activities?

### *Shortage of labour*

In the current quarter, is a shortage of skilled labour seriously, slightly or not at all hampering your activities?

1. Building: since 1993Q2
2. Manufacturing: since 1974Q2
3. Other services: since 2005Q2

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