Economic Commentaries

Learning by listening: interviews with companies reflect economic developments

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Employees of the Riksbank regularly meet with representatives of Swedish companies in the Riksbank's Business Survey, to supplement the picture of economic developments in Sweden. Indicators from this survey have proved to describe the prevailing economic situation well. In this Economic Commentary, we examine whether the individual company's responses are linked to their business activities. The results reinforce the picture of the companies' responses adding new information that reflects their own situation and not just the general picture, for instance as portrayed in the media. This increases the value of the survey for the Riksbank. If functions as a valuable complement to other statistics used to analyse economic developments.

Since 2007, employees of the Riksbank have been meeting with representatives of Swedish companies within the scope of the Riksbank's Business Survey. Interviews are held with people in managerial positions at larger companies operating in Sweden and the questions cover economic developments, the companies' own output and sales, investments and developments in prices.

Despite a relatively small sample of companies, the survey has proved to provide a good description of economic developments in Sweden.[2] The authors show, for instance, that the overall business indicator[3] makes relatively accurate nowcasts for Swedish GDP and that it largely correlates with the business sector's confidence indicator produced by the National Institute of Economic Research (NIER). The Riksbank Business Survey also captures qualitative information on how the companies behave and adapt their operations, for instance, when the oil price rises or there is a credit crunch.[4]

One main reason why the survey can provide a picture of economic developments is that Sweden has a business sector structure where a number of large multinational companies impact macroeconomic developments, both directly through their own operations and indirectly through contagion effects to smaller companies in the same or related industries. The survey therefore becomes a valuable complement to other types of economic analysis and data sources.

However, the companies' responses in the survey could be linked to macroeconomic developments due to reasons other than their own operations, such as the aggregate economic outlook portrayed in the media. Company representatives would in that case only state a general view, and not actually add any new, unique, information about economic developments. One condition for the survey to be useful is therefore that company responses reflect their own business activities, their own assessments and expectations.

Internationally, Müller (2009) and Liu et al. (2011) have shown that responses to surveys are linked to the outcomes for the same companies in economic statistics. As far as we know, no one has yet examined the same question in Sweden. In this Economic Commentary, we therefore combine data from the Riksbank Business Survey with data from income and balance sheet statements and analyse how the interview responses equate to the companies' own business activities.

[2] See Hokkanen et al. (2012).
[3] The Riksbank's business indicator summarises the information from eight questions that recur in the Business Survey. These are a mixture of backward-looking and forward-looking questions on output volume, employment, investment plans, profitability assessment, prices in 12 months' time and developments in productivity.
[4] See Frohm and Tibblin (2015).

Business Surveys give an in-depth picture of the economy

Many central banks run their own business surveys, including Norges Bank and the Bank of England in Europe, the Federal Reserve Bank in the United States, the Bank of Japan in Asia and the Bank of Zambia in Africa. Each institution carry out surveys for slightly different reasons, but one common denominator is that they wish to obtain more in-depth information than is available from the usual statistics. This could include, for instance, assessments, expectations or explanations of various economic phenomena. Helper (2000) argues that economists should use *qualitative* methods such as interviews to a greater extent, to better understand economic relationships, structural changes and to guide future research.

The main purpose of the Riksbank's Business Survey is to obtain in-depth information on how companies view the current economic situation, and how they intend to act based on this. The survey therefore contains a number of recurring questions that are followed up over time. However, there are also many questions that vary from time to time. This enables the Riksbank to have deeper discussions of current issues of a structural nature, such as pricing or investment behaviour.

The interviews

The discussions are held in confidence between experienced economists from the Riksbank and representatives of company management, often CEOs or CFOs. Between 40 and 50 interviews are carried out in May and October and around 30 in February every year. It is particularly important to the Riksbank to discuss companies' views on how they would adapt their operations if various events were to occur, what plans they have for the future, and how various shocks to the economy would affect their business decisions. The sample of companies, like the questions in the interviews, is adapted to the issues that are most interesting to monetary policy at different points in time, but the aim is to cover companies in the manufacturing industry, construction, retail trade and other service industries. Banks and other financial institutions are not currently included.

The choice of companies in the respective sectors is based on a combination of several criteria. Some central factors are the size and cyclical sensitivity of various industries in relation to one another, that the sample should reflect price pressures in the Swedish economy and that the interviews should preferably be concentrated on larger companies. The sample is thus not typical for the business sector as a whole. Since the surveys began in 2007, the Riksbank has visited approximately 320 different companies around Sweden.

The interviews are summarised in writing and the responses to a number of questions are coded on a so-called Likert scale, where -1 represents "decline, poor or worse than normal", 0 stands for "unchanged, satisfactory or normal" and 1 stands for "increase, good or better than normal".[5] This is also the standard used in several surveys, such as the NIER's Economic Tendency Survey or Swedbank's and Silf's Purchasing Managers' Index (PMI). The coded responses are often reported as net figures or a standardised index in the publication, the Riksbank's Business Survey.

The published result

The Riksbank summarises the overall picture from the interviews in two main ways. The first is through the business indicator. Figure 1 illustrates how this is linked to GDP growth and to the NIER's confidence indicator for the business sector. The correlation is in general high: with annual growth in GDP, the correlation coefficient is 0.85 and with the business sector confidence indicator it is 0.87.

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[5] See Likert (1932).

**Figure 1. Business Survey indicator correlation with GDP and NIER's confidence indicator for the business sector**
Left scale: index. Right scale: annual percentage change.

GDP (right scale)
The Business Tendency Survey indicator (left scale)
The Riksbank Business Survey's indicator (left scale)
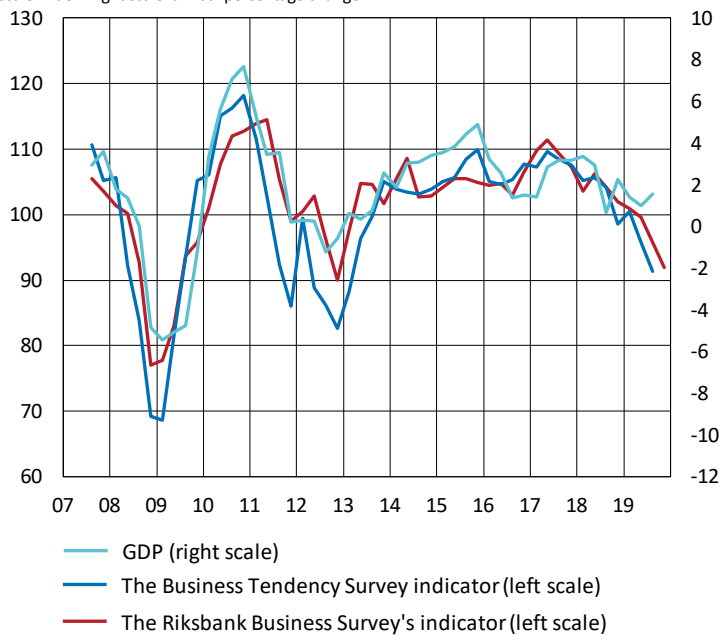
Sources: Statistics Sweden, National Institute of Economic Research and Sveriges Riksbank.

The other means is a so-called cobweb chart that summarises the information from more questions than those included in the business indicator (see Figure 2). The blue field shows the results from the most recent survey and the red field shows the results from the previous survey. The pale blue line shows the average value for the various questions, which is normalised to 100.

Figure 2. Cobweb chart in the Riksbank Business Survey

— November 2019 — May 2019 — Mean
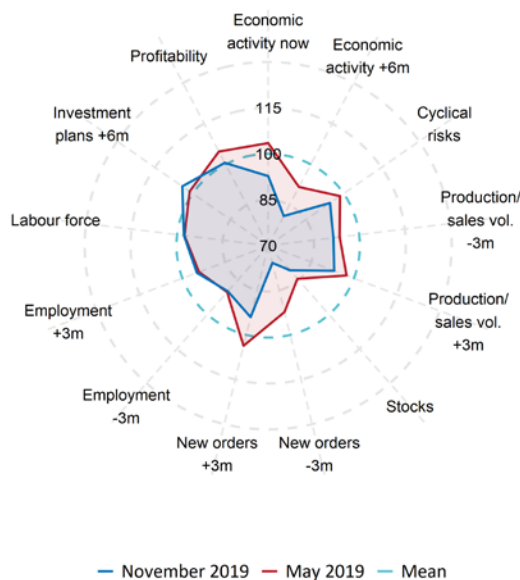
Note. The responses to the questions are plotted along "spokes" in the figure, where an index figure closer to the centre is better. The historical average is calculated from the date the question concerned was first included in the survey. The term -3m / +3m refers to the most recent three months and the coming three months respectively. +6m refers to the coming six months.

A value that is closer to the outer edge and beyond the mean value is interpreted as better than normal, while a value that is closer to origo and inside the mean value is poorer

than normal. In general, one can see that in November the companies perceived the situation to be somewhat poorer than in May, and poorer than normal.[6]

The correlation between larger companies and the Swedish economy
It may be surprising at first glance that a relatively small sample of large companies can reflect the economic situation in Sweden. Above 99 per cent of all Swedish companies are actually small enterprises with fewer than 50 employees. Together, the small enterprises employ 46 per cent of all employees in the business sector and account for 43 per cent of the total value added.[7] But smaller enterprises are often subcontractors to larger companies in global and national value chains. In this way, smaller domestic enterprises are also affected by economic activity in the larger companies.

A study by the Danish statistics authority and the OECD (2017) finds that between 30 and 50 per cent of employment in Swedish small and medium-sized enterprises is dependent on exports, as these companies are subcontractors supplying intermediate inputs and services to large export companies in Sweden. OECD (2019) shows that around one third of the output by multinational companies is in general intermediate inputs and services from smaller domestic enterprises.[8] With regard to Sweden, Friberg and Sanctuary (2016) show that individual companies can play a significant role in Swedish economic activity by studying how changes in aggregate sales volumes and exports are affected by company-specific shocks. They show that the contribution from company-specific shocks amounts to 52 per cent of the standard deviation in aggregate sales volume, while the contribution is 75 per cent for exports.[9]

Interview responses supplemented with information from interim reports

The Riksbank does not gather quantitative information on companies' performance in its Riksbank Business Survey, such as turnover, profits, assets or liabilities. But as most companies are listed on the stock exchange, the consolidated accounting data is available in their interim reports. Data from the interim reports is thus linked to the company responses in the Riksbank Business Survey with effect from the third quarter 2007. However, the interim report data is expressed in current prices and deflators from the National Accounts have been used to calculate developments in volumes for the four sectors of the Business Survey: the manufacturing, construction, retail trade and other services sectors.[10]

One important difference between the interview responses in the Riksbank Business Survey and data from the income and balance sheets statements is that in the survey, questions generally pertain to developments at workplaces in Sweden. The consolidated interim reports, on the other hand, contain data for the company's entire operations, including branches abroad. There is a potential source of error here if developments in the Swedish operations differ significantly from the foreign branches. It could also affect the validity of the deflators used and mean that correlation with Swedish developments deteriorates.[11]

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[6] Sveriges Riksbank (2019c).
[7] See the statistics series Structural Business Statistics at Statistics Sweden (SCB).
[8] OECD (2019). For domestic multinational companies the figure is one third, and for foreign multinational companies it is one quarter.
[9] See Frohm and Gunnella (2019) for how changes in the value added of certain industries can spill over into other industries and countries in global production networks.
[10] Specifically, value added deflators in the sectors with SNI2007 codes B05-C33 mines, mineral extraction and manufacturing industry, F41-F43 construction, G45-G47 retail trade and G45-T98 service producers have been used. The service sectors' valued added has been calculated as G45-T98 – G45-G47. The advantage of these deflators is that they are quarterly and therefore match the data from the interim reports.
[11] In research that uses consolidated data from income and balance sheet statements, it is common to use deflators for the domestic economy, even if the data refers to the consolidated developments. See, for instance, De Loecker and Eekhout (2019).

Company responses reflect their financial developments

In this Economic Commentary, we attempt to find out whether the responses to the Riksbank's Business Survey correlate with business activities in the companies. If not, it is possible that the responses merely reflect the aggregate economic outlook portrayed in the media. This would mean that the interviews do not provide any new information and therefore hold less value.

To investigate whether the company responses correlate with their own business activities, we firstly calculate the Riksbank's business indicator for each company and each round. The business indicator is calculated as an average of the company's responses to questions concerning output volumes for the past and coming three months, employment for the past and coming three months, the current profitability assessment, investment plans for the coming six months, productivity growth and price developments for the coming twelve months.[12] The idea is that the indicator should describe aggregate economic developments, which it appears to do fairly well (see Figure 1 and Hokkanen et al. 2012).

A second step involves calculating the average growth for the companies' sales volumes for four levels of the business indicator.[13] The indicator varies between the value 100 and -100 for each company. If it is 100, this means that the company has responded throughout "good, increase or better than normal" to the questions. If it is instead -100, this means that the company has responded "decline, poor or poorer than normal" to all the questions. A value close to zero represents a situation that is "satisfactory, unchanged or as normal". For the responses to the survey to be informative, a high value in the indicator, which points to good economic activity, should coincide with larger growth in the companies' sales volumes. When the indicator points to poor economic activity, growth should be negative.

Figure 3A shows the average growth rate in companies' sales volumes for four different levels of the indicator.

Figure 3. Companies' sales in constant prices rise faster when the business indicator is higher
Y axis: annual percentage change in companies' sales in fixed prices. X-axis: The Riksbank's business indicator or the broader indicator.
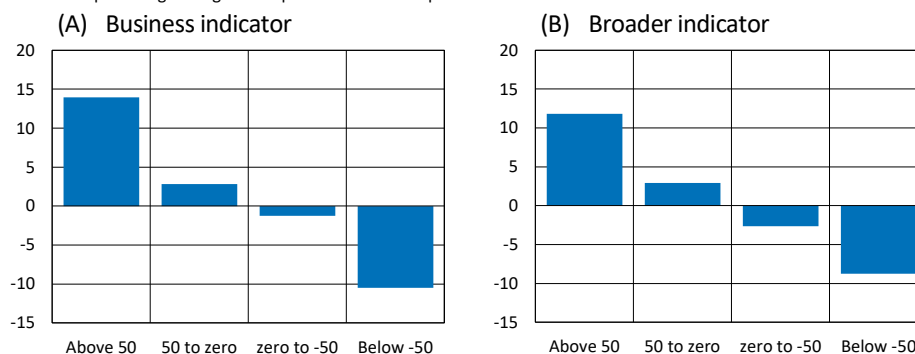
Note. Number of observations in panel (A): 480. Panel (B): 325.

For values above 50 on the business indicator, the growth in companies' sales volumes is on average 13 per cent. For a value between zero and 50, the same figure is 4 per cent. It is –1.5 per cent for a value between zero and –50 and around –10 per cent for a value below –50.

As we mentioned earlier, the business indicator is based on only eight questions. The cobweb chart (Figure 2) includes more questions that can also be good indicators of economic growth, for instance, the current economic situation, how things are expected to

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[12] Historical forecasting weights are also used in the aggregate business indicator to give more weight to indicators that have a higher forecasting ability than those with less.
[13] Sales volumes are defined here as the turnover in the company deflated by the relevant value added deflator from the National Accounts.

develop and orders over the past and coming three months.[14] In Figure 3B we make the same calculation as before and see the same results: higher values in the responses are related to faster growth in companies' sales volumes.

Regression analysis strengthens picture of companies' responses are linked to their own business activities

So far, the analysis has not checked how other common factors, such as aggregate economic activity or the prevalent media image may affect the correlation. If the company responses are to have an information value, they should have a correlation with their own business activities also when these factors are controlled for.

One way of examining whether the information in the survey correlates with the development of the companies' sales volumes is to estimate a panel regression with fix effects as in (1):

$$\Delta Y_{it} = \alpha \Delta Y_{it-1} + \beta FU_{it} + \gamma_i + \delta_t + \varepsilon_{it} \qquad (1)$$

where i is a company and t is a quarter. Δ is the change in (the logarithm) of the value between the current quarter and the same quarter in the previous year. Y_{it} is the companies' sales volumes, FU_{it} is the business indicator's or the broader indicator's value, which varies between 100 and –100. γ_i is a so-called fix effect that checks whether the companies differ.[15] δ_t is a so-called time fix effect that controls for common denominators that vary over time. This could be the aggregate economic developments or the general media image. ε_{it} is a stochastic term.

Overall, the regressions show the same results as Figures 3A and 3B, see Appendix 1. The business indicator and the broader indicator are statistically significant and have a positive correlation with growth in the companies' sales volumes. This means that a higher value in the indicators coincides with a higher growth in the companies' sales volumes. Of course, this does not mean that the companies' responses *cause* higher growth in their sales volumes, merely that the indicators appear linked to the companies' business activities.

Business Surveys create better understanding

The fact that indicators calculated from quantitative responses appear linked to the companies' own business activities strengthens our belief that also information of a more qualitative nature reflects the representatives' assessments based on the current situation of the company. This reasoning cannot normally be quantified on a scale and is not captured in the indicators, but is nevertheless important. Its gives the Riksbank deeper insights of how events in the economy affect companies' decisions and plans.

A large number of such qualitative studies have been made over the years, and some of them are described in Frohm and Tibblin (2015). The information from these is unique to the Business Survey, which makes it a valuable complement to other analyses. Qualitative articles in the Riksbank Business Survey have in recent years concerned

- factors that affect investment decisions[16]
- how the competitive situation affects pricing[17]
- the consequences of digitalisation[18]
- factors that influence wage-setting[19]

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[14] The cobweb chart includes, in addition to the questions in the business indicator, the current economic situation, the economic situation going forward, cyclical risks, orders over the past three months, orders over the coming three months and stocks.

[15] Checking for non-observable differences between companies is important in a panel data analysis. See Hsiao (2014).

[16] Sveriges Riksbank (2016a).

[17] Sveriges Riksbank (2016b).

[18] Sveriges Riksbank (2018a).

[19] Sveriges Riksbank (2018b).

- productivity growth[20]
- driving forces behind price-setting.[21]

All of these articles have broadened the Riksbank's decision-making base and given a deeper understanding of how companies behave.

Concluding comments

The Riksbank gathers information from companies by regularly interviewing them about the current economic situation. These interviews indicate whether a number of variables that are central to the company's business activity are increasing or decreasing. As this data differs from the usual statistics or accounting figures produced by the company in other contexts, there may be a risk that the responses are influenced by other external factors, such as how the aggregate economy is described in the media. If this were the case, the responses would be less interesting to the Riksbank, as the news value of what the company representatives said would not be very high.

In this Economic Commentary, we have attempted to answer this question with the aid of established methods that control for surrounding factors, and found evidence that company responses on the economic situation are linked to the development of their sales volumes. This strengthens our belief that the responses to the Riksbank's Business Survey reflect companies' own assessments and expectations. Moreover, it strengthens our belief that other information provided in the survey, but which cannot be quantified on a scale, also agrees with the companies' own views. This means that the Business Survey has considerable value for the Riksbank as a complement to other statistics used to analyse economic developments.

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[20] Sveriges Riksbank (2019a).
[21] Sveriges Riksbank (2019b).

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Appendix 1: regression results

Table A1: All companies – Business indicator (BI) and the broader indicator (S)

	(1)	(2)	(3)	(4)
FU_{it}	0.063***	0.060***		
S_{it}			0.068***	0.058***
Y_{it-1}	0.680***	0.600***	0.678***	0.685***
Company effects	No	Yes	No	Yes
Time effects	No	Yes	No	Yes
Observations	480		325	
R^2	0.589	0.794	0.589	0.715

Note. *i* are companies, and *t* are quarters. Standard errors are clustered into sectors and time dimensions.

Table A2: Panel companies – Business indicator (BI) and the broader indicator (S)

	(1)	(2)	(3)	(4)
FU_{it}	0.070***	0.077***		
S_{it}			0.068***	0.061***
Y_{it-1}	0.667***	0.665***	0.672***	0.696***
Company effects	No	Yes	No	Yes
Time effects	No	Yes	No	Yes
Observations	338		267	
R^2	0.590	0.695	0.584	0.716

Note. *i* are companies, and *t* are quarters. Standard errors are clustered into sectors and time dimensions.