Session 3

Business surveys

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Background note on surveys of the corporate sector

Tracy Chan and Paul Van den Bergh[1]

The non-financial corporate sector is one of the key sectors in a market economy. Through its accumulated capital stock and new investment it generates the production capacity of the economy, it produces the tradeable and non-tradeable goods and services demanded by the household sector and the rest of the world and offers most of the employment opportunities in the country. A good understanding of its ongoing activities as well as the expectations and sentiments of its managers is of major importance to market analysts and policy makers.

The major source of statistical information on the non-financial corporate sector comes from the national and financial accounts. National account compilers collect information from a wide range of sources, including tax declarations, business registers, industry associations, and retail sales records to estimate relevant macroeconomic data on output, employment, investment, and productivity. Additional information from financial institutions and other sources is used to shed light on the corporate sector's financial position in the framework of the financial accounts. In many countries the first estimates of the national accounts data, including for the non-financial corporate sector, are now available on a quarterly basis. A major challenge remains to produce reliable data for financial accounts, including for the corporate sector.

Even though considerable efforts are being made to improve national accounts data, in terms of coverage and timeliness, the information that is published is backward-looking. Policy makers want to have more timely data as well as indicators of business sentiment that may be driving business decisions and conditions now or in the foreseeable future. For that reason statistical agencies have developed other tools that permit a closer monitoring of the non-financial corporate sector. In many countries central banks play an important role in this: of the monetary authorities that provided background information for the preparation of the workshop, almost two-thirds carry out a survey of the corporate sector of some kind. This includes the calculation of industrial production and producer price indices, the conduct of business confidence or sentiment surveys and the collection of corporate balance-sheet data.

Industrial production (IP) indices

These indices aim to measure the real output of particular sectors of the economy, such as manufacturing, mining, energy production or construction, as well as for the industrial sector as a whole. For this, information is gathered on output measured in physical production such as tons of steel or, if such output volume measures are not directly available, on nominal measures deflated by output price indicators. At the last resort, data on inputs to the respective production processes such as hours worked or electricity consumption are used. All this makes the compilation of IP indices a relatively labour intensive exercise.

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The Board of Governors of the Federal Reserve System compiles a monthly index of Industrial Production and Capacity Utilization. Industrial production is measured for individual industries and for the sector as a whole using weights derived from the respective industry's contribution to total value-added output of all industries. The first estimate of output for a month is published around the middle of the following month. It incorporates around 70% of the source data. The data are revised in the subsequent months: by the fourth month 97 % of the source data have been incorporated. The Federal Reserve uses its IP index, in combination of the Survey of Plant Capacity conducted by the US Census Bureau, to estimate monthly capacity utilisation rates. The latter are used by policy makers and market analysts to identify emerging supply chain bottlenecks in the economy, to forecast investment, and to evaluate potential inflationary or deflationary pressures.

Similar statistics are produced by the central bank in Chile for a wide range of sectors: manufacturing, wholesale and retail trade, mining, construction, electricity, water and gas, communications, transport, education, fisheries and health. Similarly, in India the central bank produces a survey of inventories, order books and capacity utilisation for the entire private manufacturing corporate sector. The central bank in Thailand produces a monthly survey on manufacturing, which is used to calculate a manufacturing production index and an index of capacity utilisation. It also carries out a survey of construction activity, which contributes to the compilation of a property price index.

As with the consumer price index (CPI), very few central banks are responsible for the compilation of the producer price index. One such exception is the central bank in Mexico, which also produces the national CPI.[2] This requires it to survey every month around 3,500 firms covering all the major sectors of the economy (including services, with the exception of financial services and retail activities).

Business sentiment/confidence surveys

In many countries central banks conduct regular surveys of business sentiment or confidence. This includes the central banks of Belgium, Canada, the Czech Republic, India, Israel, Italy, New Zealand, Norway, the Philippines, Poland, Portugal, Russia, Thailand and Turkey.

Business surveys have become a valuable asset to business cycle research. They provide insight to the nature of market disequilibria and they capture the formation of expectations in the private sector. Entrepreneurial behaviour is not necessarily stable over time so that forecasts – especially short-term – can be subject to considerable uncertainty when they are based on behavioural equations estimated with historical data, which, moreover, are available after a considerable time lag and are often subject to revisions after publication.

Surveys fill in the need for more timely indicators. Indeed, business surveys provide up-to-date qualitative indicators and can be used to gain insight into the economic climate before official national account or industrial production statistics are published. Business surveys also have the advantage of being flexible. In times of strong structural changes, weights given to individual questions can be re-assigned to correspond to the individual factors in accordance to the influence they exert at the moment. There is empirical evidence that the inclusion of information from business cycle surveys can improve economic forecasts.

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[2] The central bank of the People's Republic of China also produces a wholesale price index (see pages 92–98, IFC Bulletin 19).

Business surveys are generally carried out using a similar methodology. A short list of questions is posed to representatives of the business sector which they can answer by ticking off a simple box of choices. Some questions reflect current conditions whilst others would be more forward-looking. Variables would include sales, exports, price movements, or order books. The response choices are typically "expected to increase", "expected to remain unchanged" or "expected to decrease". These qualitative survey responses are then converted into a quantitative number by various methods, the two most common ones being "net balances" and "diffusion" indices.[3] In the case of net balances, the percentage of the respondents reporting a decrease in a particular variable are subtracted from the percentage reporing an increase. For a diffusion index the percentage of respondents for each category (up, same, down) are given a particular weight, typically 1.0, 0.5, and 0.0 and summed up.[4] Net balance indices are bounded within a range of +100 and −100 (0 indicating no change) whilsts diffusion indices range between 0 to 100 (50 meaning that on balance respondents expect no change). In principle the two measures reflect the same information, though it must be noted that implicitly the diffusion index counts one-half of the no-change responses as increasing (the net balance index does not use the information in the no-change category).[5]

One of the first business surveys conducted is the manufacturing institute for supply management (ISM) report on business in the United States, which has been issued since 1931. This receives broad attention as a leading indicator of the US economy and is calculated as a diffusion index. The Bank of Japan's Tankan survey is also an internationally well-known business survey. It is a net balance index. The business surveys conducted by the central banks of the european union (EU) are part of a EU wide business survey coordinated and published by Eurostat. The OECD has worked to promote international standards detailing best practices in the development of business tendency surveys. These guidelines were set out in 2003 by the OECD in Business Tendency Surveys: A Handbook. Its website brings together various other publications on business tendency surveys.

The information collected through the use of surveys is of great value to policy makers and analysts. The qualitative responses from business representatives provide a timely indication of private sector sentiment or confidence when quantitative data are not yet available. Over time business survey methodology has been refined and improved. In many cases the questions have been adapted so that the responses can be linked to a particular macroeconomic variable (eg production, exports, and investment). Moreover the leading property value of business sentiment/confidence indices have been studied so that it is better understood how they can provide early signals of the turning points in economic activity.[6] An example is the business confidence survey conducted by the National Bank of Belgium, which has turned into a leading indicator of the euro area business cycle.

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[3] The diffusion index referred here should not be confused with the so-called Stock-Watson diffusion index which uses dynamic factor models to capture co-movements across a large number of economic time series.

[4] A finer granularity of responses can also be provided, for instance substantially higher, higher, same, lower, and substantially lower. A net balance index would then take the total of the percentages of respondents answering substantially higher and higher and subtract the total of percentages of respondents answering lower and substantially lower. A diffusion index would weigh the responses 1.0, 0.75, 0.5, 0.25, and 0.0 respectively.

[5] A net difference of 0 could mean that 25% of respondents expect an increase, 50 % no change and 25% a decrease. It could also mean that expectations are polarised, ie 50% of respondents expect an increase and 50 % expect a decrease. Finally, it could also reflect the fact that 100% expect no change.

[6] Business surveys measure expected changes in economic activity, ie they reflect the second moment in the underlying variable. For instance, in periods of increasing activity a positive net balance index would indicate an expectation of an acceleration of activity. A zero balance would indicate a continuing increase and a negative balance a deceleration of activity.

Corporate balance sheet information

Apart from industrial production and producer price indices or business surveys, a number of central banks gather regular balance sheet information on the corporate sector. This includes the central banks of Germany, Greece, India, Russia, South Africa, Spain, and Thailand.

The information collected includes assets and liabilities of non-financial corporations, gross and net profits, cash flow, retained earnings, income and expenditure, dividend payments, non-residents' share in enterprise capital, sales figures, investments and disinvestments, number of employees, external trade, debt position and debt issuance, and demand for financing. This information is useful to obtain a picture of evolving trends in the financial position of the corporate sector. It also serves as input for the compilation of national and financial accounts, in particular to improve its frequency and timeliness (eg quarterly financial accounts). Finally, it is a complement to information available from other sources, such as bank lending surveys, on monetary and financial conditions in the economy.

Issues for discussion

1. Why are central banks involved in the compilation of industrial production, capacity utilisation and producer price indices? Do they have a comparative advantage over other national statistical agencies?

2. What caveats should be kept in mind when interpreting balance or diffusion indices of qualitative survey responses. Can meaning be attributed to the absolute level or change in the numbers?[7]

3. The quality and meaningfulness of business survey results depends on the voluntary collaboration of participants. Is the response rate taken into account when evaluating survey results?

4. Results from qualitative surveys can be obtained quickly and can be easily summarised. Are there additional areas in which these indices can potentially be used?

5. A number of central banks operate credit registers or corporate balance-sheet repositories. How is that providing them with information to monitor the financial position of the corporate sector? What is the value of corporate balance-sheet repositories in the countries where they are not kept by the central bank?

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[7] On April 3, 2007 the Financial Times quoted the results of a recent Tankan survey by noting that "the diffusion index for big manufacturers, which subtracts pessimists from optimists, fell to 23 from 25 in the October to December period". At a meeting of senior central bank officials organised by the BIS in January 2007 the question was raised what the statistical properties are of the "up-and-down indices" of business sentiment.

Use and usefulness of business survey data – the National Bank of Belgium's case

Luc Dresse[1]

1. Why survey the non-financial corporate sector?

In many fields of the economic life, making good decisions depends crucially upon the availability of relevant information about the non financial corporate sector. At the firm level, additional investment or employment, as well as credit extended by the financial sector, are conditional on market demand and profitability prospects. At the macro level, economic and monetary policy decisions need to take account of the structural and conjunctural developments faced by the corporate sector. The national and financial accounts constitute a major source of information in that respect. Set according to well defined conventions, based on rich administrative and other quantitative statistics, they provide a comprehensive and consistent picture for all sectors of the economy in general, and for the various branches of the corporate sector in particular.

However, survey results are increasingly used to complement the official statistics. Specific surveys have been developed by private companies, by statistical bodies, and also by central banks, with a view to gaining knowledge on precise questions which are not captured by regular quantitative data, or to improving the timeliness of the data availability.

2. Business cycle and business surveys

Among those surveys, the so-called business sentiment or confidence surveys have a predominant position in the information set used in the monetary policy decision-making process. Obviously, a good perception, in real time, of the demand conditions prevailing in the economy is instrumental for assessing the degree of inflationary pressures. A significant number of central banks even maintain in house business surveys, as the National Bank of Belgium has done since 1954. Furthermore, a wide range of users, including individual firms, financial market participants and the general press, are interested in information on the business cycle position.

Business surveys and sentiment indicators are strange statistical animals in many respects. First, their aim is to monitor the economy's business cycle position and to capture entrepreneurs' expectations, i.e. two phenomena which cannot be directly observed and measured. Second, they are built on specific techniques, transforming simple qualitative answers by respondents into well behaved quantitative time series, the synthetic business indicators. Ultimately, those synthetic indicators have proved capable of providing useful information, suiting the needs of a wide range of users.

Following the Burns and Mitchell definition, business cycle movements are usually understood as "a type of fluctuation found in many economic variables". The fluctuations considered in this context are typically supposed to range between 1.5 and 8 years, that is excluding short-term volatility as well as long-term movements. Although complicated statistical approaches or pure expert judgment may be applied to extract the business cycle fluctuations from the data, it is common practice to use year-on-year GDP growth as a proxy.

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To capture these fluctuations, business survey questionnaires typically contain a limited number of questions pertaining to the entrepreneur's assessment of the current situation, his view on short term prospects and to the recent development in his firm's activity. In reply, the respondent is simply asked to choose from a limited number of options, i.e. whether the rhythm of production increased/remained unchanged/decreased, whether the order book position is regarded as good/neutral/bad, etc.

This simple set up offers numerous advantages, both for the respondent and for the compiler. On the surveyed companies' side, one person with an updated broad view on the state of affairs in the company can answer the questionnaire in a short space of time, without requiring specific quantitative reporting by the production, financial or marketing divisions. For the producer, simple questionnaires may be conducted regularly (on a monthly basis) and processed quickly, with limited resources. The simple methodology can easily be applied to different types of activity, such as industry, construction, trade, or business services. Due to the general nature of the questions, it can also be kept on for long period, without having to make changes in the statistical system.

Figure 1

Simplified production scheme for the business indicators
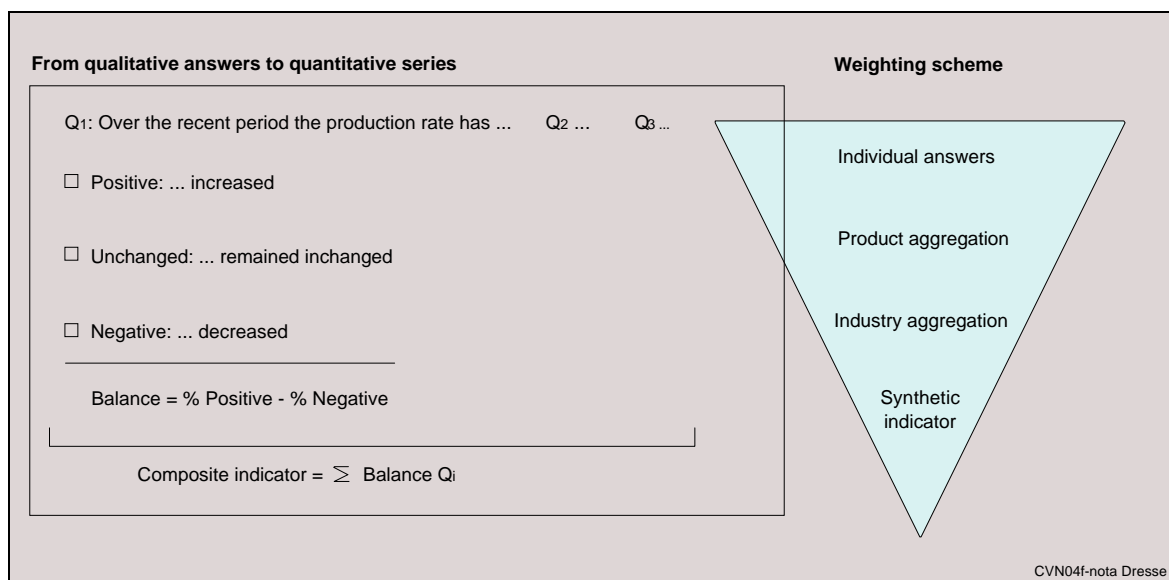
Although general methodological guidance is offered by the OECD and Eurostat – the latter actually imposing minimum requirements and calculating harmonised indicators for the member states –, practical implementation may differ from country to country. In particular, the various institutions in charge of business surveys have developed different methods of producing aggregate time series indicators from the qualitative basic information provided by the respondents. However, they follow the same general steps:

1. Condensing into one figure the participants' replies for a specific question. This can be done by taking the difference between the proportion of positive and negative answers (the so-called "net balance" approach), or by adding half of the neutral answers to the positive ones (the "diffusion-index" approach).

2. Aggregating, by means of a simple weighted average or by more sophisticated statistical methods (e.g. principal component analysis) the results over different questions, over different sub industries, to compute synthetic indicators for the economy.

3. Filtering the indicators to remove the noise, such as seasonal factors or short term volatility, in order to signal the business frequency movements. The final time-series may possibly be normalised or re-scaled.
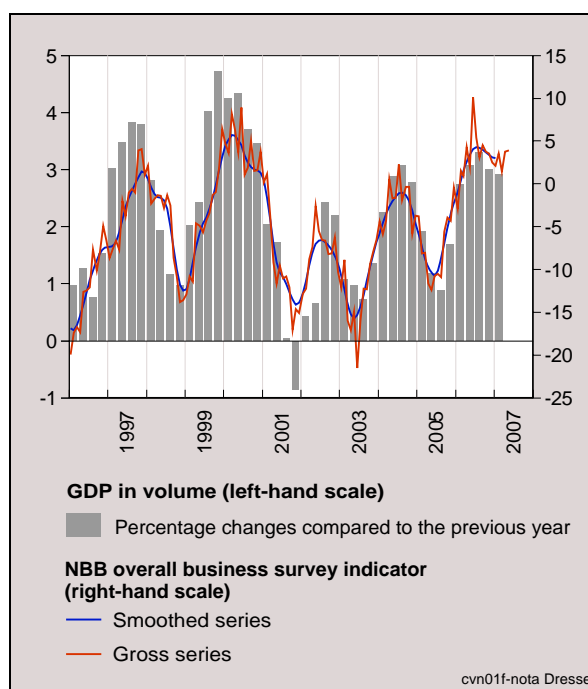
3. Usefulness of National Bank of Belgium's indicators

Using a fixed panel including more than 5 000 companies, the National Bank of Belgium has been conducting monthly business surveys in the manufacturing industry, construction and the trade sectors for more than 50 years; and, more recently, in the business-to-business service sector, too. It has developed its own synthetic indicators for the Belgian economy, which are used extensively in economic briefing, for short-term forecasting and for research. Some conclusions may be drawn from this accumulated experience:

– ***Regarding the production process***, reliable results heavily rely on the representativeness of the panel and the high response rate achieved month after month (between 90 and 95%). In particular, regular contacts with the sector organisations and with the participants are important to maintain the quality of the panel and to enhance the motivation to respond. Providing detailed feedback for the participants also helps in that respect. Obviously, the format of the survey is equally important to ensure continued participation: the questionnaire needs to be short, with a limited number of readily understandable and to-the-point questions, backed up by user-friendly transmission channels.

– ***Regarding the use of the survey indicators***, the success lies in the fact that they quickly provide a reliable picture of the Belgian economy's business cycle position. Notwithstanding the progress made to reduce the publication timelag for quarterly national accounts or for industrial production statistics, the business surveys are available within a few days. In addition, unlike most statistics, the survey results are not subject to revision. More importantly, the indicators' profile is closely related to the evolution of year-on-year GDP growth. The contemporaneous correlation reaches .8, and the short-term volatility – that is the noise which may jeopardise the extraction of business cycle movements – is limited. Depending on the users' needs, filters may be applied to minimise volatility, albeit at the expense of the timing of the data or of series revisions.

Figure 2

GDP growth and business indicator in Belgium

GDP in volume (left-hand scale)

Percentage changes compared to the previous year

NBB overall business survey indicator (right-hand scale)

— Smoothed series

— Gross series

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Sources: NAI, NBB.

These favourable characteristics justify the usefulness of the business indicators, for various purposes.

Firstly, business cycle indicators are used as a monitoring tool. They help to assess in real time whether the economic pace is accelerating or decelerating. In particular, they facilitate the detection of turning points in the business cycle. Given the strong international dimension in business cycles, it is worth noting that indicators built for one economy may contain valuable information for neighbouring or partner economies, as is the case with the NBB synthetic indicator for monitoring the euro area.

Figure 3

**Uses of business indicators:
Turning point detection and expectations
vs. current situation assessment**
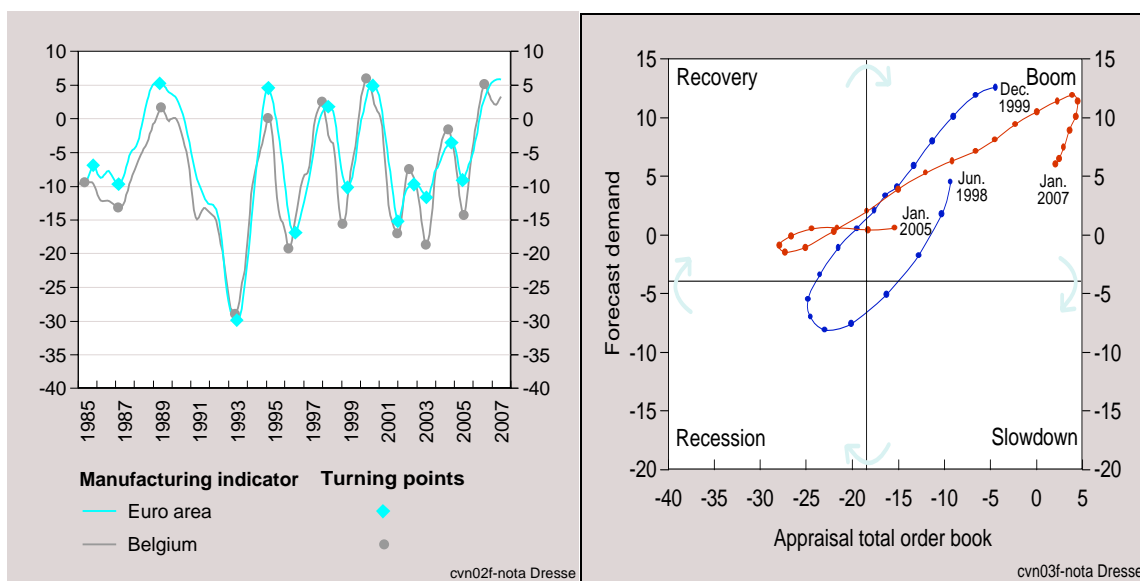
Sources: EC, NBB.

Also, using leading or coincident properties of specific sub-indicators, it is possible to disentangle the current situation from expected developments, as illustrated in the business cycle clock. A typical business cycle would actually be characterised by successive phases of recovery, when expectations improve while the current situation is still subdued, followed by a boom (buoyant expectations and current situation), a slowdown (declining expectations) and a recession, both with low expectation levels and a weak current situation.

Survey indicators are also used to improve short-term forecasting, over periods of one to two quarters. Small-scale partial models are built to exploit the relationship between activity, employment, consumption or exports, on the one hand, and business indicators, on the other hand. In this context, the value of the latter lies mainly in their timeliness. Other economic indicators, such as turnover or industrial production statistics, have similar explanatory power to business survey indicators, but they are not available as quickly.

Over the past five years, new econometric models have been developed to estimate common factors in large datasets. In this context, survey indicators largely drive the business cycle factor which emerges from short-term statistics with a large scope. These techniques can be used to forecast key variables such as GDP or to build alternative tendency indicators.

4.   Concluding remarks

To conclude, one can say that the business survey is an old but still a very successful story. Years of experience in a wide range of countries have proved how useful these surveys are. Although national statistical institutes have made remarkable improvements in delivering timely national accounts or production statistics, business indicators remain the leading tool available to monitor and assess short term economic developments and prospects in real time.

Business surveys are an effective way to collect informative data. General principles, drawn over long experience, are well-documented by international institutions. In practice, their implementation makes it possible to take account of peculiarities in the surveyed economy and specific users' preferences. The main recipe for success lies in a good understanding of the target population, in order to draw up appropriate and simple questionnaires and to attract a representative panel of respondents.

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The Bank of Canada's
Business Outlook Survey

Thérèse Laflèche[1]

History and methodology

The Bank of Canada has always had informal discussions with businesses, associations, and provincial governments. In 1996, the Bank refocused its regional presence and, a year later, decided to initiate a more structured program of business consultations, which is now referred to as the Business Outlook Survey (BOS). In 2004, after 24 quarterly surveys, an assessment of the BOS was conducted and the results were found informative enough to be published on a regular basis.[2]

The BOS uses a quota sample. As opposed to a random sample, where firms are chosen randomly, a quota sample chooses firms according to certain characteristics – in this case, their size, the sector in which they operate, and the region where their head office is located – in order to be representative of the Canadian business population.[3] When a firm is unable to participate in the survey, for whatever reason, it must be replaced by a similar firm, i.e., one of the same size, in the same industry, and in the same region.

The sample is small. Each quarter, Bank representatives visit approximately 100 private business sector firms across Canada. The interviews are done in person by one or two Bank economists who meet with the chief financial officer or the president. Participation in the survey is voluntary and there is a confidentiality agreement. Four hundred firms are visited each year, and no firm is interviewed more than once a year. In this way, the company's time and resources are not overtaxed, and a broader base of industry contacts is established. Interviews are conducted over a four-week period and each interview takes between 30 minutes and one hour.

The questionnaire

The questionnaire covers five broad categories: business conditions over the past 12 months; the outlook for business activity over the next 12 months (including future sales, investment intentions in machinery and equipment (M&E), investment intentions for buildings, and the outlook for employment); pressures on production capacity; the outlook for wages, prices, and inflation; and the firm's financing requirements and conditions. The questions are more qualitative than quantitative.

For futures sales, wages, and prices, the firm is asked how growth is expected to evolve over the next 12 months, compared with the previous 12 months: at a faster pace, a slower pace, or at the same pace. The question is similar for investment intentions and employment, but is

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[2] See Martin (2004) for a detailed analysis of the BOS results.

[3] There are five regions: Atlantic Provinces; Quebec; Ontario; Prairie Provinces, Nunavut, and Northwest Territories; and British Columbia and Yukon. The three sizes are: small (fewer than 100 employees), medium (between 100 and 500 employees), and large (more than 500 employees). Six sectors cover goods and services.

formulated in terms of level instead of growth. Two questions aim at evaluating capacity constraints – the ability of firms to meet an increase in demand (no difficulty, some difficulty, or significant difficulty) and the existence of labour shortages that restrict their ability to meet demand. In the case of inflation expectations, the horizon is two years and the respondent must choose from among four options determined by the central bank target (below 1 per cent, between 1 and 2 per cent, between 2 and 3 per cent, or over 3 per cent). Questions related to financing are backward looking; they deal with the evolution of the firm's financing requirements over the past three months, compared with the previous three months (higher, lower, or the same) and the change in credit conditions faced by the firm over the same period (tighter, easier, or unchanged).

In addition to the questions described above, the survey includes questions that provide more information on specific issues, such as the type of bottlenecks restraining the ability to meet demand. Supplementary questions can also be included to better understand a particular event. This was done, for instance, to evaluate the effect of the Canadian dollar's appreciation on Canadian firms. The survey can also explore special topics such as dollarization or the implications of environmental initiatives on firm output prices.

Information content

Some of the BOS results are quantitative. For instance, the survey provides percentages of firms that would experience some or significant difficulties in meeting an increase in demand, as well as the percentage of those facing labour shortages that restrict their ability to meet demand. Most of the results, however, are qualitative and must be transformed into quantitative information to be analyzed. This is done by calculating balances of opinion. A balance of opinion is defined as the difference between the percentage of firms expecting a given economic variable to be higher or to increase at a faster pace than in the previous year, and the percentage expecting the variable to be lower or to grow at a slower pace. The balance of opinion can vary between +100 and –100. A strong positive balance of opinion for future sales, for example, suggests acceleration in the trend growth rate over the next 12 months, compared with the previous 12 months.

To evaluate the information provided by the BOS, the results – quarterly data starting in the third quarter of 1997 – were compared with the corresponding economic variables. For instance, the balance of opinion on future sales growth was compared to the year-over-year change in the year-over-year growth rate of business sector GDP (which represents the momentum of this variable) by using simple correlations. A scale of assessment was established to evaluate the correlation coefficients.[4] The main results, presented in Table 1, are the following:

- Firms' predictions regarding the outlook for the next four quarters are closer to what occurs over the next two quarters.

- The question on production capacity (ability to meet demand) provides a proxy indicator for the Bank of Canada's current output-gap measure.

- Questions on input and output prices provide moderate signals, while the question on wages is a weak indicator.

- The outlook on business activity contains information about future growth and investment, but not much about future employment.

- The survey provides a good measure of inflation expectations.

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[4] Strong: > 0.80; moderately strong: 0.80 to 0.60; moderate: 0.60 to 0.40; weak: 0.40 to 0.20; and insignificant: < 0.20.

Table 1

**Correlations Between BOS Data
and Corresponding Economic Variables**

BOS Data	Economic Variable	Correlations 1997Q3–2007Q2
Business activity		
Past sales growth	Momentum of real business GDP	Moderately strong: $t-1$ (0.66)
Future sales growth	Momentum of real business GDP	Moderate: $t+1$ (0.50); $t+2$ (0.50)
Investment in M&E	Growth of business investment in M&E	Weak: $t+1$ (0.39)
Employment outlook	Growth of private sector employment	Insignificant
Wages, prices, and inflation		
Wage increase	Momentum of business sector compensation per hour	Moderate: t (0.40)
Input-price growth	Momentum of GDP deflator	Moderate: $t+1$ (0.54)
Output-price growth	Momentum of GDP deflator	Moderate: $t+1$ (0.54)
Inflation expectations	Total CPI inflation (2-year average)	Moderate: t (0.49)
Pressures on production capacity		
Ability to meet demand	Output gap (Bank of Canada measure)	Moderately strong: t (0.79)
Labour shortages	Output gap (Bank of Canada measure)	Weak: t (0.22)

Issues related to the methodology

This section focuses on a number of methodological issues: the use of a quota sample as opposed to a random sample, the refusal rate, and the sample design. A quota sample has advantages over a random sample. One is that a targeted response rate is always achieved for each subgroup of the population. Another advantage is, especially in the context of face-to-face interviews such as those of the BOS, that a survey based on a quota sample is less costly to conduct than one based on a random sample. The disadvantages, however, should be noted. First, a non-random sample has an unknown bias. Second, in the case of a quota sample, it is more difficult to estimate the accuracy of the results. While the margin of error for a result drawn from a random sample of 100 units is 10 per cent (16 per cent for the balances of opinion), the margin of error is unknown with a quota sample. A possible solution could lie in experimental measures of confidence intervals established by bootstrapping, which is currently being explored by economists in the Bank of Canada's Research Department.

The refusal rate is another important issue. As stated, when a firm is not available to participate in the survey, it must be replaced by a firm with the same characteristics in terms of size, sector, and region. Nevertheless, a refusal creates a potential bias, because the new respondent is not necessarily a perfect substitute for the one that has refused to participate in the survey. For example, a firm that has refused because it was too busy may present a better outlook than that of its replacement. The best way to deal with this problem is to prevent refusals. To do so, it is important to analyze the reasons behind the refusals to improve the way that firms are approached. It has been noticed, for instance, that the refusal rate is lower for large firms than for small and medium-sized firms. One explanation is that

larger firms have more resources available and are therefore more willing to participate in surveys. Another possibility is that larger firms have a better knowledge of the central bank, and of its roles, than a small or medium-sized firm. Consequently, improving the Bank of Canada's communications with small and medium-sized firms could result in fewer refusals.

The design of the BOS sample is not perfect. First, only 25 firms are visited in Ontario, and the province's share of GDP is 42 per cent. Second, the manufacturing sector is overrepresented. Third, distribution by firm size does not correspond to the true distribution of employment by firm size as estimated by Statistics Canada. However, the sample design does not appear to represent a serious problem. In fact, when the results are weighted to take into account true distribution by region, sector, and size, they do not change significantly.

Use of the BOS at the Bank of Canada

The BOS provides important information for the conduct of monetary policy. Compared with other sources of information, its value added are the timeliness of the survey data and their forward-looking nature. Moreover, the survey information can provide corroborating evidence on economic conditions. The survey can also be used to obtain information on economic concepts that are difficult to measure or observe. Finally, the use of open-ended questions and personal interviews can yield useful anecdotal evidence. It is a good vehicle to rapidly obtain information on current events such as the impact of the recent financial turmoil on business activities or the effect of rising energy costs on prices.

While the BOS represents an exceptional source of information, it is also an invaluable communication tool. Indeed, in carrying out the visits for the BOS, the regional economists not only increase the visibility of the central bank's regional presence, they also build a large network of contacts in the business community with whom they can exchange information.

Other Bank of Canada surveys

The Bank of Canada has used the expertise of the regional offices and their large network of business contacts to conduct other interesting surveys on special topics. As opposed to the BOS, which is quarterly, these surveys were not repeated. The first one, done in 1998, focused on the restructuring in the Canadian economy; the second, undertaken in 2002–03, examined the price-setting behaviour of Canadian companies. The results of these surveys were published in the *Bank of Canada Review* (see Kwan (2000) and Amirault, Kwan, and Wilkinson (2004)). A third survey is currently being conducted by the regional economists on the wage-setting behaviour of Canadian companies. Its results and main conclusions should be available before the end of 2009.

Conclusion

The Bank of Canada's Business Outlook Survey is a useful tool for the conduct of monetary policy. Of course, the survey data must be interpreted with caution, given the small sample size and a number of issues related to the survey methodology. The most important contribution of the BOS, however, goes beyond the data captured by the questionnaire: a broader understanding of business perceptions through confidential discussions with business representatives. Other business surveys conducted by the Bank of Canada have also proven useful in understanding macroeconomic phenomena from a microeconomic perspective.

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Business surveys and company accounts: implementation and use for monetary policy

Ahmet N. Kıpıcı[1]

The Business Tendency Survey (BTS) has been conducted in Turkey since December 1987. Starting from January 2007, BTS has been included in the Short-term Business Statistics of the Turkish Statistical Institute's (TURKSTAT) Official Statistics Program for 2007–2011, which was prepared in 2006. Currently, BTS has been conducted within the Joint Harmonized EU program of Business and Consumer Surveys.

Towards the achievement of the targets set in the Official Statistics Program, studies on harmonization of the BTS with the international standards and the improvements in the scope of the survey units were completed by the end of 2006. As a result, starting from January 2007, there have been significant modifications in the survey. These modifications included changes in questions, questionnaire forms and most importantly changes in wording. The extension in the scope of the survey units was another important modification.

The revision of the survey questions made in 2007, served two ends: Full harmonization with the EU "Industry Survey" and the simplification of the survey so as to reduce respondents' burden. In the earlier monthly surveys, there were 34 questions. 20 of them were similar to the questions of EU "Industry Survey".

Currently, we have two different survey forms. One of them is for the monthly survey and the other one is for the quarterly survey. The quarterly survey form, which has been sent to the respondents every three months since January 2007 in January, April, July and October, has 28 questions. The monthly survey form, however, comprises only 22 of these 28 questions.

The survey frame of the new BTS consists of the survey units of the monthly Manufacturing Industry Production Index with the base year 2005. The survey units of the Monthly Industrial Production Survey comprise all of the local units of the public sector enterprises' local units and the private enterprises' local units that generate at least 90 percent of the total production value of the private sector units with annual average number of 20 or more employees at four-digit sectors of NACE[2], Rev. 1.1.

In the new survey, sampling method is a fixed panel. 85 percent cut-off to the production value of the private sector units with 50 or more employees at 3-digit sectors and 85 percent cut-off to the production value of the public sector units at 3-digit sectors where the public sector generate at least 20 percent of the total production value. Whenever there are less than or equal to 10 public (private) units within a 3-digit sector, all of the public (private) units are included regardless of the cut-off criteria. Furthermore, if less than 10 units generate 85 percent of the production value, 90 percent cut-off is applied.

Survey units are the local units that are determined according to the cut-off criteria. However, enterprises with more than one local unit within the same three-digit sector can report for all of their activities in one survey form. Within this context, survey units comprise approximately 1600 local units and enterprises. They generate at least 80 percent of the production values

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at 3-digit manufacturing sectors of NACE, Rev. 1.1. Unweighted response rate has been about 70–75 percent over January – September 2007.

There are also differences in weighting and classification between the two surveys. While there was no weighting in the former survey, two-step weighting is applied in the new one. And finally, compared to the previous ISIC classification, the new survey has been designed according to the NACE classification.

As for the sectoral breakdown of the participants, Compared to the new BTS, the percentage of the units operating in DA, DG and DM were higher in the former BTS, whereas the percentage of the units operating in DB and DI were lower. The percentage of the units operating in the other sectors were close to the percentages of those in the new BTS and 3.5 percent of the participants to former BTS were operating in nonmanufacturing sectors. From the participants of former BTS, 31.3 percent are comprised within the respondents of the new BTS.

The fieldwork period of the survey is between the 1st and 15th of the surveyed month and no respondents are contacted afterwards. First application of the survey in January 2007 was made via post and answering preferences of the respondents were asked. According to their preferences next survey was applied. Currently, 68.1 % of the participants use Internet.

Weighting is performed at two stages: First, answers received from the establishments are weighted with the average number of employees of the establishments in the previous year as provided by the respondents once a year, and totaled up to three-digit level classification of the business activities. For the transition from three-digit level to two-digit level, results are weighted with production values, while the transition from two-digit level to the manufacturing industry total, the weights are based on the value-added figures related to the overall Turkish economy. Production value weights utilized in 2007 at three-digit level have been calculated by using the production data provided by the establishments for the compilation of the Industrial Production Index in previous year. Value-added weights have been calculated by carrying the value-added proportions of the year 2000 forward into 2006, using the Manufacturing Industry Production Index (1997 = 100). All weights will be updated once a year by using the most recently released data on value-added figures and the annual Industrial Production Index for the previous year.

Net balance obtained by subtracting the percentage of negative answers from the percentage of positive answers is used in evaluation of the results. The assessment of the results reveals that breaks exist in the balances of some questions. Tali and Çınar (2007) examine in detail the characteristics and possible reasons for the breaks.

Preliminary evaluations have indicated that; (i) the breaks are not only due to use of weighting; (ii) wording changes affected the results; (iii) conformity between the survey questions and with the reference series seems to indicate good performance; (iv) further observations and analysis are expected to provide more reliable evidence.

Finally, I would like to mention briefly on the use of BTS in monetary policy implementation. The results of the BTS are an important input in Monetary Policy Committee meetings. It provides an indicator for the assessment of the possible short-term developments in the key economic variables as well as helps understanding the sentiment of the business world. The results also supply input data to econometric models in addition to quantitative data for the purpose of designing economic policies.

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Reserve Bank of India
surveys on corporate statistics

V.C. Augustine[1]

Evolution

The Reserve Bank of India (RBI) has been regularly conducting studies on the financial performance of private corporate business sector for the past five and half decades. The first regular study covering the years 1950 and 1951 was published in the RBI Bulletin in August 1954. The studies are undertaken with a view to capture the trends in important performance indicators like sales, income, value of production, profitability, saving, investment, borrowings etc. in the corporate sector. Each year, five studies on financial performance of various sub-sectors of private corporate sector are published in the RBI Bulletin for wider dissemination. The results of these studies are used extensively by the Bank for policy formulation. The RBI also prepares the estimates of saving and capital formation in the private corporate business sector for inclusion in the National Accounts Statistics. Corporate activity has undergone rapid changes over the years due to the policy decisions of the Government, amendments in company legislation and increasing exposure to globalization. Consistent with these changes, the coverage of the studies was enlarged from time to time by the inclusion of new companies as well as by revising the items included in the studies.

Selection of companies

The Corporate Sector in India consists of companies in both Public and Private sectors. They are required to be registered under the provisions of The Companies Act, 1956. The RBI studies cover companies in the private corporate sector only.

Companies are required to prepare their accounts annually and present the balance sheet and profit and loss account at an annual general meeting (AGM) of the members within six months of the date of closing of accounts. Companies prepare the annual accounts for their shareholders in the manner/format prescribed in the Schedule VI of the Companies Act, 1956.

The RBI studies on corporate statistics are carried out based on analysis of annual accounts of select companies. RBI adopts purposive (non-probability) sampling for the studies. The main criterion for the selection of companies is the size of their paid-up capital, as it is the only characteristic for which reliable information is available at the population level. The objective is to have maximum coverage, industry-wise, in terms of paid-up capital and to include as many representative units as possible from various industries subject to constraints of time and resources. The list of selected companies is revised constantly with a

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view to improve the paid-up capital coverage and the representative character of the selected companies.

Issues in selection of sample companies and collection of their annual accounts

The Indian private corporate sector is very vast with over 700 thousand companies registered under the Companies Act, 1956. Updated information on current financial parameters of many of these companies is not readily available. The RBI maintains a database of companies consisting of information of about 30,000 companies and corresponds with them for procurement of balance sheets. For each year, on an average, accounts of about 12,000 companies are collected and their information is updated/added in the database. Companies in the construction/formative stage, defunct companies and those not operative for more than six months during the year as well as banking and insurance companies, companies functioning for non-profit motives, companies limited by guarantee, promotional/ developmental organizations, etc. are excluded from the studies. Only those companies whose annual accounts are available for three consecutive years are included in the sample.

Allocation of company codes: The RBI allots unique identification codes for all companies included in its database. This helps in processing the data, maintaining the database and preparing time-series data.

Selection of companies: Preference is given to companies included in the sample of the previous study. However, due to non-receipt/late receipt, many companies from the previous sample may be substituted with new companies. Generally, about 75 to 80 per cent companies are common to two successive studies. For new companies, preference is given for companies with high paid-up capital (PUC) and those belonging to selected industries so as to maximize the industry-wise PUC coverage. Small companies with PUC below Rupees 5 million are not included in the sample.

Industrial classification: Companies selected for the study are classified into various industries on the basis of latest year's major activity of the company. Industrial classification of companies is based on the National Industrial Classification (NIC).

Analysis of data and estimation methods

Analysis of data

The source of data for company finances studies is the audited annual accounts of companies. Data on assets/liabilities, income, expenditure and appropriation accounts are collected from annual accounts and posted in a self-balancing worksheet (standardized format). These are supplemented with information available in Directors' report, notes on accounts, statutory disclosures, etc. Data are captured in respect of about 300 variables. The RBI has developed a suitable methodology to standardize the accounts so as to ensure comparability between companies and over time.

In addition to data items, changes in the accounts during the year due to revaluation/ devaluation of assets and liabilities, changes in capital structure, effects of amalgamation, mergers and de-mergers, etc. are also captured. This information is used in standardization of accounts while computing performance indicators and in the preparation of sources and uses of funds statements.

Treatment of non-operating surplus/deficit: As mentioned earlier the RBI studies are also used for preparation of saving estimates for the private corporate sector. In order to arrive at the saving figures for the current year, it is necessary to exclude income and expenditure relating to earlier period as well as capital gains and losses. The RBI studies, therefore, classify such items under the head "non-operating surplus/deficit". This item is excluded while preparing savings for the current year.

Aggregation of data/preparation of Summary statements

Summary statements are prepared by year-wise aggregation of data of all companies at industry level and all industries level. These statements are examined for any inconsistencies at industry-level data between consecutive years. The companies causing such inconsistencies are identified and checked for possible errors. After finalizing the set of companies, final statements are generated and the study is prepared for publication. The regular studies are released as articles in RBI Bulletin for wider dissemination.

Issues in Aggregation of data

Date of closing of accounts: The reference period of the RBI studies is the fiscal year i.e. April 1 to March 31. In India, majority of the companies close their annual accounts as on March 31, coinciding with the fiscal year. However, some companies close their annual accounts on other dates like June 30, September 30, December 31, etc. In the RBI studies all companies closing their accounts any time during the year April 1 to March 31 are included and treated equally. While aggregating the data, the accounting period of all companies, irrespective of the date of closing of accounts, is uniformly taken as April 1 to March 31.

Annualisation: Generally companies close their annual accounts once a year covering 12-month period. However, some times companies prepare their accounts for period other than 12 months (varying from 6 months to 18 months) by extending or shortening their accounting year. In the case of companies, which either extended or shortened their accounting year, income, expenditure and appropriation account figures are annualized so as to ensure comparability between companies and over time period. However, the data in respect of balance sheet are retained as presented in the annual accounts of the companies.

Compilation of performance indicators

The RBI studies presents analysis of corporate performance based on performance indicators like growth rates, key financial ratios and sources and uses of funds statements.

While preparing the sources and uses of funds statements and growth rates based on consolidated data, care is taken to neutralize the effect of adjustments made by individual companies in their accounts like revaluation/devaluation of assets and liabilities, amalgamation, mergers and de-mergers, etc. However, such adjustments are not necessary in computing financial ratios.

For example:

Gross fixed assets formation = Gross fixed assets of current year (adjusted for revaluation/mergers etc.) – Gross fixed assets of previous year

Growth in Gross fixed assets = [{Gross fixed assets of current year (adjusted) – Gross fixed assets of previous year} ÷ Gross fixed assets of previous year] x 100

Time-series Analysis

The companies included in the RBI studies keeps changing from sample to sample. However, in each of the RBI studies, data are presented for three consecutive years for the same set of companies, enabling comparison of data. The number of common companies between two consecutive studies is generally in the range of 75 to 80 per cent, making the results fairly comparable across varying samples. The distribution of companies according to their PUC is highly skewed. Since the number of companies with high PUC is very small, it is generally possible to get accounts of most of the high PUC companies and include them in the sample for successive studies. This in turn helps in maintaining the consistency of results between consecutive studies. Also, since the coverage of the RBI studies is reasonably large (over 2000 companies), representing companies from various size classes and wide range of industries, the results are generally found comparable between samples. Moreover, unlike absolute numbers, the indicators like growth rates and financial ratios compiled based on large sample of companies are found to be consistent across varying samples and are fairly stable. Hence it is possible to build up time-series of growth rates and ratios even in the case of varying samples. Further, if the analysis is done based on results of common companies, the absolute figures also become comparable.

End use of data

The following five annual studies are regularly being published in the RBI Bulletin:

1.   Finances of Large Public Limited Companies

2.   Finances of Public Limited Companies

3.   Finances of Private Limited Companies

4.   Performance of Financial and Investment Companies

5.   Finances of Foreign Direct Investment Companies

Besides annual publications, the RBI also brings out special publications on adhoc basis.

Estimates of Saving and Capital Formation in the Private Corporate Business Sector

The Company Finances data is also used for compiling the estimates of saving and capital formation in the private corporate business sector in India for inclusion in the National Account Statistics.

Gross Saving and Gross Capital Formation are computed as follows:

Gross saving = Retained profits – Non-operating surplus/deficit + Depreciation Provision

Gross capital formation = (1+2)

(1) Gross fixed assets formation

= Gross fixed assets (closing stock)
(Adjusted for revaluation during the year)
– Gross fixed assets (opening stock)

(2) Inventory formation

= Inventory stock (closing)
– Inventory stock (opening) (adjusted for price changes)

The sample estimates are blown-up using population paid-up capital (PUC) figures received from Ministry of Corporate Affairs to obtain the population estimates.

Population estimate = Sample estimate X Ratio of PUC of all companies to PUC of sample companies

RBI Studies on Quarterly Results

The Reserve Bank also conducts regular studies on performance of private corporate sector based on un-audited quarterly results of companies. Companies listed in stock exchanges publish their quarterly results as per provisions of their listing agreements with the exchange. The quarterly results provide data on select variables like sales, income, major heads of expenditure, and profits. These data are regularly collected and summary results prepared. The studies on corporate performance based on quarterly results are extensively used in policy formulation and evaluation of performance by the real sector. Two of these studies presenting performance of private corporate sector based on half-yearly results and annual results are also published in the RBI Bulletin, which serves as advance indicators on corporate performance. The selection of companies for these studies is again based on timely availability of results. It has been observed that the results of the quarterly studies are consistent with the regular RBI studies based on audited annual accounts. The quarterly studies, thus, bridges the information gap due to delay in finalization of the regular annual studies.

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Direct Reporting System: foreign direct investments of the business sector in Israel

Tsahi Frankovits[1]

1. Preface

The Direct Reporting System (hereafter "DRS" or "the system") was developed following the foreign currency liberalization program of the late 1990's is Israel. The main reason for developing this system was the need to monitor the business sector activities abroad as a substitution for the obligation imposed on Israelis to report and get approval for their FX transactions in the pre-liberalization era.

In recent years, the usage of the system has evolved to support the compilation of the country's IIP, BOP's financial accounts and other statistics. In this article, I will describe the DRS features in the following order:

In section 2, a general description of the system and the reporting entities' statistics is given. In section 3 I describe the cut of the tail method that we used to define the reporting population. Section 4 is dedicated to statistics that we currently compile from this data. Section 5 includes some concluding remarks.

2. General description of the system

The DRS is a system to collect data directly from companies, individuals and not-for-profit organizations, if:

- The annual revenue of the company is higher than 50 million US $ or,

- The value of assets invested abroad is higher than 20 million US $ or,

- Any company that issued tradable securities abroad.

The reporting entities use a highly secured web interface and should report (mostly) on a quarterly basis (up to 60 days after the last day of the quarter). The reported data can be classified as follows:

- Ownership composition (residency, holding percentage).

- Sales, export, import and profit.

- Assets and liabilities by type (financial and real).

- Stocks and flows in local and foreign currency, in Israel and abroad.

- Financial flows through bank accounts abroad.

- Capital and debt issuing abroad.

- Qualitative data such as geographic or economic sector classification.

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Currently the reporting population include over 450 companies, about 60 individuals, 30 not for profit organizations and 120 other companies that issued tradable securities abroad. They report using 9 different forms. This is about 3,500 forms that are reported to the Bank of Israel each year. The reporting population represents a significant portion of the economy as shown in table 1.

Table 1

Indicators for the share of the reporting entities in the economy

Sales/GDP	74%
Exports/Total Exports	60%
Direct Investments Abroad[1]	90%
Portfolio Investments Abroad[2]	36%
Inward Direct Investments	43%
Inward Portfolio Investments	83%

1 When looking for coverage ratio in setting the cut of the tail thresholds, this was the main indicator in focus.
2 Most of the portfolio investments abroad are attributed to the financial sectors in the country.

Based on 2007 figures.

3.   Setting the survey population

Until the year 2007, the reporting population included any entity (Businesses, Individuals and not for profit organization) that had more than 5 million $ in assets abroad. As a result, the annual number of forms that were reported to the Bank of Israel exceeded 6,500 forms.

Due to the need to reduce the amount of resources allocated to this assignment within the bank, together with the will to reduce the reporting burden, we started to look for the optimal point where we get maximum efficiency gains (measured by the reduction in FTEs allocated to this assignment), maximum reduction in reporting burden (measured by the reduction in the over whole number of reported forms) and minimum reduction in the coverage rate (measured by the reduction in percentage of direct investment statistics abroad). The results of this analysis are shown in the following graphs.

Anural number of forms by threshold

6,474 Forms before the policy change

3,552 Forms after the policy change
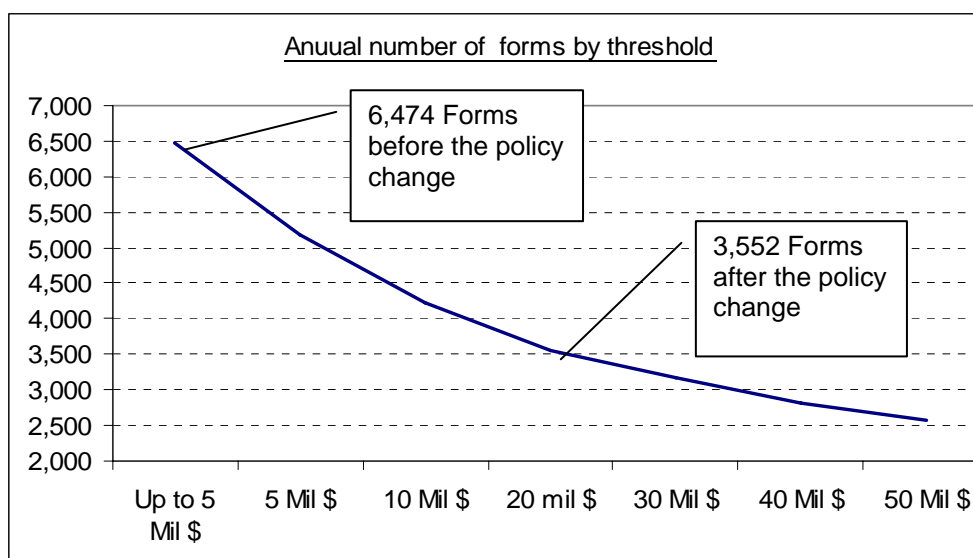
From an efficiency as well as reporting burden point of view, we have noticed that the best effect is being achieved around the 20 million $ threshold (there is almost a linear relation between the number of forms and the resource allocation within the bank). When checking for the coverage ratio, we realized that the representation of the statistical phenomenon is not significantly affected by this change as shown in the next graph:
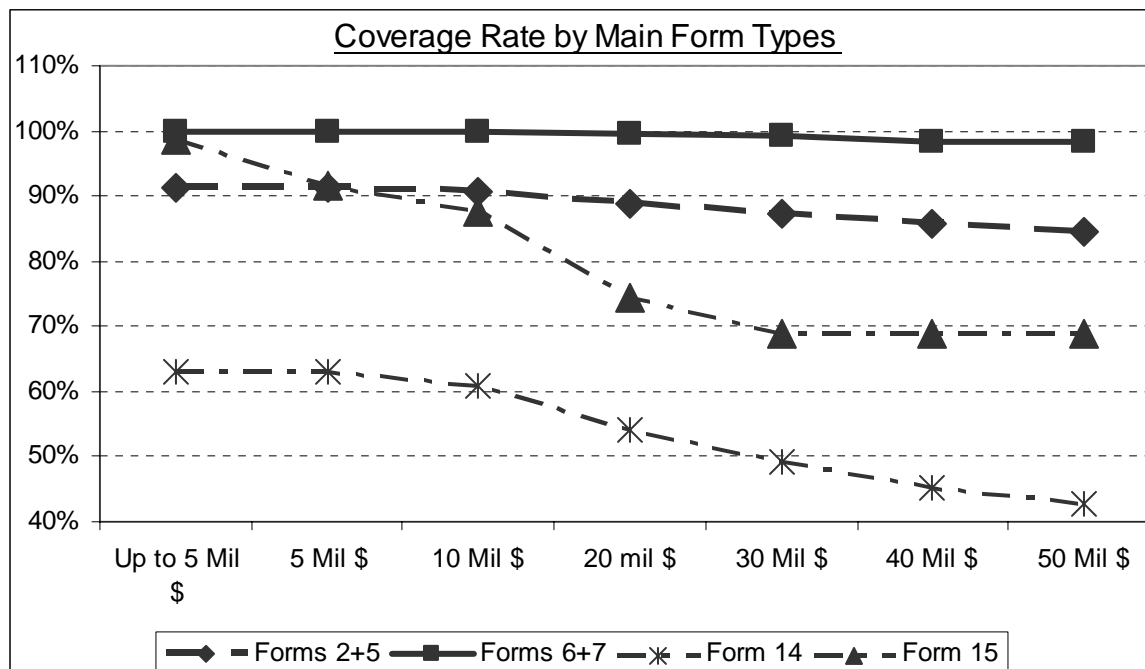
Forms 2,5,6,7 are the most important forms from a statistical perspective.

With this decision we achieved a reduction of 4 FTE in the allocation of resources to this assignment.

4.   Survey statistics

As of mid 2008, the reporting population to the DRS total investments in financial assets abroad were US $ 18.3 billion and their direct investment abroad summed up to about US $ 43.2 billion. These assets represent the majority of the countries assets abroad (the reduction in the portion of the investment in tradable securities is a result of the increase in the investments of institutional investors abroad in recent years) – see table 2.

Table 2

The reporting population share in total assets abroad

	Dec-05	**Dec-06**	**Dec-07**	**Jun-08**
Bank Deposits	78%	73%	72%	71%
Tradable Securities	60%	61%	51%	50%
Direct Investments	96%	95%	96%	93%

As part of the survey, the Bank of Israel asks for some real economic activities statistics. This data is helping us to link the financial and cross border statistics to the real activities of the reporting population. Table 3 shows some indicators that demonstrate the importance of these statistics due to their significant portion in the economy.

Table 3

The reporting population and 3 economic indicators

	2005	**2006**	**2007**	**Jan–Jun 2008**
% sales of Business Sector's GDP	79%	86%	85%	86%
% Export of Total Industrial Export	61%	67%	63%	61%
% Import Total Import of goods	61%	70%	63%	64%

Together with the compilation of national statistics, we also use the DRS statistics to calculate and estimate the business sector's FX positions. This statistics is very important because it represent the long term changes in the demand and the supply of the business sector for foreign currencies against the Israeli Shekel.

5.   Concluding remarks

Direct reporting has proved to be a reliable and cost effective process to collect statistical data from the business sector in Israel. It also minimized the need to rely on commercial banks' reports which have shown a decline in quality and relevance over time.

Direct reporting also gives us a direct communication channels to the business sector. This may help when we need to get additional information such as in times of economic crisis.

Nevertheless, when using the threshold sampling method, we may lose coverage rate over time. To overcome this, we plan to use a business sector survey in cooperation with Israel's Central Bureau of Statistics. The main purpose will be to check our coverage rates and adjust the threshold accordingly.

Some remarks on business surveys
in the National Bank of Poland

Piotr Boguszewski[1]

I. General motivation

This paper is not an exhaustive description of the system of business surveys in the National Bank of Poland. It is rather aimed at giving a general overview of motives, main premises, backgrounds and development of solutions implemented in this area by the Bank.

It could be taken for granted that information coming from the real sector of economy is an essential and integral part of the process of monetary policy making by central banks. Within very simplified and stylized approach to the monetary policy, treating it as an optimal control problem, one can say that these data are very helpful in identifying the current position of the economy and forecasting future movement of the system. There are many potential sources of such information. The traditional and probably most common solution to this problem is to rely on hard financial data; particularly obtained from corporate balance sheets and cost-benefits statements. Unfortunately, in practice it turns out that from the point of view of central banks needs, usefulness of some of these potential sources are a bit limited. Among others, the reason is that information central banks look for should meet specific criteria (listed below), which in many cases is difficult; especially for developing economies:

- timeliness – information should be available sufficiently before decision-making processes start up. Despite a big effort of national statistical offices and international statistical organisations toward shortening the period of financial data collection, both in developed and developing countries, data collection processes in this area remain relatively slow if standards and requirements of monetary policy are under consideration;

- comparability across time – time series techniques are very important and popular tool for analyzing and forecasting data used in monetary policy decisions. In the case of developing countries, in many instances, there is a lack of sufficiently long time series due to relatively short history of market economy in some of these states;

- comparability across space – in a global world national monetary policy should not be restricted to domestic problems and determinants. It means that a wide spectrum of international information are required by central banks (for example – see the evolution of a concept of the global output gap[2]). But without sufficient level of international comparability of these data the applicability of this approach is limited. In this context we should keep in mind the idea that in the contemporary world a lot of factors like inflation, fluctuations of exchange rates, some effects of globalization etc. tend to violate this principle of financial information comparability;

- reliability – in contemporary statistics financial data are collected from different sources, processed with different methods (seasonal adjustment, outlier removal etc.) and aggregated with a collection of deflators. One result is that data corrections

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[1] The opinions expressed herein are those of the author and don't necessarily represent those of the National Bank of Poland.

[2] See: Borio, C., Filardo, A., Globalization and Inflation: New Cross-country evidence on the global determinants of domestic inflation, BIS Working Papers 227, May 2007.

are frequent in many statistical offices and in a lot of cases these changes are significant from the point of view of econometric modelling, forecasting etc. It should be noted that there is a long lasting and unfinished discussion among analysts regarding which releases of data – preliminary or final – are better in this respect. In some developing countries high inflation seems to be a serious problem, if reliability is what we strive to, due to the distortions it brings to financial statements.

The lack of comparability, unreliability or delays in some data used by central banks impair forecasting power of this information. From the point of view of monetary policy efficiency and effectiveness all these drawbacks are disadvantageous. In such circumstances qualitative data could be very useful (together with statistical offices efforts to solve problems we have mentioned above) in overcoming some of these weaknesses of financial data:

- in many cases surveys could be conducted and processed more quickly and therefore they provide users with leading information; it is worth mentioning that sometimes surveys give us coincident or even lagged indexes which are available earlier than analogous financial data. In such cases this index could be "leading" in comparison with financial one.

- in many instances, aggregation of qualitative data seems to be easier (if we abstract from – for example – cultural differences among social groups or nations influencing the way they answer the same questions)

- using survey data we are able to verify "hard" financial data and to find some inconsistencies in existing information

- surveys give us information about problems for which we have no financial (hard) information or limited availability of data; expectations, judgements, etc. belong to this category

- in contrast to financial information, surveys are usually more flexible; in many cases collecting new financial data is much more difficult and complicated than adding new question to a survey questionnaire

Bearing these in mind we can conclude that in central banks surveys are attractive and useful supplement of financial information.

II.   Origins of the business surveys in the National Bank of Poland

In the National Bank of Poland business surveys started in 1995. At that time there were at least two reasons in favour of survey methodology: in Poland it was consecutive year of high inflation (aprox. 28 % y/y) and only the sixth year of transformation of the Polish economy. In such circumstances, for reasons described in the previous part, usefulness of pure financial data was limited. It remained true despite the fact that since 1993 NBP had access to relatively wide spectrum of financial data at disaggregated level. Hence, the decision about extending our interest to qualitative data was based on deep analysis of pros and cons of financial statements in that circumstances.

Coming to the origin of business surveys in NBP it is worth stressing that some measures and solutions adopted during that pioneering period exerted significant impact on our future methodology. One would like to point out to three issues. Firstly, we have to be aware that central banks usually have no (or limited) special entitlements to force enterprises to cooperate with them in the field of non-banking business statistics. It means that in many cases central bankers have to rely on voluntary declarations of enterprises to join such programmes. In NBP we decided to go along that way. That decision has turned out to be very fruitful and useful and it has been unchanged until now despite the fact that in this respect current formal regulations are more favourable for the Bank. The second problem is that in 1995, we realized that it would be difficult to collect representative sample if cooperation

is voluntary. Asking biggest firms to join the program seemed to be the practical remedy for that problem because it guaranteed stronger correlation between answers and overall performance of the economy dominated by such units. The third important factor was that until 1994 CSO collected financial data (cost-benefits statements) from nonfinancial enterprises on monthly basis. It explains why we started with yearly questionnaire rather than with business climate quarterly survey. At that time frequency of financial data and lags in collection periods were satisfactory as far as business climate diagnosis was under consideration. But it was time of deep and substantial changes in the Polish business sector explaining the strong demand for qualitative data from enterprises and aimed at covering vital aspects of their financial strategies, attitudes toward banking sector and so on. In consequence, the first questionnaire was mainly devoted to such problems like determinants of capital structure, perspectives of development, investment plans, solvency, threat of bankruptcy etc.

III.   Rules

There are at least two reasons why rules are so important in the case of designing business survey techniques:

- if we want to adopt time series methodology to analyze our data the condition of intertemporal comparability of observations should be satisfied during a sufficiently long period of time; especially we should have time series of required length (20 observations – an equivalent of information collected during five years of quarterly surveys – seem to be an absolute minimum)

- relative stability of the sample in the case of panel techniques

It is obvious that frequent changes in formulation of questions, unstable principles of cooperation with enterprises or unclear rules of panel selection are contrary to these requirements. Of course, we mustn't forget that such "stabilizing" approach has potential drawbacks and sometimes it could lead to some undesirable rigidities, persistencies, or in response patterns. In our methodology we try to take into account these threats; particularly by treating business surveys as an integral part of a wider system of business sector monitoring. Pinning down these ideas in the case of NBP following rules have been adopted from the beginning:

- **coherence and integrity**; surveys are designed as an integral part of the system of information on enterprises in NBP (see Diagram 1).

- **voluntary participation**; reasons for this option have been explained earlier but may need more examination. Such a solution is sometimes criticized. The main argument against it is that there is the risk that sample would be unrepresentative. These doubts are of course reasonable. But it seems that there is a simple and practical solution to this problem. On the one hand, bearing in mind the multidimensionality of the whole population of enterprises, it is obvious that it is very difficult to reproduce such complicated structure in the sample. In practice it means that this sample should be relatively large, which is usually unobtainable without strong effort, costs, favorable formal regulations etc. In the case of many countries these prerequisites are not satisfied. On the other hand, the main goal of such surveys is not the constructing representative sample per se, but in achieving a satisfactory result, reflecting the true state of the whole economy. Operationally it means that results of surveys should be well correlated with the set of the main macro variables. It is possible to meet this condition if the sample consists of sufficient number of biggest companies. It is especially true in the case of economies having a high level of concentration ratios. For example, in Poland the one hundred biggest investors account for more than 40% of total investment by enterprises in the population of medium and big firms.

- **convenience sample** is the next rule, closely related to the previous one. The importance of this rule is significant, especially in the context of loyalty of respondents and openness of the relations between pollsters and surveyed firms. It should be emphasized that nonrepresentativness of the sample is not the only factor influencing reliability of surveys. Non-cooperation by enterprises in financial distress is the second possible source of bias. Such behavior is not rare for firms in this situation; partly due to the reputational reasons, partly as a consequence of burdens and lack of time imposed on the staff due to an adverse financial situation. As a consequence, population of respondents is dominated by firms in good health, which means that the results would be too optimistic. This is probably independent on the techniques the sample is created, unless the participation is obligatory by law. But even in that case the frankness of answers could be limited. Good and long lasting relations between the surveyors and the surveyed seem to be a more efficient solution. With such a relationship, the barriers to communication are lowered and are more transparent. The process of communication between these two groups of partners is more natural and based on mutual trust.

- **primacy of supplementing over changing**; continuity and intertemporal comparability of results require conservative policy in respect of the scale of possible questionnaire modifications. In typical situation it is better to add new question (or in the last resort to redesign some points in the questionnaire) than to modify existing questions. The other consequence of this principle is that within questionnaires we have two groups of questions – repeatable, practically invariable over time and temporary, focusing on time-specific needs. The second kind of questions is predominant in annual surveys and, of course, is the essence of ad hoc surveys.

- **statistical confidentiality**; guaranteed anonymity of respondents and firms is the next pillar of mutual trust and necessary condition of cooperation between all sides involved in surveys.

Diagram 1

System of information on enterprises in the National Bank of Poland
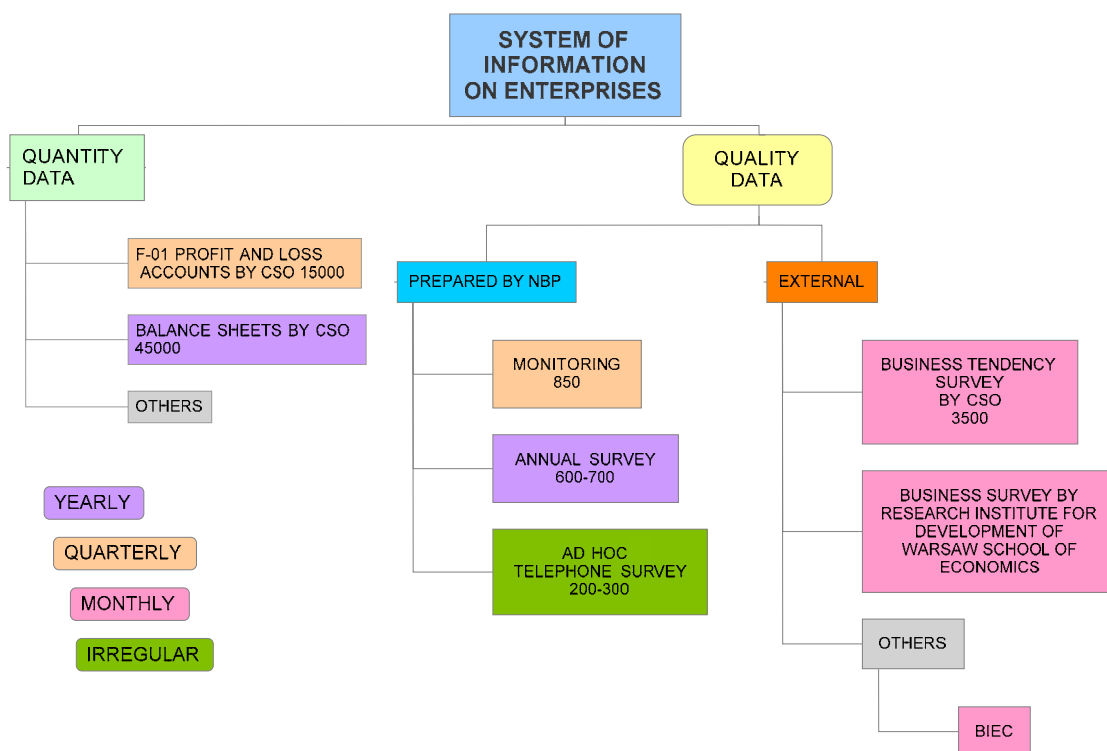
Numbers represent the approximate size of investigated population.

- **frequency of regular surveys not more than quarterly**; of many surveys conducted by statistical offices, the monthly frequency form is rather typical for this kind of studies. But in the light of our practice monthly frequency in some cases seems to be too high. There are at least two reasons for it. Firstly, it is probable that shocks are stored in the memory of respondents during such a short period of time. It means that a group of answers could be influenced more by these shocks than fundamental factors determining economical situation of firms. In the case of quarterly survey it is more likely that shocks are "integrated" in mind over time interval of sufficient length and may be less important or even disappear. The second argument against monthly frequency could be deduced from Weber law which states that the strength of perception is proportional to the logarithm of stimulus. In practice it means that two similar stimuli are undistinguishable by an observer. But it is difficult to assume that during one month changes in economic situation of firms are sufficiently substantial to be recognized.

Of course there is a one exception to this rule – ad hoc telephone surveys (see Diagram.1). Ex definitione they are aimed at capturing opinion of respondents on the impact of untypical events (shocks) on economical situation of enterprises.

- **holistic forward-looking approach**, this principle means that we try to cover in advance most important, from the point of view of the central bank mission, aspects of economic activity of enterprises. Consequently, we analyze in surveys relatively wide range of aspects of firms economic condition (see Diagram 2). It is evident from this Diagram, that among others the surveys are focused on inflation determinants and financial stability. While annual surveys lean toward medium and long-term aspects and mechanisms of problems to be examined, quarterly surveys are more concentrated on factors of short-time importance.

Diagram 2

**Main topics of surveys – classification by frequency of surveys**
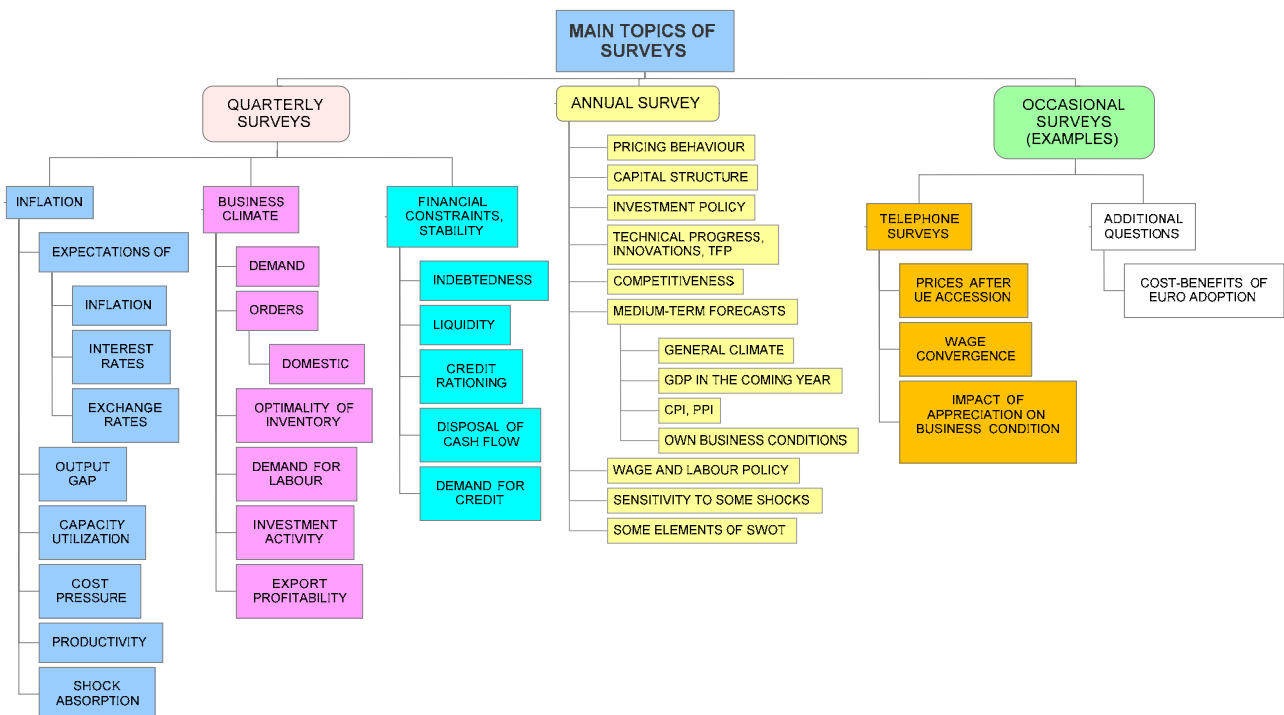
IV.   The sample

In 1995 our first sample consisted of approximately 200 of the large and largest Polish enterprises (see right panel on the Fig.1); the reasons for such choice has been explained earlier. The size and the structure of the panel was relatively stable to the end of 1998. At the beginning of this century we decided to supplement our sample with strata of medium-sized enterprises. It resulted in significant drop of the mean value of employment in firms we study. After next few years we made a decision to speed up the process of sample building and to extend our sample by including smaller enterprises. There were some motives behind that decision but one seemed to be decisive. Namely, it is well-known fact that the SMEs sector is the biggest employer in the economy. It is a matter of the great importance for monetary policy because situation on the labour market is one of the fundamental determinants of inflation pressure.

All that decisions resulted in a growth of the sample we investigated and in changes of its structure. Now, aprox. 900 enterprises belong to the sample (see Fig.1 – right panel). Although the structure of our sample doesn't reflect the structure of the population of non-financial enterprises and it is still distorted toward bigger items, now the number of SMEs is almost sufficient from the point of view of methodological requirements for studying this sector.

Fig. 1
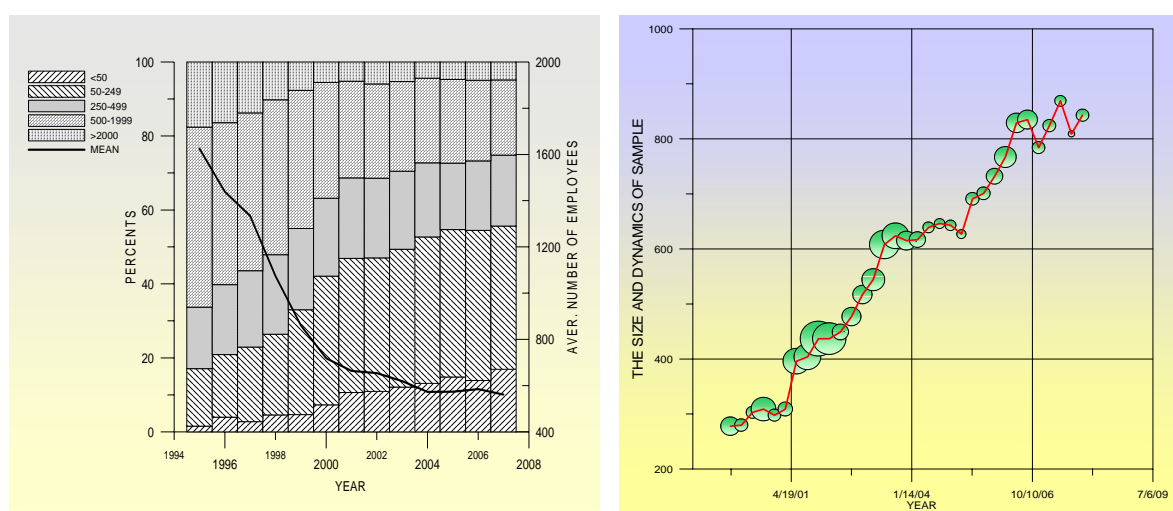
Structure (left figure) and size (red line) and dynamics (diameter of green bubbles) of the panel – right figure.

From the beginning of surveying, 16 regional branches of NBP have been actively involved in the process of data collection and other forms of collaboration with respondents. In this system regional branches are responsible for:

- surveying existing respondents

- interventions for probing or explanations if required by respondents

- recruitment new members of our sample

- maintaining open and trustful mutual relations between firms and branches

- correcting mistakes, explaining doubts etc. in the process of surveying

This system is to some extent similar to solutions applied by the Bank of England in this area. Of course there are significant differences, too. For example, one of the most important difference is that in the case of the National Bank of Poland the formula of interview conducting by regional agents within quarterly and annual surveys is more predetermined

and restricted to centrally administered questionnaire (one for all branches) and is conducted as a structured interview while the Bank of England seems to follow more individualistic and diversified approach – the scenario of a survey to a greater extent depends on a regional agent choice and dynamic interplay between agent and respondent during the time of surveying.

In practice the system based on active role played by regional branches turns out to perform well in the National Bank of Poland if at least two following criteria are considered: fidelity ratio and response rate.

Fig. 2
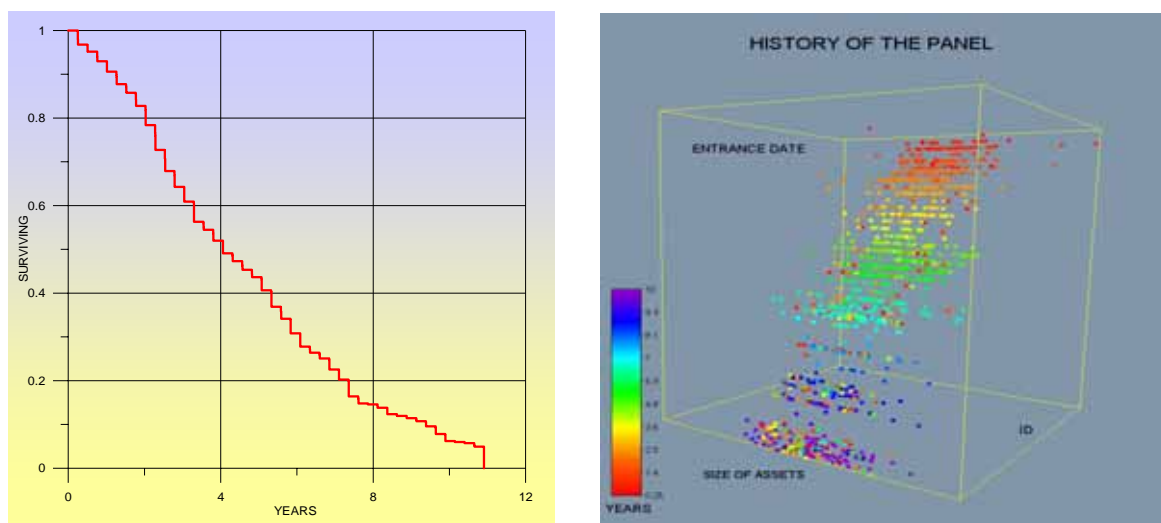
The Kaplan-Meier Survival Plot for the sample (left panel) and the three dimensional scatter plot of survival (in years) by size of the (log of) assets and entrance (to the sample) date – right panel.

The first thesis is well documented by the Fig.2 . The Kaplan-Meier plot suggests that more than half of the respondents surviving within the sample at least for 4 years. The steepness of the curve points out that there is one period of a bit higher risk of leaving the sample – after aprox. 2 years of cooperation. The second important information derived from this figure is that after seventh year of cooperation, firms seem to be more reluctant to abandon the sample and our cooperation becomes long-lasting. It is confirmed by scatter plot (right panel of Fig.2). It indicates that the first cohort of participants of our surveys (the cluster at the bottom of the cube) is dominated by violet and blue-coloured points what means that these enterprises are in the sample for more than nine, ten years. Additionally, it is worth noticing that we have long-lasting relationships with biggest companies. The consequence of significant share of bigger companies is, among other things, higher average age of members of our sample (see Fig. 3). But we should point out that both mean and median of the age decline over time; partly due to the changes in the structure of the panel (see Fig.1). Now we have more smaller and hence younger firms. This transformation is good from the point of view of studying some topics like, for example, the impact of accession to EU on entrepreneurship or some demographical problems of Polish enterprises in this context.

Fig. 3

**Average age of respondents – mean and median**
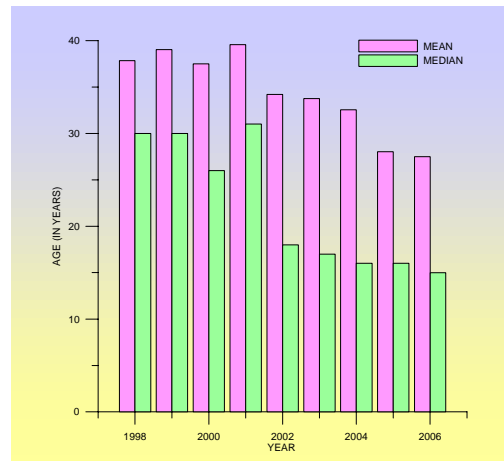
If we turn back to the problem of response rate our practice confirms it is high because new respondents acquisition is based on "face-to-face" formula. The system of direct contacts seems to be much more effective than solutions founded on mailing or anonymous telephone contacts. One can add that our strategy is effective not only at the stage of attracting new participants for surveys but it is influential over all time of cooperation between the central bank and respondents. For example, this is a good method for avoiding one of the most serious weakness of surveys – limited motivation or knowledge of respondents. In our direct approach we always try to contact proper persons responsible for problems we are interested in.

V. Quality

There is a wide spectrum of possible measures and criteria for determining survey quality. Here we limit ourselves to the two groups of indicators. Cross-correlations between business indicators and reference series belong to the first one. The second approach is based on predictive power of business indicators.

Fig. 4

**Index of new investment (quarterly surveys)
and real dynamics of investment outlays (Y/Y)**
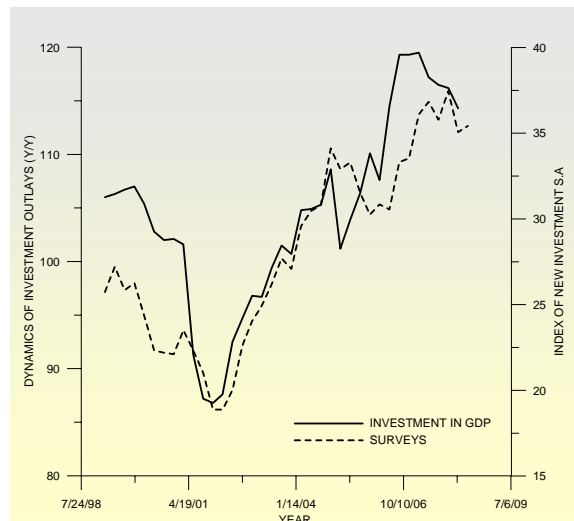
In the light of data as far as the cross-correlations are considered it is evident that business indicators obtained from the quarterly surveys are at least moderately (> 0,5) correlated with reference macro variables. But it should be noticed that we have some outstanding indicators exhibiting correlation higher than 0,9 (for example, high correlation exists between the investment activity indicator and dynamics of investment outlays – see Fig. 4). In many cases these indicators are simultaneous with reference series in statistical sense. Bearing in mind lags in availability of financial series it means that indicators extracting from surveys are leading in informative sense.

Predictive power of indicators is an interesting topic, and here there are variety of methods to be used. But in the case of our surveys some of them are useless – due to relative short interval of the data in our hands which eliminates some more sophisticated tools (for example so called switching models). Traditional approach to this problem is based on examination of the role business indicators play in econometric models. Of course, one has to decide which class of models should be applied. We have opted for VAR (BVAR) models. Results seem to be mixed. On the one hand, some indexes turned out to be insignificant. But we have to keep in mind that sometimes it is not clear to which extent it could be attributed to the form and specification of models we estimated. On the other hand, we are able to detect leaders in this competition. Additionally, from the point of view of the central bank needs it is important that some of these indicators are essential for the job we do (index of expected inflation is a good example).

VI.   Concluding remarks

Summing up, our experience on the field of business surveys is good and underscores the point that this methodology is useful for central banks. Results of the surveys are widely used both in decision-making processes and for communication purposes – they are quoted in the *Inflation Reports* and they are published as separate publications assessing current situation and perspectives of business climate in the Polish economy (http://www.nbp.pl/). This flexible approach confirms its applicability in the changing world of new and sometimes previously unknown challenges, too. Furthermore, one can expect that the future of this methodology within the Bank is promising. The length of time series we are able to collect on the basis of business surveys grow as time goes by. It means that we will be able to utilize more and more sophisticated statistical and econometrical tools for analyzing such data.