Olga Gaca, Hanna Sękowska, Magdalena Święcka, Katarzyna Walkowska[‡]

The impact of phrasing of selected questions on the results of the business tendency surveys conducted by the Central Statistical Office of Poland

Abstract

Precise wording of qualitative questions poses substantial problem because frequently even small lack of accuracy or inappropriate word used in a question may bias surveys' results. We analyze an impact of the wording on results of the qualitative business tendency surveys conducted by CSO of Poland. The relationship between the way survey questions are formulated and obtained replies is pointed out, e.g. the influence of adding explanatory notes and taking into account a kind of activity respondents perform.

Keywords: business tendency surveys, wording of survey questions

JEL classification: C81, E32

[‡] Central Statistical Office, Poland.

1. Introduction

The business tendency surveys program was launched by the Central Statistical Office of Poland (CSO) in the beginning of the 1990s. In June 1992 the survey of business tendency in manufacturing was introduced as the first, then, in July 1993, the survey of business tendency in construction, and in October of the same year – the survey of business tendency in retail trade. In 1999 questions concerning investment activities of companies were separated from the business tendency surveys' questionnaire in manufacturing and construction to form a separate survey. Their scope was broadened to be consistent with the harmonized form of the European Commission survey in manufacturing. In January 2003 the survey of business tendency in services started, and later, in 2011, the business tendency survey in wholesale trade. Additionally, in 2011 the sampling scheme was changed to allow for regional comparison.

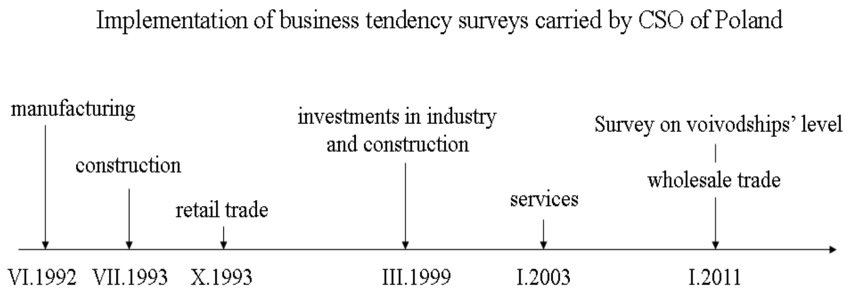

Figure 1. The evolution of business tendency surveys at CSO.

The scope and variables of particular business tendency surveys were subject to modifications in the subsequent years, resulting both from changes in the legal and economic environment, as well as from changes in user needs. Furthermore, the business tendency surveys conducted by the Central Statistical Office take into account the scope and variables valid in the *Joint Harmonised EU Programme of Business and Consumers Surveys* (Commission decision C(97) 2241 of 15 July 1997; Commission communication COM(2006) 379 of 12 July 2006). As the result, the changes introduced at the European level also affected the surveys carried out by CSO.

2. Formulation of questions in qualitative surveys

The business tendency surveys conducted by CSO collect subjective opinions of entrepreneurs about current and future situation of the companies managed by them, related to such elements of business activities as, e.g. order books, production, financial situation, employment, prices, investments. While filling in a questionnaire, the respondents rely on their evaluation concerning current situation of the company and its expected development without referring to accounting records. It enables faster collection of answers than in the case of quantitative surveys, as well as quicker elaboration and publication of results, providing, in a short time, with the first and general information about trends in the economy. The collected qualitative information may refer not only to data acquired afterwards in quantitative surveys, but also to phenomena not observed by quantitative statistics, such as, e.g., opinions about barriers to economic activity. As a result, business tendency surveys data complements quantitative survey results. An important element of business tendency surveys are prognostic questions, providing information about entrepreneurs' forecasts concerning firms' situation and its selected elements in the months to come.

Due to the subjective nature of business tendency surveys, qualitative questions, to a much greater extent than the variables contained in quantitative questionnaires, should be formulated in such a way so as to ensure that they are clear and fully understandable for the respondent. Precise formulation of questions is a fairly important problem, as even a minor understatement or incorrect word used in a question may affect the results. The author of the survey must know the target group of the survey – the type and the unique character of their activities, the scope of information possessed by the respondents, as well as the language used by the respondents. Any problems in understanding or interpretation of the questions may affect the answers, and, as a consequence, also the obtained results.

Proper phrasing of the question is an important issue that bothers survey authors – that can be seen in many publications analyzing different aspects of questionnaire designing or formulation of questions within them. For example, Presser and Schuman (1977) analyze how different ways of wording of the same question can influence survey results, i.e. question's length and complexity as well as introducing neutral response. The conducted analysis also takes into account respondents' level of education and answers for different question's variant. On the other hand, Kalton and Schuman (1982) describe alternative solutions tested in surveys – questions phrasing, choice of answers, questions order in a questionnaire – and their influence on obtained results.

Krosnick (1991) analyzes situations when respondents are unwilling to respond to survey questions and give answers that are not optimal, but rather select the first acceptable response alternative, not putting much effort into answering. He points out that a respondent of lower level of education who is tired or doesn't understand the question, chooses more often the answer 'does not change' or 'don't know'. Hardy (2015) analyzes the length of the questionnaire and the precision of response to quantitative questions in surveys. He draws attention to the place of the question in the questionnaire, especially in the context of respondent tiredness and tendency to give easy, fast and neutral answers.

To avoid such problems as much as possible, the questions' drafts, before being introduced to the survey, are analyzed and tested in detail. However, identification of some problems related to questions may be possible only after their introduction to the survey and after collection of the first results.

The paper presents some examples of how the phrasing of the questions of the business tendency surveys conducted by CSO impact the results.

3. Methodology of the CSO business tendency surveys

The business tendency surveys conducted by CSO are based on subjective opinions of entrepreneurs. A typical question of the BTS questionnaire is phrased in the way that a respondent could pinpoint how has situation (e.g. demand, production, employment, financial situation) changed in comparison to the past (i.e. increased, remained unchanged or decreased) and will change in the future (will increase, will not change, will decrease). There can only be one answer to these types of questions.

In the questionnaire there are also two other kinds of question – one where the respondent can choose several answers from a given set (e.g. question concerning factors limiting production), and another one, where the respondent is asked for an exact number reflecting her/his situation (a quantitative type of question, e.g. on capacity utilization).

In the case of the first type of questions, a balance is calculated as a difference between the percentage of the respondents choosing the first variant (increase/improvement) and the percentage of those who choose the third one (decrease/deterioration). In the second case an indicator is calculated separately for each variant as the percentage of the respondents choosing it. Indicators referring to the quantitative type of questions are calculated as an arithmetic mean out of all answers to the particular question.

Next, the balances and indicators are weighted by the shares of sold production to receive results representative for all the country.

4. Question about capacity utilization in services

The degree of capacity utilization informs about the level of involvement of production capacity of a firm, the maintenance of which entails costs, as well as about the possibility of a firm to produce more, or whether it should increase employment or undertake investments, which would make it possible to fulfill submitted or expected orders. It also indicates economic situation, including situation of consumers, as well as whether and to what extent produced goods and services match – also in terms of innovation – demand, and therefore the relation between supply and demand.

The information on capacity utilization is not available in quantitative statistics. The question is asked in business tendency surveys only and is one of few questions of quantitative nature. It was included in the first Polish business tendency surveys in the early 1990s – in the quarterly questionnaire sent to manufacturing companies, as well as in the monthly questionnaire sent to construction and assembly companies. It has been decided that the survey addressed to service companies should also contain a question about capacity utilization, in identical wording as in the questionnaire addressed to companies conducting activities related to manufacturing (section C according to NACE Rev.2) and construction (section F).

As the result of analysis of data on capacity utilization acquired on the basis of the business tendency survey in services, it has been observed that these results, in spite of the fact that they were obtained on the basis of the question formulated in the same way as in the manufacturing and construction surveys, raise some doubts in terms of quality of the answers. The level of capacity utilization in services, indicated by the respondents, was significantly lower than the level reported by manufacturers and construction companies. In the case of service companies it reached the range of 20-30%, whereas in the case of the two remaining surveyed groups of firms – 60-90%.

Therefore, an attempt to solve this problem was made by changing the phrasing of the question, assuming that, due to the character of the activities conducted by service firms, the respondents may have a problem with correct interpretation of the question, which results in giving incorrect answers. When preparing the new question, the diversity of the types of service activities covered by the CSO survey was analyzed, which required taking into account various factors typical that affect service activities.

The business tendency survey in services covers entities classified according to the NACE Rev.2 to the section:

- Transportation and storage (section H)
- Accommodation and food service activities (section I)

- Information and communication (section J)
- Financial and insurance activities (section K) – only banks, credit unions, insurance companies, brokerage houses and offices, universal pension fund (management) companies and investment fund companies
- Real estate activities (section L)
- Professional, scientific and technical activities (section M)
- Administrative and support service activities (section N)
- Education (section P) – without tertiary education
- Human health and social work activities (section Q) – without health maintenance organizations
- Arts, entertainment and recreation (section R) – without juridical cultural institutions
- Other services activities (section S)

Finally, it was decided to formulate the question with additional explanation of what should be taken into account when providing answers:

What capacity (persons employed, equipment, means of transport, space etc.) is your company currently operating at (as a percentage of full capacity)?

Such a change introduced in the questionnaire of the business tendency survey in services, since January 2010, radically affected the obtained answers. The reported level of capacity utilization in services exceeded the level indicated by manufacturing and construction and assembly companies, reaching values between 80% and 90%.

In 2010, on the basis of the modified question in the businesses tendency survey in services, the questions addressed to manufacturing and construction entities were also clarified. However, in these cases, clarification of answers did not affect the results.

Figure 2 presents the answers to the question about capacity utilization for three types of activities – manufacturing, construction and services, before and after rephrasing of the question.

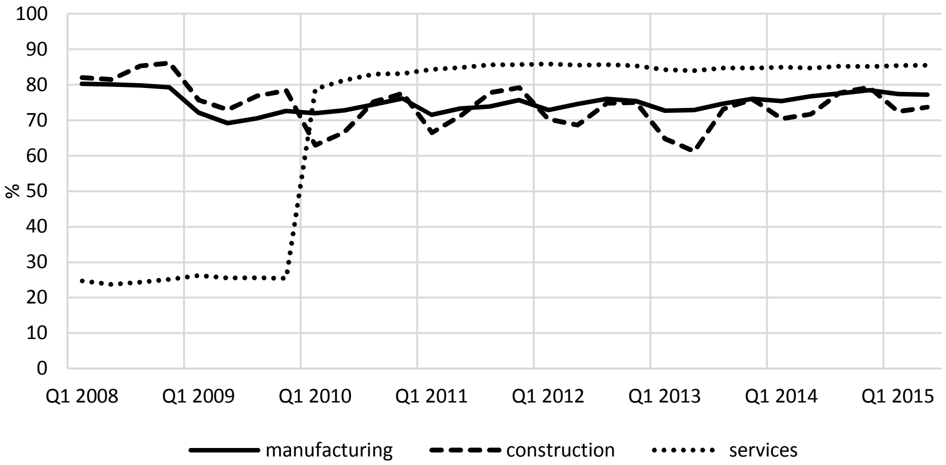

Figure 2. Capacity utilization in manufacturing, construction and services.

Changes also come out when analyzing data for different types of service activities covered by the survey. Figure 3 presents, for instance, the results for the following sections: transportation and storage (section H), accommodation and food service activities (section I), information and communication (section J), human health and social work activities (section Q).

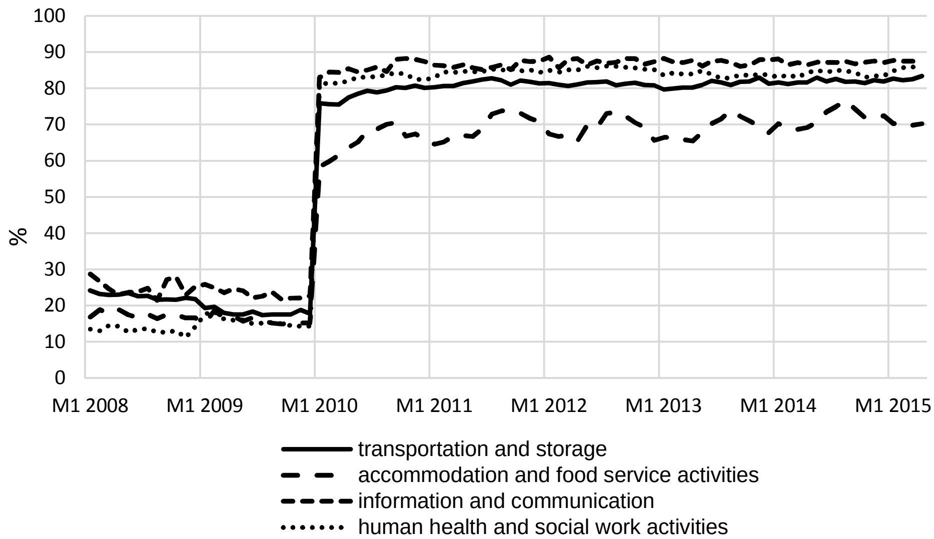

Figure 3. Capacity utilization in selected types of services.

The change in the phrasing of the question had a significant impact on the obtained results. As long as the question did not explain how the respondents conducting service activities were supposed to understand the term of the capacity utilization, associated first of all with manufacturing, the relevant indicators, both at the total and section levels, achieved low values. After the question had been clarified, the respondents started to take into account, among others, 'employees, means of transport, equipment, space etc.', and the values of the indicators for services increased to the level comparable with manufacturing and construction.

Although more explanations were added to the questions, respondents were not daunted by its length. Correcting the question wording gave more reliable outcome that was consistent with the conclusion of Kalton and Schuman (1982) that 'difficulties from long questions probably derive from their complexity rather than their length *per se*'.

5. Questions about competition/competitive position

Competitiveness is one of the significant challenges of the contemporary economy, both at the national and international levels. The competitive position of a firm depends on internal as well as various other factors resulting from its legal and economic environment. For this reason, different aspects of competitiveness of firms themselves or of economies can be measured by means of indicators processed on the basis of available statistical data.

Under the *Joint Harmonised EU Programme of Business and Consumers Surveys* conducted by the European Commission three new questions were added to the quarterly survey of manufacturing firms. Specifically, these are the questions concerning competitive position on the domestic market, the European Union market and markets outside the European Union.

The questions were also introduced in 2002 to the quarterly business tendency surveys in manufacturing conducted by CSO. A decision was made to ask the respondents the following questions:

1. How has your company's competition changed on the domestic market in the last three months: increased, remained unchanged, deteriorated.

2. How has your company's competition changed on foreign markets inside the EU in the last three months: increased, remained unchanged, deteriorated.

3. How has your company's competition changed outside the EU in the last three months: increased, remained unchanged, deteriorated.

The obtained results indicated that the respondents properly interpreted the questions about the encountered competition, indicating high level of competition, in particular, on the domestic market. However, during further works on harmonization of the questionnaire it was decided that the questions should be rephrased just as in the European questionnaire in order to ensure the international consistency and comparability of the survey data. As a result, additional questions related to the competitive position of companies on three specified markets were introduced to the questionnaire for 2003. At the same time, it has been decided not to ask previous questions about competition so as not to excessively burden the respondents with questions of similar nature.

New questions have been formulated as follows:

1. How has your company's position in comparison to competitors changed on the domestic market: increased, remained unchanged, deteriorated

2. How has your company's position in comparison to competitors changed on foreign markets inside the EU: increased, remained unchanged, deteriorated

3. How has your company's position in comparison to competitors changed outside the EU: increased, remained unchanged, deteriorated

Just as expected, the change in the phrasing of questions significantly affected the obtained answers. Specifically, since 2003 the balances, as compared to the figures of 2002, decreased from the value of +30 to +50 points to the level of -10 to +10 pts. The questions asked in 2002 and later changed are logically related. In reply to the question about a change of competition on three specified markets, asked in 2002, the respondents indicated that competition on the particular types of markets was significantly increasing (this means problems with entering the market by enterprises and difficulties in their later activities there) - the balances calculated for 2002 were at a high positive level. Since 2003, after the introduction of the questions about the competitive position of a firm, the balances have significantly decreased (to ca. 0 pts). That means the entrepreneurs assessed their competitive position substantially did not change much (taking into account the high level of competition reported in 2002).

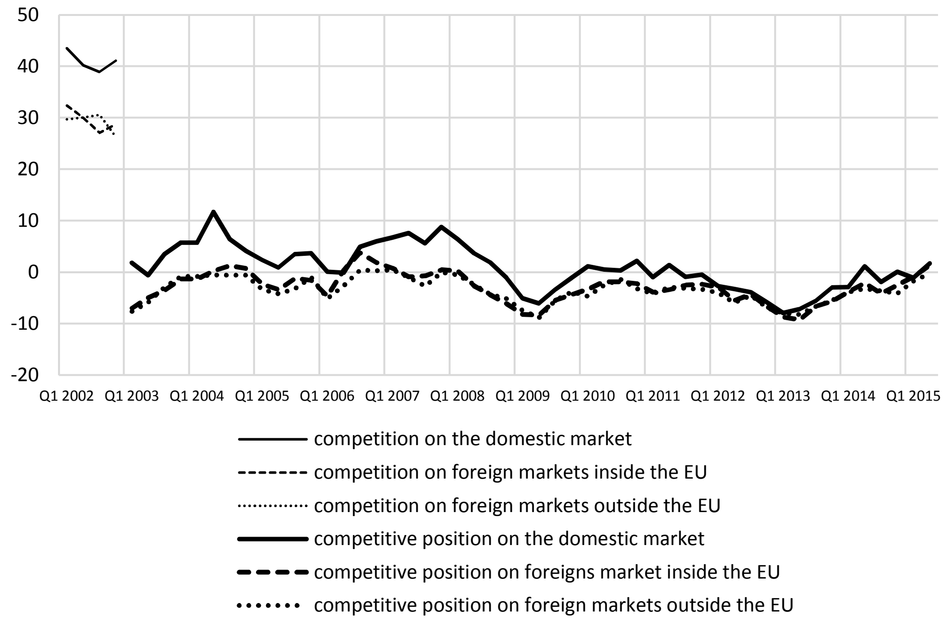

Figure 4. Manufacturing – competition on the market and competitive position.

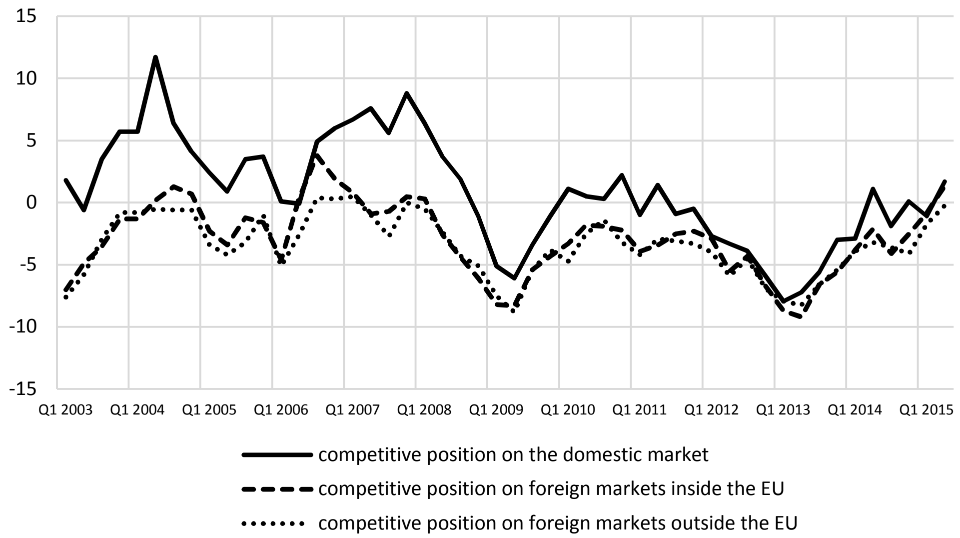

Figure 5. Manufacturing – competitive position.

In order to compare survey data with quantitative statistics, we present below several charts illustrating respondents' opinions on their competitive position on the EU market together with data on exports to the EU market, in years 2009-2014. We selected the types of manufacturing activities in which the share of exports is significantly higher, i.e.:

- manufacture of motor vehicles, trailers and semi-trailers;
- manufacture of food products, beverages, tobacco products;
- manufacture of rubber and plastic products;
- manufacture of fabricated metal products, except for machinery and equipment;
- manufacture of electrical equipment; and
- manufacture of furniture.

For these industries one can note a relationship between the respondents' feelings with regard to their competitive position and the size of exports (of each industry). Specifically, in the period of 2009-2010, in some divisions, the competitive position of firms improved in line with a rise in exports, and then, in 2012-2014, deterioration of the competitive position was accompanied by a decline in exports.

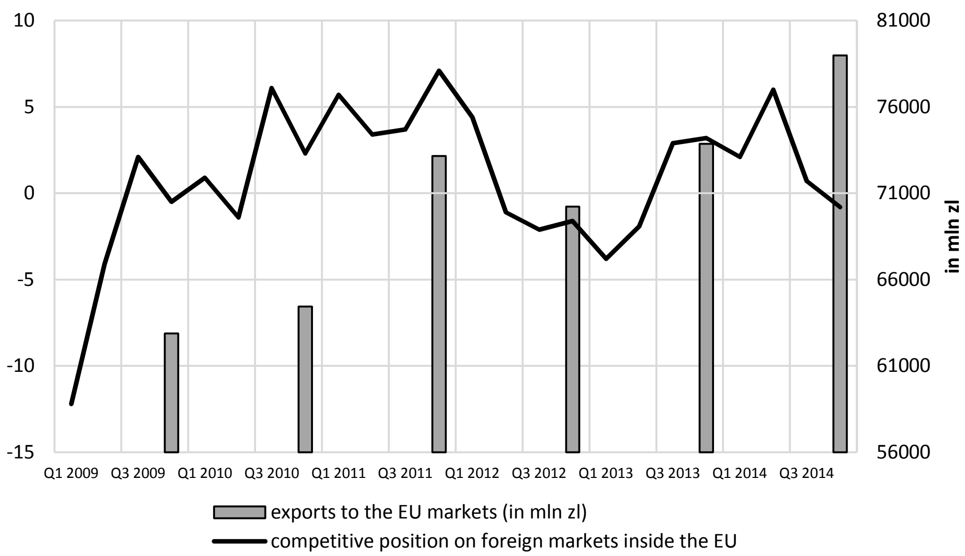

Figure 6. Manufacture of motor vehicles, trailers and semi-trailers – the balance of competitive position on the EU market and exports to the EU market in million zlotys (current prices).

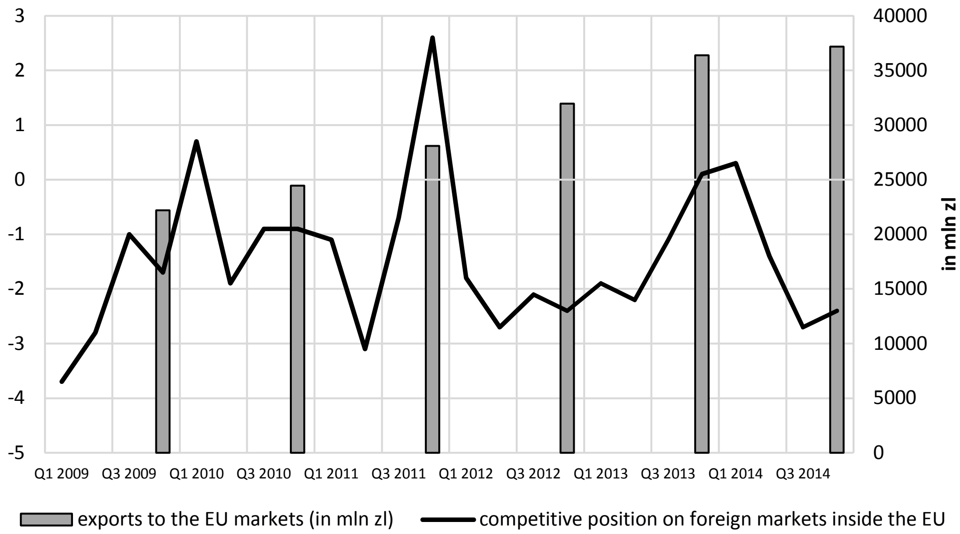

Figure 7. Manufacture of food products, beverages and tobacco products – the balance of competitive position on the EU market and exports to the EU market in million zlotys (current prices).

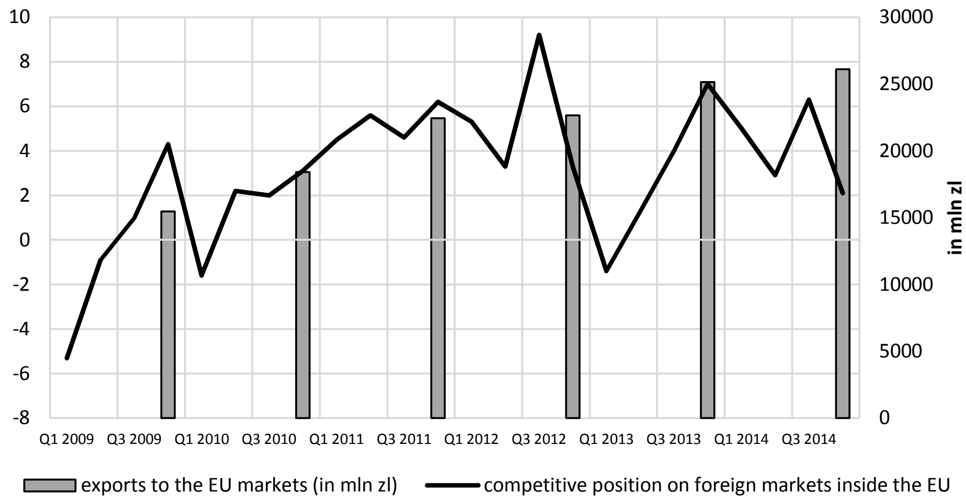

Figure 8. Manufacture of rubber and plastic products – the balance of competitive position on the EU market and exports to the EU market in million zlotys (current prices).

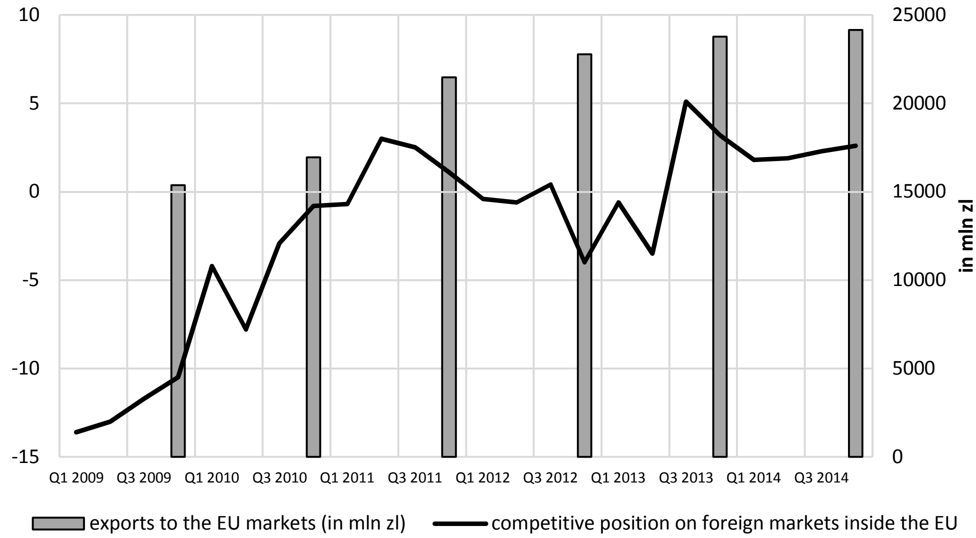

Figure 9. Manufacture of metal products – the balance of competitive position on the EU market and exports to the EU market in million zlotys (current prices).

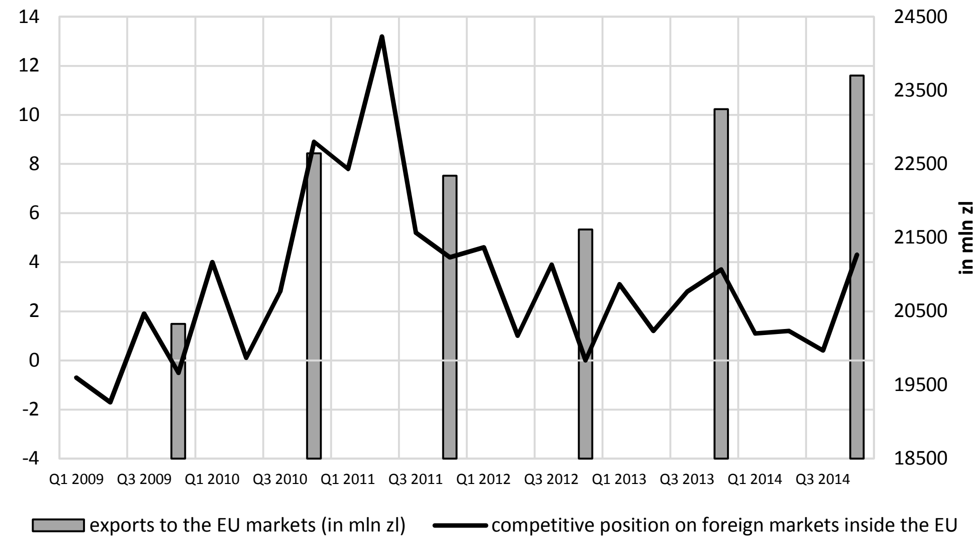

Figure 10. Manufacture of electrical equipment – the balance of competitive position on the EU market and exports to the EU market in million zlotys (current prices).

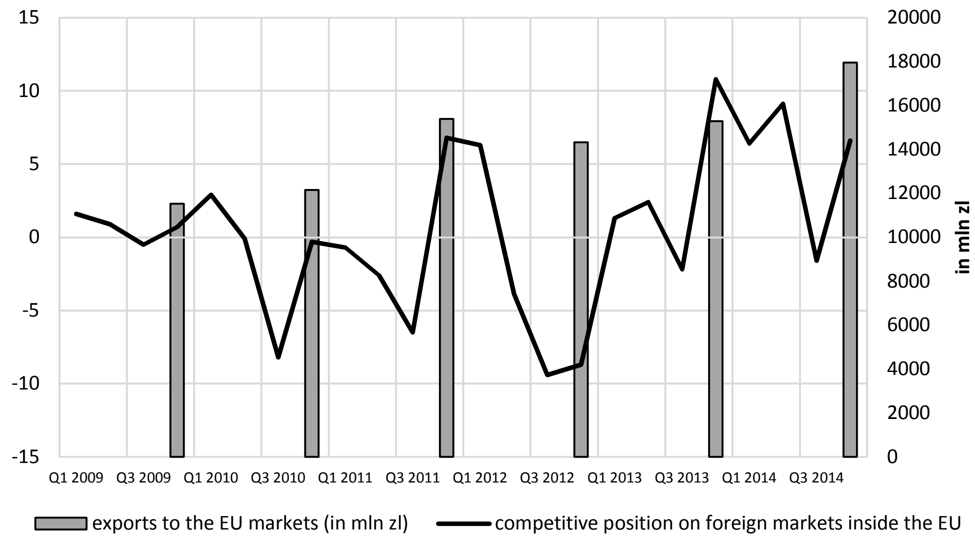

Figure 11. Manufacture of furniture – the balance of competitive position on the EU market and exports to the EU market in million zlotys (current prices).

The possibility of a significant influence of marginal changes to a question on the response was indicated, *inter alia*, by Kalton and Schuman (1982). According to them, there is a chance that a slight change in formulating survey questions may not seem significant to respondents, and be disregarded by them, when the words used before and after the rephrasing are very similar.

At the beginning of 2003, in the first period of using by CSO the questions in the present version, there was a risk that the respondents, after answering an apparently similar question in 2002, may not notice the new phrasing, which would negatively affect the quality of the response. However, our results show that, in this case, the respondents carefully read and correctly understood both the previous questions about competition on the markets as well as the subsequent questions about their competitive position.

6. Shortage of (skilled) labor

Human capital is one of the significant factors of business activity that influences its performance indicators, as well as, among others, its competitiveness and innovativeness. It can be defined as professional knowledge, experience and skills accumulated by employees. The investment in the personnel to increase their effectiveness and efficiency involves not only providing them with necessary equipment to perform the work, but also employing qualified staff and training employees.

Business tendency surveys contain, among others, questions about factors limiting economic activity, which provide information about difficulties encountered by firms when running a business. This type of questions have been introduced to all business tendency surveys conducted by CSO: quarterly survey of manufacturing and monthly surveys of construction, trade and services. Since the early days of the former (in 1992) the questionnaire has contained the list of limitations which respondents can choose from, including the ‘shortage of *skilled* labor’ (italics added by the authors). In 2003, as a result of adjustment of the business tendency surveys to the *Joint Harmonised EU Programme of Business and Consumers Surveys*, several new factors restricting business activity, including the barrier of ‘shortage of labor’, were added to the old ones. It was decided to keep the previous option in the questionnaire due to, among others, the need of continuation of the ten-year time series and the presumption that, in spite of similar notion, the response may not be identical.

An analysis of the obtained answers confirmed that, despite of some similarities, the respondents, while filling in survey questionnaires, clearly distinguish between ‘shortage of labor’ and ‘shortage of skilled labor’. Figure 12 presents the results. According to the respondents, the ‘shortage of skilled labor’ is, for them, a significantly more serious problem than the general ‘shortage of labor’. An increase in the percentage of firms indicating the shortage of skilled labor can be noted after the accession of Poland to the EU in 2004, and in the expansion period of 2006-2008, with a subsequent rapid decrease during the global financial and economic crisis of 2007-2009. Recently, the respondents have reported this limitation again, and the percentage of the firms reporting ‘shortage of skilled labor’ has been greater than those reporting ‘shortage of labor’. When comparing both with quantitative data on average employment in (total) manufacturing, a strong correlation is noticed.

Figure 13 shows the percentage of the respondents reporting the shortages of labor and skilled labor, and uncertainty of economic environment, together with the manufacturing confidence indicator. By thorough inspection of the graph one can conclude a negative correlation between the percentage of the firms reporting the shortage of skilled labor and the confidence indicator. A weaker correlation can be noted for the percentage of the surveyed firms reporting the shortage of labor (which is less volatile).

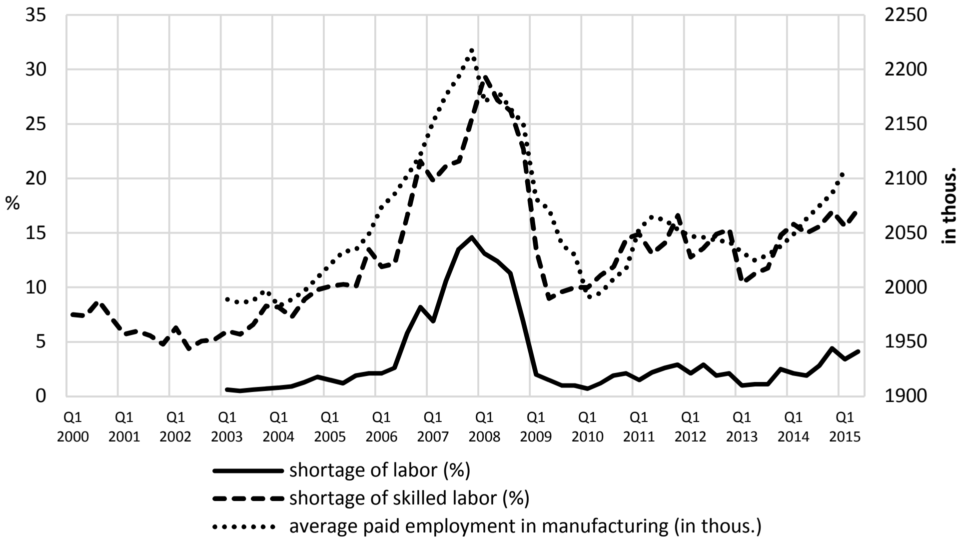

Figure 12. Factors limiting business activity (survey data, in %) and average paid employment in manufacturing (in thousands).

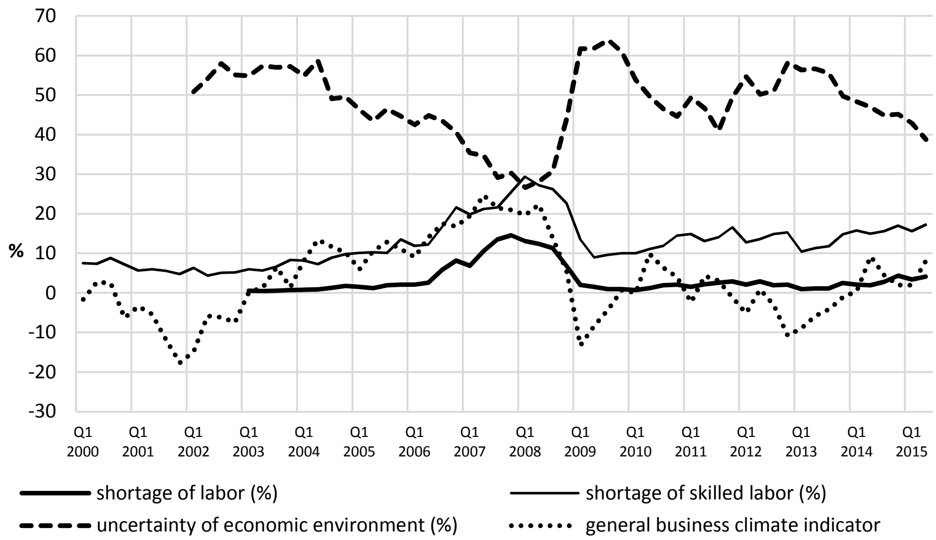

Figure 13. Factors limiting business activity in manufacturing (in %) and the general business climate indicator in manufacturing (survey data).

The difference between the percentages of the respondents reporting the two barriers can also be seen at the level of the manufacturing sections. For instance, taking into consideration two manufacturing sections classified as

Knowledge Intensive Activities, i.e. manufacture of basic pharmaceutical products and pharmaceutical preparations, and manufacture of computer, electronic and optical products, it comes out that by studying the response on the shortage of labor a researcher could be misled. In the case of manufacture of basic pharmaceutical products and pharmaceutical preparations, over the past six years the respondents did not report any problems related to the shortage of labor, whereas in the case of skilled labor such a deficiency has been reported, though with diminishing intensity (see Figure 14). In the case of manufacture of computer, electronic and optical products, the similar difference can be noted. In both cases, during the crisis of 2007-2009, in spite of the fact that labor demand significantly decreased, skilled labor was undersupplied.

Figure 14. Manufacture of pharmaceutical products – factors limiting business activity (survey data, in %) and average paid employment (in thousands).

To summarize we found that, although both indicators have similar tendencies, the respondents distinguish between them and more often report the shortage of skilled labor as being more troublesome. When designing the questionnaire, it is therefore crucially important to be precise as much as possible as even slight differences in the wording of questions may bias survey results.

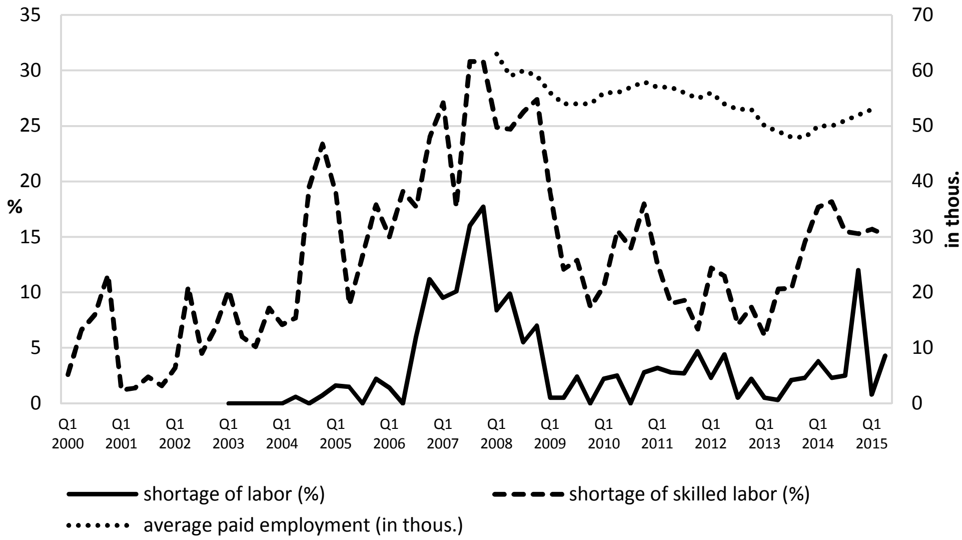

Figure 15. Manufacture of computer, electronic and optical products – factors limiting business activity (survey data, in %) and average paid employment (in thousands).

7. Summary

The above paper presents several case studies showing how rephrasing of a business tendency survey questionnaire affects the response.

In the first case, concerning capacity utilization, failure to adjust the question to the specific nature of business activities resulted in obtaining incorrect results. The clarification of the question had a positive impact on its understanding by the respondents and resulted in more adequate answers. At this point of the study there were no actions taken to increase the comparability of the data before and after the question was rephrased.

In the second case, a slight change in the question wording, however significant for the substance of its content, has been correctly understood by the respondents who adjusted their answers to the question.

The last example provokes a reflection on the level of detail which questions should have in order to, on the one hand, not focus on excessively detailed issues, and on the other – capture the phenomena essential for the data users.

It is worth noting that, due to the observed sensitivity of response to phrasing of survey questions, it is important to ensure – as far as possible – their stability, and to carefully consider any change to be introduced as they may affect results of the survey and, therefore, lead to structural breaks in time series.

References

European Commission, *The Joint Harmonised EU Programme of Business and Consumer Surveys. User guide*, 21 March 2014.

Hardy, W. (2015). Długość kwestionariusza a precyzja odpowiedzi na pytania ilościowe w badaniach ankietowych, *Ekonomista*, 5 (160), 707-726.

Kalton, G., Schuman, H. (1982). The effect of the question on survey responses: A review, *Journal of the Royal Statistical Society*, Series A, 145 (1), 42-73.

Krosnick, J. A. (1991). Response strategies for coping with the cognitive demands of attitude measures in surveys, *Applied Cognitive Psychology*, 5 (3), 213-236.

Presser, S., Schuman, H. (1977). Question wording as an independent variable in survey analysis, *Sociological Methods & Research*, 6 (2), 151-170.

Badanie koniunktury gospodarczej, CSO, Departament Przedsiębiorstw, Warszawa 2015.