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Research Project for the Ministry of Labour, Social Affairs and Family of the Slovak
Republic

Methodologies on Labour Market Indicators

**Job vacancies, job creation and job destruction in small businesses in the
Slovak Republic**

Final report

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Summary

The Ministry of Labour, Social Affairs and the Family of the Slovak Republic (MoLSAF) requires reliable information for policy making. An important way to strengthen the institutional capacities of MoLSAF in the field of labour market policies is to acquire a number of reliable labour market indicators. Among these, indicators on job vacancies, job creation and job destruction are of prime importance, since they provide an indication of the dynamics on the demand side of the labour market. In this report, information is provided on methodologies to collect data and calculate indicators on job vacancies, job creation and job destruction in small businesses (with less than 20 employees) in the Slovak Republic.

Currently, MoLSAF only disposes of data on the number of job vacancies as reported by employers to Labour Offices with the intention to fill them by jobseekers from the register of unemployed. These numbers are not complete and represent a selection of the total number of vacancies. The Statistical Office of the Slovak Republic (SO) has launched a pilot of a Job Vacancy Survey at the end of 2004, using the Eurostat methodology. However, the return rate on the question of job vacancies is very low, resulting in insufficient reliability of these statistical data for further analysis. This is particularly true for small businesses with less than 20 employees. On the other hand, the private research company Trexima has held a pilot survey on job vacancies, job creation and job destruction in the summer of 2005, which resulted in an encouraging response rate of 65 percent. However, the survey was held only once and among 471 small businesses only.

The need for improvement of the data collection methodology with respect to job vacancies, job creation and job destruction in small businesses is obvious in the Slovak Republic. The most important reasons why good data on these indicators are not yet available are the following:

- Using an existing survey on employees and wages, the person who fills out this survey may be an expert on personnel and wages, but may be less acquainted with the number of job vacancies at the company. This may hamper the response.
- No information on occupation or other characteristics of the job vacancies is available for small businesses, with the exception of small businesses which are profit organisations with an annual turnover of 100 million SKK or more.
- It is not possible to distinguish zero's and missing values in answers to questions on the number of job vacancies in the survey on employees and wages.
- Sampling stratification does not take place by region. In Bratislava for instance, there are more real estate, renting and business activities (branch K according to the NACE economic activity distinction) than in other regions. This branch could very well show different job vacancy numbers in Bratislava than in other regions.
- A unit that goes out of business during the year is not replaced in the sample by a new business from the same stratum. As a consequence, the sample size decreases during the year.

- Precision in completeness of the response is stressed to a great extent by the Statistical Office. This may come at the expense of maintaining a good relationship with businesses that are repeatedly surveyed.
- For sole entrepreneurs, no survey is held, but the estimated number of job vacancies is based on the number of vacancies as reported to the Labour Offices. These data have considerable limitations:
 - Not all vacancies are reported, only the ones that businesses find suitable for mediation at the Labour Office.
 - A selective part of all job vacancies are reported, mainly jobs suited for low skilled labour. Most job seekers registered at the Labour Offices are long term unemployed with low levels of skills.
 - Job vacancies for which businesses find no candidate in any other way may also end up to be reported to the Labour Office.
- Data collection at Trexima mainly focuses on larger businesses.
- Sampling from the business register is relatively static (once a year, no refreshments during the year) compared to the dynamics in job creation and job destruction in small businesses.
- Methods for the calculation of population totals are not yet well established at Trexima.

To improve the methodologies on data collection, and thereby the quality of the data on job vacancies, job creation and job destruction in small businesses in the Slovak Republic, recommendations are given with respect to data collection methods. These recommendations are based on information with regard to potential methods for data collection as used throughout Europe, taking notice of the specific national and economic circumstances with regard to data collection on job vacancies, job creation and job destruction that currently exists in the Slovak Republic. The most important recommendations are:

- Use a new and separate survey to combine questions on job vacancies, job creation and job destruction. This survey can be held by either the Statistical Office or by a private party like Trexima. Make no further use of the existing job vacancy data from Labour Offices. The advantages of these data are largely outweighed by a number of drawbacks.
- Combine two kinds of survey frequencies: A brief quarterly survey with questions on the number of job vacancies, the size of job creation and the size of job destruction only, and an extensive yearly survey at one of the four yearly quarters, including the quarterly survey, with questions on several attributes of job vacancies as well.
- Ask the following four obligatory questions in the brief quarterly survey in a very simple way and abstain from lengthy definitions:

1. Number of occupied posts at the last day of the previous quarter.
 2. Number of job vacancies at the last day of the previous quarter.
 3. Number of created jobs during the previous quarter, whether occupied or not.
 4. Number of destructed jobs during the previous quarter.
- Include questions on the following attributes of job vacancies in the annual survey: occupation, part-time / full-time, difficult to fill vacancies.
 - Base the sample stratification for the survey among small businesses on the following three characteristics of businesses: economic activity (NACE classification), region (NUTS classification), and business size. The number of businesses from each of the combined economic activity / region / business size stratum that should be included in the survey must be determined by the organisation that sets out the survey. In general, this depends on the total sample size and the number and size of strata. The larger a stratum, the lower the percentage of businesses that must be included in the survey. Small strata must be surveyed exhaustively (full scale survey).
 - Include entrepreneurs in the survey, but only those with at least one employee. They may eventually be surveyed separately from small business (legal persons) if the number (or type) of vacancies by type of economic activity is significantly different from those in small businesses.
 - Let the total sample size depend on the total number of businesses in the business register, the distribution of businesses among sampling strata and the minimum number of business that are drawn from each of the strata. This has to be determined by the organisation that sets out the survey. An indication of the total sample size that would result from this strategy could be set at 5 percent in the register, based on the average in Europe. This would amount to 2500 small businesses (legal persons) and an additional 4000 entrepreneurs with one or more and less than 20 employees. If a separate survey for entrepreneurs is created, the sample size might be 5000 small size firms (as in the current suvey of the Statistical Office) and 4000 entrepreneurs (based on the 5 percent average).
 - Particular attention must be paid to establishing a longer term contact with businesses that are included in the survey for the first time in order to quickly raise the understanding of concepts and definitions. Also, companies that go out of business during a quarter can best be replaced by another company from the same stratum the next quarter to sustain the survey size.
 - Keep the effort in adjusting the collected data on job vacancies, job creation and job destruction limited to the cases that have large influences on the population totals. More important than the level of effort in adjusting the collected data is the consistency in adjustments, since this will result in consistent information over time. Bias in information can never be completely prevented.
 - Most information that has been collected within the current research project points in the direction of telephone interviewing as the survey method with the highest response

rate. A disadvantage of telephone interviewing is that it may be more difficult to find the right person at a company to survey. But this is expected to be a minor problem among small businesses. Moreover, an announcement of the interview by mail may help. One other disadvantage of telephone interviewing can be the costs of personnel for performing the interviews, especially when many detailed questions need to be asked. For that reason, the survey on job vacancies, job creation and job destruction is best held short. In that case it is recommended to use a new and separate survey by telephone.

- Keep surveys as simple as possible: consistency of (the quality of) the data collection is more important than precision in the completeness of definitions and the response to surveys.
- Work on a good relationship with businesses that are repeatedly (!) surveyed.
- Put effort in updating business and trade registers from which the statistical units are drawn. This issue may be discussed with the Ministry of Finance that finances the Statistical Office, and with the Tax Office that is able to identify active businesses in the economy. There may be a role for the Ministry of Justice in enforcing the requirement of updated business and trade registers.
- Methodologies on collecting job vacancy data among larger businesses may also be improved. The response rate on job vacancy questions among these larger businesses is also low in surveys from the Statistical Office. Trexima may provide a partial solution to this problem by collecting (and calculating) information on job vacancies, job creation and job destruction among larger businesses, but the focus in this data collection is on the largest businesses (with 250 employees and more).

Neither the Statistical Office nor Trexima has experience with telephone interviewing, but both have call-teams that are currently being used for reminding units to respond. We have asked both parties to give a cost estimation of implementing the recommended methodologies on data collection with regard to job vacancies, job creation and job destruction. The Statistical Office has indicated that it does not have any free capacity to start up a new survey on job vacancies. Therefore, it has not provided any cost estimations. Based on the recommendations and the costs estimations by Trexima, MoLSAF should be better able to make decisions on the following issues:

- A new survey on job vacancies, job creation and job destruction is to be held by the Statistical Office or by a private party like Trexima;
- Whether to include entrepreneurs in a survey on small businesses or to create a separate survey for entrepreneurs;
- The sample size;
- Setting out a new survey by telephone or on paper by mail.

Important consequences from the implementation of the recommended methodology include:

- Access to business and trade registers is currently not limited to the Statistical Office, but access by private parties needs to be put down in an agreement to ensure consistency in the job vacancy data collection over time in case a private party is contracted to perform the survey;
- A telephone survey is more successful if it is preceded by a letter from MoLSAF to explain the reason of the survey and to point at the importance of the exercise (e.g. “to enable policy to combat unemployment, thereby reducing economic problems”);
- Some training on the implementation of the recommended methodologies is needed, but no major difficulties are expected. For instance, methods for the calculation of population totals are currently better developed at the Statistical Office than at Trexima, but are widely available in the literature;
- In case a private party is contracted to perform the new survey on job vacancies, job creation and job destruction, European rules may require a European tender procedure;
- Criteria for the selection of a contracted party to perform the survey are – among others – the price of the services, the quality of the services (in terms of consistency of the data collection method, response rate and methodological expertise), reliability (in terms of timely deliverance of data to MoLSAF and potentially Eurostat), and consistency with data collection methods used among larger businesses and in other European countries. The relative importance of each of these criteria needs to be decided by the contracting party;
- Current data collection on job vacancies in larger businesses at the Statistical Office can be combined with data collection on job vacancies, job creation and job destruction at small businesses within the framework of the recommended new survey. There is still plenty of room to improve the response rate on job vacancy questions among larger businesses as well. Since Eurostat requires that all data be delivered to Eurostat within 45 days after the end of the reference quarter, data collection for both small and larger businesses at one organisation has obvious advantages.
- At Eurostat, the development of methods to collect information on job vacancies is an important issue and well on its way. It is very important to monitor these developments at Eurostat, not only to learn more about optimal methods to collect reliable job vacancy data, but also to keep the data collection method in the Slovak Republic in line with European developments and requirements.

1 Introduction

In the past five years, the Slovak Republic has implemented two important rounds of structural reforms. The first round followed the 1998 elections, which put an end to a period of dirigisme and international isolation. Key structural reforms resulted in growing inflow of foreign direct investment and large-scale industrial restructuring, triggering a significant improvement of productivity growth. The second round followed the September 2002 elections, after which a new government was formed, representing a modification of the previous coalition. This government undertook a set of more politically demanding reforms. These reforms, in the field of public finances, employment, education and social cohesion, are focused on accommodating the labour law and welfare system for productive employment, adjusting the taxation and regulatory frameworks in a way as to support the creation of new enterprises and to promote development of the business sector, and making the public education system more efficient, effective and responsive to the needs of a 21st century environment.

All of these reforms require enhanced managerial skills, relevant education and training opportunities in the public sector, and “cultural” changes in law – and rule – enforcement to make the formal regulatory framework fully reliable. For a successful implementation of the reforms and to achieve the required conditions to make them sustainable, it is necessary to strengthen institutional capacity at relevant institutions, improve the coordination and cohesion of public policy-making, improve the public education system, and set up relevant trainings in the field of effective public policy-making.

For the Ministry of Labour, Social Affairs and the Family of the Slovak Republic (MoLSAF) this means that reliable information must be gathered for policy making. An important way to strengthen the institutional capacity of MoLSAF in the field of labour market policies is to attain a set of reliable labour market indicators. Among these, indicators on job vacancies, job creation and job destruction are of prime importance, since they provide an indication of the dynamics on the demand side of the labour market. In this report, information is provided on methodologies to collect data and calculate indicators on job vacancies, job creation and job destruction in small businesses (with less than 20 employees) in the Slovak Republic.

This first chapter describes the relevant research questions that are addressed in this report (Section 1.1), the research methodology that is used to attain the information on which this report is based (Section 1.2), and the structure of this report (Section 1.3).

1.1 Research questions

Reliable labour market indicators provide necessary information for labour market policy. Key indicators concern the change in labour demand, which show the dynamics in employment opportunities. Useful labour market indicators in this area are:

- Number of job vacancies.
- Job vacancy rate = number of vacant jobs divided by the sum of the number of job vacancies and occupied jobs. This indicator gives an indication of the tightness of the labour market. A lower job vacancy rate implies that the labour market is tighter.
- Ratio of job vacancies and unemployment. This indicator gives an indication of the quality of the match between labour supply and labour demand. A high ratio implies that vacant jobs match poorly with labour supply due to for instance differences in supplied and demanded skills, educational level or number of working hours.
- Number of created jobs. Indicates the level of growth or flexibility of the economy.
- Number of destructed jobs. Indicates the level of growth or flexibility of the economy.

To see in which direction the labour market is tight or flexible, grows or shows mismatches, the following further specification of labour market indicators are very useful:

- Distinction by economic activity. Provides information on sectoral changes.
- Distinction by region. Provides information on regional developments.
- Distinction by part-time and full-time. Provides information on growth of the economy (constant fraction of part-time jobs) versus transition of the economy (changing fraction of part-time jobs).
- Distinction by occupation or educational level. Provides information on the quality of the match between labour supply and labour demand.

Currently, MoLSAF only disposes of data on the number of job vacancies as reported by employers to Labour Offices with the intention to fill them by jobseekers from the register of unemployed. These numbers are not complete and represent a selection of the total number of vacancies (see Chapter 3 below). The Statistical Office of the Slovak Republic (SO) has launched a pilot of a Job Vacancy Survey at the end of 2004, using the Eurostat methodology. However, the return rate on the question of job vacancies is very low, resulting in insufficient reliability of these statistical data for further analysis. This is particularly true for small businesses with less than 20 employees. These businesses are relatively important for the economy, due to their large number. They are also an important generator of employment in times of transitions in the economy. Reasons why the response rate on job vacancy questions in surveys may be relatively low at small businesses are:

- Job vacancies at small businesses may be less structural than at larger businesses. They may be created and destructed in a less formal way than at larger businesses. For that reason, vacancies at small businesses do not turn up as easily in official registers or surveys.
- Even though vacancies at small businesses are relatively important for the economy, due to the large number of small businesses, and for the businesses themselves, due to the smaller size of their work force, the absolute number of vacancies at an individual small business is very low and often incidental, resulting in low response rates.

- Small businesses may often have lower Information Technology (IT) standards than larger businesses. The existing IT may often be inappropriate for the requested kind of data tracking.

In addition, even when the response rate among small businesses with less than 20 employees would be the same as for larger businesses, job vacancy data may still be less reliable due to the following:

- In small businesses, the creation of job vacancies may often be preceded by the arrival of a candidate to fill the vacancy, whereas in larger businesses the creation of vacancies may often precede the arrival of job applicants.

In order to fill the information gap on labour market indicators that reliably calculate the dynamics in labour demand, a methodology needs to be set up to obtain relevant statistical data and to create indicators that reflect policy-relevant information on job vacancies, job creation and job destruction among small businesses in the Slovak Republic. This report provides the necessary information how this can be done.

1.2 Research method

To obtain the necessary information to describe and recommend the most relevant methodologies on data collection with regard to job vacancies, job creation and job destruction, particularly at small businesses, a number of data sources are used. The most important are:

1. Collection of information in an international context

Desk research and interviews are used to obtain information on existing indicators on job vacancies, job creation and job destruction in an international context, as well as on available statistical data that are used for these indicators and on methodologies used to collect these data. Three main sources of information have been used:

- Desk research on existing indicators for job vacancies, job creation and job destruction based on the existing literature on this topic as well as sources on the Internet. An important source of information on the Internet is the discussion group on EU Job Vacancy Statistics by Eurostat: <http://forum.europa.eu.int>¹.
- Interviews with several people of Statistics Netherlands (Centraal Bureau voor de Statistiek) to get a clear picture of the methodologies that are used for collecting data on job vacancies, job creation and job destruction, at present as well as in the past and planned for the future². Statistics Netherlands has collected job vacancy data for a

¹ We are grateful to Dominique Wagner of Eurostat for making us a member of the discussion group.

² We would like to thank John Weidum of Statistics Netherlands, who has been very helpful in providing us with information on the Dutch job vacancy survey and introducing us to several people at Statistics Netherlands and Eurostat.

relatively long time and therefore has ample experience with these kinds of data methodologies.

- An extensive survey on methodologies for collecting job vacancy data among Statistical Offices of 31 European countries³. The desk research and interviews provided the necessary information for setting out this survey. The outline of the survey is found in Appendix A to this report.

2. Collection of information at MoLSAF, the Statistical Office and Trexima⁴

To assess the policy requirements for the labour market indicators to be developed, staff members from several departments at MoLSAF have been interviewed: the Social Policy Institute, the Employment Strategy Department, the Central Office of Labour, Social Affairs and the Family (CoLSAF) and the State Secretary, Mr. Miroslav Beblavy. Together, these staff members provided a clear picture of the information needs at the Ministry.

To assess the current state of data collection on job vacancies, job creation and job destruction, a number of visits have been made to the Statistical Office of the Slovak Republic and to the private research company Trexima. Both institutes provided us with ample information on existing surveys, survey methods, sources of data and data itself on job vacancies, job creation and job destruction, particularly within small businesses with less than 20 employees. This information is used throughout this report.

1.3 Structure of report

This report is structured as follows. Chapter 2 describes several requirements at MoLSAF and Eurostat with regard to data collection (methods) and data use concerning job vacancies, job creation and job destruction. Chapter 3 describes the current state of data collection on these topics in the Slovak Republic. Chapter 4 gives an overview of alternative data collection methods for these labour market indicators, that take account of informational needs and requirement of MoLSAF and Eurostat on the one hand and available data collection (methods) in the Slovak Republic on the other. In Chapter 5 recommendations are provided with regard to the methods that can best be used in the Slovak Republic, together with an appraisal of consequences for implementation. The survey on job vacancy surveys throughout Europe is given in Appendix A.

In order to give more structure to the chapters of this report, a distinction is made in 10 attributes of data collection methods whenever possible. These 10 attributes are explained in Chapter 4 and are defined as:

³ We are very grateful to Aurora Ortega-Sanchez of Eurostat for providing us with a list of e-mail addresses of job vacancy experts at the Statistical Offices in Europe.

⁴ We like to thank Stefania Komarcova for assisting us in assessing all information, arranging meetings with the relevant staff members and translating between Slovak and English.

1. Using a survey or using existing data
2. Frequency of the survey
3. Questions on the number of job vacancies, created jobs, destructed jobs
4. Questions on characteristics of job vacancies, created jobs and destructed jobs
5. Sampling stratification
6. Sample size
7. Sample refreshment
8. Data adjustments
9. Survey method
10. Reporting and the calculation of population totals

2 Requirements MoLSAF and Eurostat

For the development and recommendation of data collection methods for job vacancies, job creation and job destruction, the Ministry of Labour, Social Affairs and the Family of the Slovak Republic (MoLSAF) has formulated a number of conditions that need to be met. Section 2.1 gives an overview of the requirements for data collection by MoLSAF. One of these requirements is that the data and indicators created by the proposed methodology must be compatible and comparable internationally. For that reason, a broad overview of requirements on data collection methods for job vacancies, job creation and job destruction at Eurostat are given in Section 2.2.

2.1 Requirements by MoLSAF

The Slovak Republic is suffering from a relatively high unemployment rate. In 2004, unemployment amounted to 18 percent (source: Eurostat). The long-term unemployment rate in the Slovak Republic is the highest in the EU. For that reason, MoLSAF is working on targeted policy to improve the labour market situation and reduce unemployment. To be able to apply effective policy measures, there is an urgent need for clear and reliable labour market indicators on the demand side of the labour market, particularly with regard to job vacancies, job creation and job destruction. Only with these reliable labour market indicators, it can be determined where and what type of policy measures are needed. In addition, the effectiveness of policy measures can only be measured with reliable information on these indicators. A particular area of interest is that of small businesses. These businesses are considered an important employment generator and therefore a “motor of the economy”, while data collection may be more challenging at these businesses.

In the past, information on job vacancies was obtained from the Labour Offices. Although companies were obliged to report their job vacancies to the Labour Office, this obligation was not enforced. As a result, the information on the number of job vacancies was not complete and the quality of the data was doubtful. This made the information from the Labour Offices on job vacancies unsuitable for policy making. Since 2004, companies are no longer obliged to report their job vacancies to the Labour Office. This has improved the quality of the information on the reported job vacancies, which helps the process of filling these vacancies. However, the reported job vacancies still only represent a selective part of the total number of job vacancies in the Slovak Republic, which makes the information unsuitable for targeted labour market policy.

Since 2004, the Statistical Office (SO) of the Slovak Republic is engaged in a pilot study to collect job vacancy data in line with the requirements by Eurostat. In addition, the private research company Trexima is involved in a pilot study since 2005 to collect data on job vacancies, job creation and job destruction. The quality of the data in both studies is not completely satisfactory, particularly those collected at small businesses with less than 20 employees. At the SO, the return rate on job vacancy questions is very low among small businesses, while Trexima only has a small number of small businesses in the survey sample to begin with (see Chapter 3 for details). In order to fill the information gap on labour market indicators that reliably indicate the dynamics in labour demand, there is a need for a data collection methodology that retrieves the relevant

statistical data and creates indicators that reflect policy-relevant information on job vacancies, job creation and job destruction within small businesses in the Slovak Republic. Therefore, MoLSAF has requested advice on which methodology is best suited and how the collection of this information – and the response rate from small businesses in particular – can be improved.

MoLSAF has stated that the recommended methodology for the collection of data on job vacancies, job creation and job destruction should meet the following requirements as much as possible:

- The methodology should aim at obtaining data to establish, monitor and evaluate indicators on job vacancies, job creation and job destruction within the small business sector
- The indicators must be applicable in the specific national conditions, taking account of institutional capacities and other national circumstances in the Slovak Republic
- The data, methodology and indicators recommended should be fully compatible and comparable internationally, and with existing data and indicators on medium and large size businesses in the Slovak Republic
- The recommended methodology must result in information that is suited for labour market policy making. As a measure of labour demand, the collected data should provide information on mismatches in the labour market when compared to labour supply information, like skills shortages and lack of qualifications. Job vacancy data must therefore be further detailed by attributes of the vacant jobs. Relevant distinctions are by:
 - Economic activity
 - Region
 - Educational level
 - Occupation
 - Salary-range
 - Part-time / full-time jobs or sharing of the job

To meet the second requirement of applicability in the national context of the Slovak Republic, an overview of the current situation with regard to data collection on job vacancies, job creation and job destruction is made, which is presented in Chapter 3. The third requirement regarding comparability and compatibility can only be met with a good understanding of methodologies that are used internationally. To obtain this understanding, an overview of the data collection requirements with regard to job vacancies is given in the next section.

2.2 Requirements by Eurostat

In this section, an overview is given of the requirements Eurostat has formulated for collecting job vacancy data. Eurostat has no requirements concerning data collection on job creation or job destruction.

Eurostat is the Statistical Office of the European Union. It collects data primarily to meet the information needs of the European Commission and the European Central Bank. With regard to job vacancy data, the European Commission has a particular need for information on the structure of job vacancies to assess the direction of sectoral growth within the EU and mismatches in local labour markets. The European Central Bank is particularly interested in information on short-term changes in job vacancies and the job vacancy rate for the analysis of the state of the European economy and the business cycle. The collection of reliable job vacancy data throughout Europe has therefore recently become a priority at Eurostat. Budgets have been allocated to job vacancy data collection and several pilot projects have been launched throughout Europe. As a consequence, several European countries have become acquainted with the collection of job vacancy data, including the Slovak Republic. At present, a gentlemen's agreement determines what kind of information is collected. At the same time, a legal framework for job vacancy statistics is created by a special task force, but this framework is not yet available. According to plan, the legal framework on job vacancy statistics will be ratified by the European Parliament and the European Council in November 2007. Most of the information in this section is taken from Eurostat Document F2/JVS/11/2005, which is used as input for the preparation of the legal framework.

1. Using a survey or using existing data

Member States are required to produce the data by using one or a combination of different sources specified below:

- Job vacancy statistics based on business surveys, where statistical units are asked to give timely, accurate and complete information. The basic statistical unit for the data collection is the local business unit, however, the majority of European statistical offices collect the vacancy data from enterprises;
- Other sources, including administrative data may be used if these are appropriate in terms of relevance, accuracy, timeliness, coherence, completeness and comparability.

2. Frequency of the survey

Annual data on job vacancies are required by the European Commission for monitoring and analysis of the structure of the labour market and for identifying labour shortages by region, sector of economic activity and occupation.

Quarterly data on job vacancies are required by the European Commission and by the European Central Bank for monitoring short-term changes in the number of job vacancies by economic activity.

In Document F2/JVS/8/2005, Eurostat describes three possibilities for the sampling design, still to be discussed by the task force:

- One possibility would be to make use of a small scale sample, not robust enough to produce quarterly results at a regional level, but suitable for a Euro-area breakdown by

economic activity. In every quarter, data on occupation and by region will also be requested in order to produce structural data on job vacancies broken down by region and occupation, as required.

- In a second approach, extra structural variables (i.e. job vacancies by occupation and region) are collected from a minimum sub-sample. Economic activity (NACE) information could be transmitted to Eurostat quarterly and the information containing the structural information yearly. The expected higher non-response rate for the structural information should be taken into account to determine the size of the sub-sample.
- A third possibility is to use two different questionnaires, a short one for the quarterly data collection and another with additional questions to collect the structural information. The extended questionnaire will be sent in one of the quarters. A larger sample could be defined for this period, if necessary. In this case, the annual data will not be an average of the quarterly information but will show the situation at the moment of observation (time-period fixed). Special attention should be paid to the linkage of both collections, to assure the consistency between quarterly and the corresponding annual data.

3. Questions on the number of vacancies

A job vacancy is defined by Eurostat as a post (newly created, unoccupied or about to become vacant)

- for which the employer is taking active steps to find a suitable candidate from outside the enterprise concerned and is prepared to take more steps; and
- which the employer intends to fill either immediately or in the near future.

The concepts ‘post newly created’, ‘unoccupied’ and ‘about to become vacant’, ‘active steps to find a suitable candidate’, and ‘in the near future’, will be clarified in the legal framework.

4. Questions on characteristics of vacancies

Every quarter, Member States are required to transmit to the European Commission (via Eurostat) the job vacancy data, broken down by economic activity using the NACE Rev. 1.1 classification at section level.

Every year, Member States are required to transmit to the European Commission (via Eurostat) the job vacancy data based on the following breakdowns:

- by region (NUTS);
- by occupational groups using the ISCO–88 classification;
- by economic activity using the NACE Rev. 1.1 classification; and
- by size of the unit in terms of the number of employees.

5. Sampling stratification

Sampling is needed to reduce the number of businesses that are surveyed; sampling stratification is needed to obtain a sample from which representative information for the whole population of (small) businesses can be derived. Sampling stratification determines which or how many businesses are surveyed from several strata. Strata are determined by attributes of businesses with which the number of job vacancies varies. Since the reporting of job vacancy data is determined by region (NUTS), by occupational groups using the ISCO–88 classification, by economic activity using the NACE Rev. 1.1 classification, and by size of businesses in terms of the number of employees, these attributes are best used to base the strata for sampling stratification on. Concerning the scope of the strata by economic activity, Eurostat has the following requirements:

- Each Member State is required to submit to the European Commission (via Eurostat) data on job vacancies in the economic activities defined in sections A to O of the NACE Rev. 1.1 classification. The data should be compiled from the local kind-of-activity units with at least one employee.
- The coverage of economic activities defined by NACE Rev. 1.1 sections A and B and section L to O must be determined separately for each country, since not all countries have a substantial number of business in these economic sectors.

Other attributes of data collection method

Eurostat has no requirements in the job vacancy data collection regulation on other attributes of the data collection method, like sample size or survey method. But Eurostat Document F2/JVS/8/2005 strongly advises users to reduce the delay in delivering the results to Eurostat to 45 days after the reference period. In general, the document states that data should be of high quality (reliability, relevance, accuracy, comparability, completeness, consistency), but at the same time cost-effectiveness should be considered and the burden for businesses is to be limited, because as a consequence, this reduces the non-response bias.

3 Current situation in the Slovak Republic

In this chapter, an overview is given of the current situation of data collection on job vacancies, job creation and job destruction in the Slovak Republic. From this overview it becomes clear to what extent the current state of data collection meets the requirements by MoLSAF and Eurostat, as described in Chapter 2. Three sources of information on job vacancies, job creation and job destruction are discussed: the Statistical Office, Trexima and the Labour Office.

3.1 Statistical Office

Since 2004, the Statistical Office of the Slovak Republic (SO) generates information on job vacancies and – since 2005 – newly created vacancies. This information is obtained from the pilot Job Vacancy Survey, initiated by Eurostat.

1. Using a survey or using existing data

The pilot survey makes use of an existing survey on employees and wages to minimize the burden for businesses. Another argument for using an existing survey is that reporting units are familiar with the data collection method.

No survey is held for entrepreneurs, but the number of job vacancies among entrepreneurs with at least one employee is estimated, based on the number of vacancies as reported to the Labour Offices. For a definition of entrepreneurs, see Box 3.1. According to former experiences at the Statistical Office, the response rate for surveys targeted at businesses existing of physical persons – instead of legal persons – is very low and results in less reliable information.

Box 3.1: Definition of entrepreneurs

Entrepreneurs are persons, who undertake their own liability according to special rules. These are tradesmen (persons running businesses on the basis of the tradesman law), persons with freelance professions (persons running businesses on the basis of a law other than tradesman law e.g. lawyers, physicians, auditors and others) and self-employed farmers (Statistical Office, 2005).

2. Frequency of the survey

- The survey on employees and wages, in which questions regarding job vacancies and newly created vacancies are included, is held quarterly. An annual survey on employees and wages is held that includes a question on the number of vacancies by occupation. This survey is targeted on medium and larger sized businesses and only includes small businesses which are profit organizations with a turnover of more than 100 million SKK.

3. Questions on the number of job vacancies, created jobs, destructed jobs

Questions asked to businesses concern:

- Total number of job vacancies at the last day of the reference quarter
- Number (of this total) of newly created job vacancies during the reference quarter

A job vacancy is defined as a post (newly created, unoccupied or about to become vacant) that the employer intends to fill either immediately or in the near future (within 3 months) and for which the employer is taking active steps to find a suitable candidate from outside the enterprise concerned, and is prepared to take more steps.

4. Questions on characteristics of job vacancies, created jobs and destructed jobs

- For the annual survey only, there is a breakdown in the question on the number of job vacancies by occupation (10 main categories). The only small businesses that are included in this annual survey are profit organizations with a turnover of more than 100 million SKK.

5. Sampling stratification

Sampling stratification for the survey on employees and wages takes place in different ways, depending on business type. Full-scale surveys are used for all non-profit organisations (including small size businesses), organisations providing financial intermediation, for-profit organisations with 100 and more employees, and in organisations with 2 and more establishments. Post and telecommunications are also surveyed at full scale. Sampling is applied in case of profit organisations with less than 100 employees (including small sized profit organisations with an annual turnover of less than 100 million SKK).

In case of sampling, a stratified sample is taken at the beginning of the year from the business register, which covers all businesses in the Slovak Republic. Stratification is based on the following characteristics:

- Economic activity (NACE at the 4 digit level);
- Type of business (ESA95, which makes a distinction between public non-financial businesses, national private non-financial businesses and foreign controlled non-financial businesses);
- Size class of businesses (1, 2-4, 5-9, 10-19 employees for small businesses).

Based on these characteristics, several strata are created from combinations of economic activity, type of business and size class. From each stratum, a representative sample is taken. The smaller a stratum in the business register, the higher the fraction of businesses that are included in the sample from this stratum. This way, variation among businesses in small strata is well represented in the sample.

6. Sample size

For small businesses with less than 20 employees, the sample size is equal to more than 5000 units. This is around 10 percent of the 50 thousand small businesses in the register for which the size class is known. The response rate for the question on the number of occupied posts in the quarterly survey is around 40 percent (2000 businesses). The response rate for the question on the number of (newly created) job vacancies is only around 3 percent (less than 200 businesses), including zero job vacancies. There are at least three possible explanations for this low response rate. Firstly, it is not possible to distinguish between zero's and missing values in the answers to the questions on the number of job vacancies. This means that non-response may or may not also indicate zero job vacancies. Secondly, the person in charge of filling out the survey may primarily be involved in the company's wage administration, as the survey was primarily targeted on wages, but may lack knowledge with regard to job vacancies. For small businesses, this reason is less obvious. Thirdly, the number of job vacancies at small businesses truly is small and incidental, leading to a very low number of reported job vacancies.

For larger businesses, the full-scale survey leads to a survey size of 10 thousand units, with a response rate that is only slightly higher than for small businesses.

The *annual* survey on small businesses shows even lower response rates on the job vacancy questions than the quarterly survey:

- Approximately 600 profit organizations with a turnover of more than 100 million SKK are included in the survey, of which less than 10 report on job vacancies: a response rate of 1 percent;
- For non-profit organizations, approximately 5500 businesses are included in the survey, of which approximately 100 report on job vacancies: a response rate of 2 percent.

7. Sample refreshment

At the beginning of the year, about 30 percent of all businesses in the sample is refreshed. If a unit is out of business during the year, it is not replaced by a new business in the same stratum until the beginning of next year. As a consequence the sample size decreases during the year.

8. Data adjustments

If there are any doubts about the completeness or structure of the surveyed data, the regional administrations of the Statistical Office contact the relevant businesses by phone to verify and check the data. When necessary, missing data in the reference period for a stable statistical unit (i.e. a business that has submitted data in the previous quarter) are imputed by making use of data from the previous period. The imputation of data for other statistical units is realized by taking data from donors. A donor is an active responding unit, which has delivered a correct and completed questionnaire and for which no problem with the quality of the data has been identified in the checking process (Statistical Office, 2005).

9. Survey methods

The information is collected using a written survey that is send out by mail.

10. Reporting, calculation of population totals

Results on job vacancies for the sample of small-sized for-profit businesses with an annual turnover of less than 100 million SKK are grossed up to population totals for small-sized businesses by economic activity at the 4-digit level of the NACE Rev.1. The weight that is used for businesses in a stratum for the calculation of population totals is inversely proportional to the number of active units in the sample out of the estimated number of active businesses in a given stratum of the sampling frame. The calculation of population totals is achieved by multiplying the mean values of the indicators in given strata of the sample with the weights of the surveyed units (Statistical Office, 2005).

Limitations of job vacancy data *in small businesses* at the Statistical Office:

- Since use is made of an existing survey on employees and wages, the person who fills out this survey may be an expert on personnel and wages, but may be less acquainted with the number of job vacancies at the company. This may hamper the response.
- No information on occupation or other characteristics of the job vacancies is available for small businesses, with the exception of small businesses which are profit organisations with an annual turnover of 100 million SKK or more.
- It is not possible to distinguish zero's and missing values in the answers to the questions on the number of job vacancies in the survey on employees and wages.
- Sampling stratification does not take place by region. In Bratislava for instance, there are more real estate, renting and business activities (branch K according to the NACE economic activity distinction) than in other regions. This branch could very well show different job vacancy numbers in Bratislava than in other regions.
- A unit that goes out of business during the year is not replaced in the sample by a new business from the same stratum. As a consequence, the sample size decreases during the year.
- Precision in completeness of the response is stressed to a great extend by the Statistical Office. This may come at the expense of maintaining a good relationship with businesses that are repeatedly surveyed.
- For sole entrepreneurs, no survey is held, but the estimated number of job vacancies is based on the number of vacancies as reported to the Labour Offices. These data have considerable limitations (see Section 3.3).

At the same time, it must be noted that the Statistical Office constantly attempts to improve the information they gather and publish. For instance, staff members frequently visit workshops on job vacancy statistics organized by Eurostat.

3.2 Trexima

Since 1992, Trexima has developed an Average Earnings Information System (AEIS) under coordination of MoLSAF. This system includes quarterly surveys of average hourly and monthly earnings plus a number of additional job and worker characteristics for all existing jobs in a company. A great advantage of this system is that all information is available at the job level. Information on wages can therefore be produced by occupation and educational level of the employee. Since the survey concerns a rotating panel, with the same sample used for four consecutive quarters, information can be obtained about created and destructed jobs at company level (Siebertová & Senaj, 2005). A new question on whether a job is vacant is planned to be added to the survey. However, since all information is collected by electronic survey, there are still some IT-problems in this respect. However, the main problem with deriving vacancy data from the earnings survey is that persons at companies, who are in charge of earnings information, often have no good insight in the number of job vacancies at the company level. For information on job vacancies, often the Human Resource Management department has to be contacted. In addition, small businesses are undersampled in the survey, as they were originally no part of the main survey on earnings. Also, small businesses often lack adequate IT-possibilities for an electronic survey. For that reason, Trexima does not plan to use the method of electronic data collection for small businesses in the near future.

In the second quarter of 2005, Trexima has held a single pilot survey on paper to collect information on job vacancies, job creation and job destruction. For this survey, the same sample was used as for the AEIS. Below we give details of the pilot survey on job vacancies, job creation and job destruction.

1. Using a survey or using existing data

The pilot survey on job vacancies, job creation and job destruction by Trexima is a separate survey on paper.

2. Frequency of the survey

A single pilot survey during the second quarter of 2005.

3. Questions on the number of job vacancies, created jobs, destructed jobs

The survey contains 3 questions:

- Number of job vacancies at the end of the quarter (equal to the number of non-occupied jobs)
- Number of newly created jobs during the quarter (as a result of a change in company structure or extended production)
- Number of destroyed jobs during the quarter (as a result of a change in company structure)

4. Questions on characteristics of job vacancies, created jobs and destroyed jobs

No questions were asked on characteristics of the job vacancies, created or destroyed jobs.

5. Sampling stratification

Sampling has been performed by economic activity (NACE), region and company size.

Sampling from the business register for the AEIS sample is performed by Infostat (department at the Statistical Office), based on the opinion of a group of experts from Infostat, the University of Economics Bratislava and Trexima.

6. Sample size

For the pilot survey on job vacancies, job creation and job destruction, 471 small businesses with less than 20 employees were included in the sample and 304 of these businesses responded (response rate of 65 percent, including zero job vacancies). The response rate may have been higher than for a pilot survey with a completely new and separate sample, since Trexima had already established a relationship with these businesses, since they were taken from the sample of the Average Earnings Information System (AEIS). However, the response might have been even higher if all means to increase the response rate would have been used, for example a reminder by telephone. Since this survey concerned a pilot only, increasing the response rate has not been a priority.

For larger businesses, 2700 were included in the sample, of which 1578 responded to the questions on job vacancies, job creation and job destruction. This response rate of 58 percent is lower than for small businesses, which shows that the response rate by small businesses does not have to be lower by definition.

7. Sample refreshment

The sample is obtained once a year and used during four quarters. The sample is not updated during the year to correct for attrition (for example when companies go out of business), which results in a declining sample size during the year.

8. Data adjustments

Trexima indicates that businesses that do not respond may be contacted by telephone to remind them. In this pilot survey, this has been done less frequently than usual in the AEIS survey.

9. Survey methods

The pilot survey is a written survey that has been send out and received by mail.

10. Reporting, calculation of population totals

No population totals are calculated.

Limitations of data on job vacancies, newly created and destructed jobs at Trexima:

- Data collection mainly focuses on larger businesses.
- Sampling from the business register is relatively static (once a year, no refreshments during the year) compared to the dynamics in job creation and job destruction in small businesses.
- Methods for the calculation of population totals are not yet well established at Trexima.

Like the Statistical Office, Trexima also pays much attention to improve data collection methods. It is part of a group of experts who decide on the method for sampling from the business register. At this moment, Trexima is studying how the AEIS survey can be extended to include data on job vacancies. An important problem is that this system of electronic data collection is difficult to implement at small businesses, which often lack the necessary IT.

3.3 Labour Office

The Central Office of Labour, Social Affairs and the Family (CoLSAF) provides indicators on job vacancies, job inflow and job outflow on a monthly basis. Data for these indicators are obtained from 79 labour offices in districts throughout the country. This data concerns job vacancies that are reported to the Labour Offices by businesses with the purpose of filling these vacancies. Each month, about 15 thousand vacancies are reported. Since 1996, information on job vacancies has been collected in two ways:

Between 1996 and 2004:

- All businesses were obliged to report all of their job vacancies to the Labour Office.

- However, this obligation was not enforced.
- Employers often considered reporting their job vacancies to the Labour Office as a necessary burden, which reduced the quality of the information obtained.
- This resulted in very limited information on job vacancy characteristics.

Since 2004:

- Act on the obligation to report job vacancies to the Labour Office was abolished.
- Civil servants of the Labour Offices actively seek for job vacancies at businesses for the purpose of the mediation of job seekers.
- For a limited number of job vacancies, much more information is obtained, which can be used to establish a match with a job seeker.

Limitations of job vacancy data at the Labour Office:

- Not all vacancies are reported, only the ones that businesses find suitable for mediation at the Labour Office.
- A selective part of all job vacancies are reported, mainly jobs suited for low skilled labour. Most job seekers registered at the Labour Offices are long term unemployed with low levels of skills.
- Job vacancies for which businesses find no candidate in any other way may also end up to be reported to the Labour Office.

3.4 Main shortcomings of current data

In sum, the main shortcoming of the current data collection on job vacancies, job creation and job destruction in small businesses in the Slovak Republic are:

- Low coverage of small businesses and entrepreneurs in existing surveys.
- High non-response rate, due to:
 - high burden of data collection at small businesses;
 - use of existing survey (SO) or survey methods that may be less suited for collecting data on job vacancies, job creation and job destruction at small businesses.
- Limited information on characteristics of job vacancies, job creation and job destruction.

- Surveys to which job vacancy questions are added, were originally directed at collecting other information (for example wages). Persons at companies who are in charge of earnings information, may be less aware of the number of job vacancies at the company level, leading to low response rates. However, this reason is expected to be less valid in the case of small businesses. The pilot survey at Trexima shows that it is still possible to obtain a considerable response rate among small businesses.
- It is not possible to distinguish zero's and missing values in the answers to the questions on the number of job vacancies in the survey on employees and wages by the Statistical Office.
- If a company in the survey sample goes out of business during a year, it is not replaced by a new business from the same sample stratum. As a consequence the sample size decreases during the year.
- Precision in completeness of the response is stressed to a great extent. This may come at the expense of maintaining good relationships with businesses that are repeatedly surveyed.
- Business registers and trade registers could be better updated to obtain better samples.
- Sampling is not always done by region, which seems to be important (Statistical Office).
- Methods for the calculation of population totals are not always well established (Trexima).
- The reporting of job vacancies by the Labour Offices only gives a partial and selective impression of the true number of job vacancies.

In the next chapter, an overview is given of methods of job vacancy data collection in other European countries. Several alternative methods are treated. The overview provides insight in the way the shortcoming in the current data collection on job vacancies, job creation and job destruction in small businesses in the Slovak Republic can be solved.

4 Alternative data collection methods

In this chapter an overview is given of alternative methods to collect data for the purpose of generating indicators on the number of job vacancies, the size of job creation and the size of job destruction. The focus is primarily on collection methods that are appropriate in small size businesses with less than 20 employees. For that purpose, an overview is given of the different methodologies that are used in several countries. In order to produce this overview, three main sources of information have been used:

- Desk research on existing indicators for job vacancies, job creation and job destruction based on the existing literature on this topic as well as sources on the Internet. A very important source of information on the Internet is the discussion group on EU Job Vacancy Statistics by Eurostat: <http://forum.europa.eu.int>.
- Interviews with several people of Statistics Netherlands to get a clear picture of the methodology used at present, in the past and planned for the future. The Netherlands has a long history in collecting job vacancy data.
- Survey among the Statistical Offices of 31 European countries. The desk research and interviews provided the necessary information for setting out this survey on methodologies for collecting data on job vacancies.

The results of the survey are used as the main source of information to give an overview of relevant data collection methods, as this information is the most recent and most extensive information that could be collected. This information is supplemented with information from the other sources. Besides getting a wealth of information on alternative methodologies that are used in several countries to collect data on job vacancies, job creation and job destruction, the survey also made it possible to ask experts from the Statistical Offices for specific advice on data collection in small businesses with less than 20 employees, since this is not necessarily done in the same way as among larger businesses. One of the questions in the survey asked for the opinion of these experts with regard to the way in which small businesses should be surveyed to get the highest response rate in combination with good quality data. The answers to all survey questions are treated below.

Section 4.1 first focuses on job vacancies. Different approaches to data collection for job vacancy indicators in the European countries surveyed are listed and supplemented with the information from the literature sources and interviews. Section 4.2 does the same for job creation and job destruction. Since Eurostat does not require the collection of information on job creation and job destruction, not many European Statistical Offices gather this information or have created methodologies on this labour market indicator. Still some information on alternative methods to collect this information is reported in Section 4.2. The survey that was used to obtain most of the information in this chapter can be found in the Appendix.

4.1 Job vacancies

There exists no ready to use overview of the different methodologies that are used for collecting data to produce job vacancy indicators, not even at Eurostat for the European countries. Therefore, it was decided to create this overview by setting out a survey among all European countries to collect the necessary information. Eurostat has been so kind to provide a list of e-mail addresses of experts on the collection of job vacancy data at the European Statistical Offices. Our survey contains questions on the existence of data collection on job vacancies in each country, the frequency and size of the survey, the kind of questions that are asked, including details on individual vacancies, the sample size and response rate of these surveys, the data collection method used (mail, telephone, internet, e-mail, etc.) and the preferred data collection method. The exact questions that were sent to these experts can be found in the Appendix.

The survey has been sent to 31 experts at the Statistical Offices, of which only 4 did not respond before the deadline. Of the 27 country experts that did respond, 9 reacted that they did not collect job vacancy data in their country or that they had just started with a (pilot of the) survey and were in their opinion not yet capable of answering the survey satisfactory. This concerned Belgium, the Check Republic, Denmark, Iceland, Luxemburg, Malta, Norway, Slovenia and Turkey.

The other 18 country experts indicated that job vacancy data is collected by means of a survey. This concerned Austria, Bulgaria, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Latvia, Lithuania, the Netherlands, Poland, Portugal, the Slovak Republic, Spain, Sweden and the United Kingdom. Apart from a good response rate, there is a good mix in response by Western European countries that have conducted business-based vacancy surveys for a long time, like Germany, Sweden en the Netherlands, and Eastern European countries that have only started to collect this information recently, like Bulgaria, Hungary, Latvia, Lithuania, Poland and off course the Slovak Republic.

From the survey it becomes clear that there are a lot of alternative approaches for data collection for the purpose of creating a labour market indicator on job vacancies. Countries may hold surveys among businesses or make use of data from other sources, for example administrative data from Labour Offices. When countries do hold a survey, they can add questions to an existing survey or conduct a specific one. Other choices to make when collecting these data is how frequent to hold the survey, which questions to ask, whether to hold a full-scale survey or a sample survey, how large this sample size should be, how often to refresh the sample, which characteristics to use for sampling, how to adjust the data to get plausible and consistent information, and which survey method to use, either mail, telephone, Internet or any other way.

Below a description is given of which of these approaches for data collection on job vacancies are available and used in the European countries for which information was collected by our survey. It is also indicated which of these approaches are more or less common practice.

1. Using a survey or using existing data

Alternative approaches:

There are two main approaches for gathering information on job vacancies: to hold a business-based survey or to make use of other (administrative) data sources, for example the registration of job vacancies at labour offices or temporary work agencies. When a survey among businesses is used, there are still two options, namely adding questions to existing business-surveys or setting out a new and specific survey.

Common practice in Europe:

In Europe more and more countries are conducting a survey to gather data on the number of job vacancies. About half of the European countries that participate in our survey make use of a separate and particular job vacancy survey. The other half uses relevant questions in existing business surveys. Some countries make use of administrative sources from labour offices. In almost none of the participating countries it is obligatory to register job vacancies at the labour office. The administrative data from labour offices do have some advantages: data can be obtained at low costs, they can be obtained regularly and frequently, and there often is valuable information on individual job vacancies, like occupation and number of hours. However, these advantages are largely outweighed by a number of drawbacks: the data are not necessarily complete or representative, their coverage may be biased by skill level, and there may be problems in an update of the registers, showing vacancies that in reality no longer exist. There is a heavy dependence on political and administrative changes, which may result to biases due to priorities assigned to labour offices. This way, the number of job vacancies at labour offices mainly indicates the effort that labour offices put in finding job vacancies for the purpose of mediation of job seekers rather than the true number of job vacancies. Also, the definition of vacancies that are covered by labour offices may be substantially different from one country to the other, which makes international comparisons very difficult (Groupe de Paris, 1998).

2. Frequency of the survey

Alternative approaches:

A survey on job vacancies can be held with different frequencies. Important to realize is that job vacancies are very dynamic and the number and type of job vacancies may change rapidly over time. This would imply the need for a survey with a high frequency, for instance quarterly or even monthly. On the other hand, job vacancy information is difficult to assess, even by representatives of businesses themselves, so response rates may be low if too much information is asked for or too often. This would imply holding a survey every year only. A solution to this dilemma that is found in practice is to hold a quarterly survey with only very general questions on job vacancies and a yearly survey in which more detailed questions are asked about characteristics of individual job vacancies. It is no coincidence that Eurostat requires information on the number of job vacancies every quarter, but detailed information on characteristics of job vacancies by economic activity, region and company size only once a year.

Common practice in Europe:

As a result, almost all countries in Europe hold a quarterly survey. In four of the participating countries in our survey, extra questions are asked in an annual or biannual survey. Of course, one always wants to gather as much information from a survey as possible, and at the same time for as many units as possible (high response rate). But asking too many questions may reduce the response rate. To ask the necessary questions quarterly and gather extra information yearly is an elegant solution to this problem.

3. Questions on the number of job vacanciesAlternative approaches:

The European countries in the survey ask the following questions on the number of vacancies (the number of countries that ask a particular question, regardless of periodicity, is given in parenthesis):

- Number of vacancies on a specific date in the reference quarter (e.g. the last day) (18)
- Number of vacancies occupied during the reference quarter (8)
- Number of created vacancies during the reference quarter (4)
- Number of destructed non-occupied vacancies during the reference quarter (5)

Common practice in Europe:

As a result of the way our questionnaire among the Statistical Offices in Europe has been set up, the question on the number of vacancies is included in the surveys of all countries that completed our questionnaire. Apart from this information, a number of countries ask additional questions on the number of job vacancies that have been occupied during the reference quarter, the number of created job vacancies during the reference quarter or the number of job vacancies that were not occupied and eventually destructed during the reference quarter. These three additional questions result in flow data, while the question on the number of job vacancies at a specific date results in stock data. Section 4.2 elaborates on the questions on newly created job vacancies and destructed job vacancies for the purpose of creating indicators of job creation and job destruction.

4. Questions on job vacancy characteristicsAlternative approaches:

Apart from the *number* of job vacancies, surveys ask for *characteristics* of individual job vacancies. The following questions are asked in the job vacancy surveys held in the European countries that completed our questionnaire (the number of countries that ask about particular characteristics is given in parenthesis):

- Occupation (10)
- Part-time / full-time job (6)

- Indication whether it is hard to fill the job vacancy (5)
- Required educational level (5)
- Immediately available job vacancy (3)
- Location of the vacant job (3)
- Registration at the Labour Office (3)
- Advertisements made (2)
- Duration that vacancy has been unfilled (2)
- Number of people to manage in the vacant job (2)
- Characteristics of last filled vacancy (working time/conditions, search ways, etc.) (1)
- Job for an interval of less than 3 months (1)
- Manual / non manual workers (1)
- Required gender (1)
- Suitability for school leavers (1)

Common practice in Europe:

The job vacancy characteristics that are most frequently asked in Europe are occupation, part-time / full-time, the required educational level and an indication whether it is a hard to fill the job vacancy.

5. Sampling stratification

Alternative approaches:

Since it is very costly to perform an exhaustive or full-scale survey among small businesses, which are much more numerous than larger businesses, it is best to draw a sample. To obtain representative data, the true variation in the number of job vacancies needs to be reflected in the sample. Sampling can be done by stratification, which means that small businesses are divided in a number of groups with a low level of variation in the number of vacancies within each group and large variation in the number of vacancies between these groups. The groups can be based on several characteristics. The following four sampling characteristics are used in Europe:

- Region
- Economic activity
- Number of employees
- Size of turnover

Common practice in Europe:

Almost all countries make use of economic activity and the number of employees as sampling characteristics for sampling stratification. About half of the countries also make use of a regional stratification. The size of turnover is barely used, the Slovak Republic being an exception. This characteristic is strongly correlated with the number of employees (size class). The surveyed sample of businesses has to be representative for all businesses in the country. If for example the number of vacancies of small size manufacturing businesses differs between regions, than except

for the number of employees and economic activity, region must be one of the variables used for stratification. The sample for a business-based survey can be taken from a national business register. The variables used for stratification must then be part of this register.

6. Sample size

Alternative approaches:

The main choice is the size of the sample. Businesses of a certain type - with specific (sampling) characteristics - can be surveyed full-scale or a sample of these businesses can be surveyed. The choice depends on the number of businesses in the register and the variation in the type of businesses (or in the number of job vacancies). If there are only a few businesses, or when the number or type of job vacancies vary to a large extent among these businesses, a full-scale sample is preferred. If many businesses exist, which do not vary too much, it is much cheaper and efficient to survey a sample only. Other businesses may not be surveyed at all, for instance entrepreneurs with 0 employees.

Common practice in Europe:

On average, about 6500 businesses with less than 20 employees are surveyed on job vacancies by the Statistical Offices in Europe, and about 10 thousand businesses with 20 employees or more. Naturally, countries with more businesses in their register include more businesses in their survey sample. On average, the sample percentage is about 5 percent in case of small businesses. The response rate among these businesses is about 80 percent, for medium and large size businesses even 85 percent on average. In general, a full-scale survey is used for the largest firms. Almost none of the countries survey the job vacancies among entrepreneurs with no employees. In case entrepreneurs are surveyed, a very low number of job vacancies is reported. That is one of the main reasons why the Statistical Offices in the European countries do not survey entrepreneurs that have no employees. Other reasons include the fact that entrepreneurs are not properly registered at business registers, that there are too many entrepreneurs to contact and when it is not feasible to collect a representative sample of entrepreneurs. Only a few countries estimate the number of entrepreneurs from other sources.

7. Sample refreshment

Alternative approaches:

If a sample survey is used, the sample must be updated occasionally. Refreshment of the sample is needed to replace businesses that go out of business and to adjust for a change in the composition of the business register by sampling characteristics. Also, businesses must not be held in the sample for too long, since it is well known that the quality of the response decreases with the duration of the inclusion period. Respondents become less motivated to fill in the same questionnaire repeatedly and may even copy responses to save on effort. However, the refreshment of the sample needs to be kept limited, as it takes time to instruct new businesses how to complete the survey.

A choice has to be made with regard to the number of quarters that businesses remain in the sample. If a sample unit goes out of business during that period, it can be replaced by a similar business from the same sample stratum.

Common practice in Europe:

In the European countries that completed our questionnaire, the most common periodicity for updating the sample is once a year. On average, a quarter of the business in the sample is refreshed yearly. While this panel rotation has the benefit of sharing the burden more equitably among the business population, and may also improve response rates because of the perception that this is more equal, it has negative effects on the general comprehension of the survey. Particular attention should be paid to contacts with businesses coming into a survey for the first time in order to quickly raise the understanding of concepts and definitions (Eurostat, 2005). Few countries in the questionnaire mention that they replace the survey units that are out of business quarterly by new businesses in the same stratum.

8. Adjustments

Alternative approaches:

Once the data are collected, the data may or may not be adjusted. If the data are adjusted, the choice is to adjust all data if needed and possible, or to make selective adjustments on data that have a large influence on the population totals. For these adjustments, other data may be used, for instance historical data, data from another labour force or business survey, or data from labour offices.

Common practice in Europe:

Some of the Statistical Offices in Europe do not make any adjustments, some of them adjust all data, and some of them only make selective adjustments. There is no common practice. It must be noted that not all data have to be perfect as long as the same method is used in course of time to make the results comparable. To contact all firms from which the data is not completely trusted may be very time consuming. It also puts an unwanted pressure on these firms, which may result in non-cooperation in the survey the next quarter. In the Netherlands, adjustments are almost entirely computerized. Final adjustments are made by common sense with a focus on the data that have a high influence on population totals.

About half of the European countries make use of other data: in most cases data from another labour survey or historical data.

9. Survey methods

Alternative approaches:

The following methods are used in Europe:

- Written survey by mail

- Written survey by fax
- Contact by telephone: firms are called
- Telephone data entry system: firms can call a special number
- Electronic survey by email
- Electronic survey through the Internet
- Electronic survey responded by (floppy) disc
- Face to face survey

In several countries a combination of these methods is used. In this mixed-mode strategy, respondents can choose the method they prefer.

Common practice in Europe:

The most common method in Europe is still a survey by mail, but also the Internet and contact by telephone is used quite often. If the survey is held by telephone, Computer Assisted Telephone Interviewing (CATI) is used. CATI allows the interviewers to key the information directly into the computer system. As a result, data entry as a separate process is no longer necessary.

The methods used are not necessarily the same as the method that will give the highest response rate. Because low response rates are one of the key problems in the survey among entrepreneurs and small size businesses in the Slovak Republic, one of the questions in our questionnaire among the Statistical Offices in Europe was which method was thought to give the highest response rate on questions about job vacancies, with good quality data for entrepreneurs and small size businesses. The answer to this question gives an excellent view of the best method for getting the highest response rate with the best quality data on job vacancies according to experts on job vacancy surveys at the Statistical Offices in Europe. Almost all experts indicate telephone interviewing as the best method for this purpose, sometimes in combination with other methods.

In most countries, telephone interviewing is not the method that is currently used for collecting job vacancy data. Our questionnaire asks about the reason for this. The experts mainly attribute this to the higher costs and a tradition of mail surveys. In other words, they generally find that telephone interviewing is too expensive and/or it is hard to change a system that has been used for a long time and has proved its value. However, telephone interviewing has a number of advantages. Direct contact allows respondents to ask questions about the concepts and definitions used in the survey and the interviewer can check whether concepts have been correctly understood. Since a large proportion of small businesses do not have any job vacancies, most telephone interviews can be brief. Nevertheless there are also some drawbacks of telephone interviewing. It can take a long time for the interviewer to identify the correct contact person within an organization (mainly relevant for the first contact) and consequently the cost of telephone calls may in some countries prohibit this approach. If information on the number of occupied posts is also collected by telephone interviewing, or if a regional breakdown or occupational breakdown is required for job vacancies, the interviews may become very time-consuming and costly, particularly for larger businesses that have a higher number of job vacancies more frequently (Eurostat, 2005).

10. Reporting and the calculation of population totals

Alternative approaches:

Based on the number of job vacancies in each stratum of the sample, i.e. businesses with a specific combination of characteristics, the total number of job vacancies in a country can be estimated. If all businesses were included in the total of strata and report all of their job vacancies, then of course the total number of job vacancies in a country is equal to the total number of reported job vacancies from all strata. However as mentioned under 'sample size', for many strata sampling is used to survey a representative fraction of the businesses in a stratum only. This means that in calculating the total number of job vacancies in each stratum, and therefore the total number of job vacancies in the country, one has to correct for potential selectivity in the sample stratification and, more important, selectivity in the kind of businesses that have reported the number of job vacancies. This correction can be attained by multiplying the total reported number of job vacancies in each stratum by the inverse of the fraction of businesses in the relevant stratum that has responded to the survey. This estimator is called the Horvitz-Thompson estimator. The main advantage of this estimator is that it allows for reporting the number of job vacancies in crosstables of one sample characteristic versus another. More dimensions can be reported in these crosstables if more business characteristics are used for sample stratification.

The Horvitz-Thompson estimator is the easiest and most common estimator to calculate population totals. For a more detailed presentation of alternative approaches of calculating population totals, see Chapter 5.3 of the *Handbook on design and implementation of business surveys* by Eurostat, edited by Ad Willebroordse (1998).

Common practice in Europe:

No questions are asked on this topic in the questionnaire on job vacancy surveys among experts of the Statistical Offices in Europe. In the Netherlands, the Horvitz-Thompson estimator is used to calculate population totals.

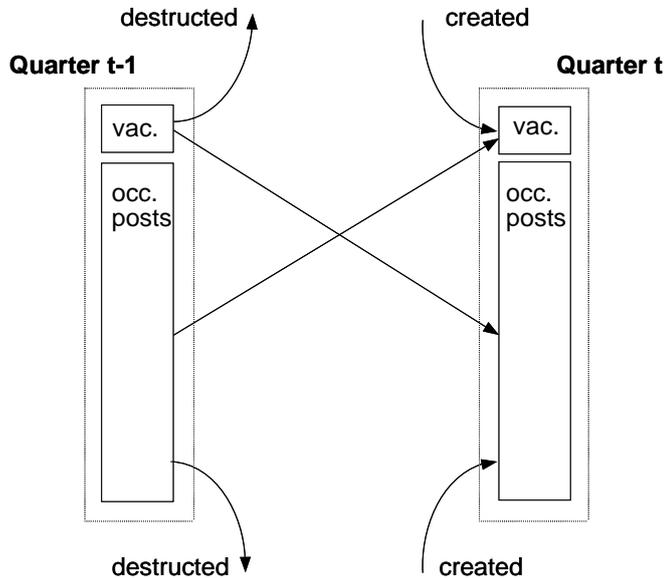
4.2 Job creation and job destruction

Job creation during a certain period is defined as the number of new jobs that have been created during this period, which may in the meantime have been occupied or not (new job vacancies). Job destruction during a certain period is defined as the number of destroyed jobs plus the number of destroyed vacancies during that period. Figure 4.1 shows the total dynamics of created and destroyed jobs during a quarter in relation with job vacancies and occupied posts.

Figure 4.1 shows that a job is only be considered as created during a quarter if it has been filled by the end of the quarter (the arrow in the lower right corner) or has not yet been filled (the arrow in the upper right corner). Job destruction takes place when job vacancies that have not been filled during a quarter have been destroyed (the arrow in the upper left corner), or when existing jobs are not continued, either by laying off employees or by not searching for an

employee after the former employee has left the job (the arrow in the lower left corner). With all other transitions – from jobs to vacancies or from vacancies to jobs – no jobs are created or destroyed, since the number of jobs (vacant or not) remains constant in the long run.

Figure 4.1 Job creation and job destruction in relation with vacancies and occupied posts



Below, we describe potential methods for data collection with regard to job creation and job destruction, in particular the choice between using a survey and using existing data and potential survey questions on the number of created and destroyed jobs. All other data collection attributes in case of job creation and job destruction are in line with those for job vacancies.

1. Using a survey or using existing data

Alternative approaches:

From existing data on the number of jobs, or more particular the number of occupied posts plus the number of job vacancies, the growth in the number of jobs can be determined. This sum of created and destroyed jobs can be computed by subtracting the total number of occupied posts and vacancies in quarter t from the total number of occupied posts and vacancies in quarter t + 1. Most important disadvantage of this approach is that no idea is obtained about the dynamics of this process. A zero sum of created and destroyed jobs is consistent with no job creation and with a very large job creation, as long as the number of jobs that are destroyed is equal to the number of created jobs. To get insight in the dynamics of job creation and job destruction, and with that insight in the dynamics of the labour market, the four transitions in Figure 4.1 can be the topic of a survey. These questions can well be posed in a survey on job vacancies. When

surveying the number of job vacancies and the number of occupied post in consecutive quarters, only the number of created or the number of destructed jobs need to be surveyed, since the other can be deducted from the change in total jobs (occupied posts and job vacancies). When all four items are surveyed, some of them can be used to check the consistency of the data.

3. Questions on the number of created jobs and destructed jobs

Alternative approaches:

As mentioned before, some or all of the transitions as shown in Figure 4.1 that determine the number of occupied posts and the number of job vacancies can be surveyed. In a number of European countries, these transitions are asked for in surveys on job vacancies. These questions are specified as follows (with the number of countries that ask a particular question, regardless of periodicity, given in parenthesis):

- Number of created job vacancies during the reference quarter (4)
- Number of destructed non-occupied job vacancies during the reference quarter (5)

In addition, a number of European countries asks the following question:

- Number of job vacancies occupied during the reference quarter (8)

This question is irrelevant for the calculation of the size of job creation and job destruction, since this question is concerned with the transition from vacancies to occupied posts.

For some of the transitions it can be questioned whether it is sensible to ask in a survey. For example, the number of destructed non-occupied vacancies is expected to be very small. In the Netherlands, this number is only 10 percent the size of the number of newly created vacancies. To limit the size of the questionnaire, and the associated burden for businesses, leaving this question out may be a serious consideration. In addition, the two sorts of created jobs – those that have been filled in the meantime and those that are still vacant – could be surveyed in sum. The survey question would then become:

- Number of created vacancies during the reference quarter, both filled and unfilled during the quarter

In the next chapter, recommendations are given on approaches that can best be used for data collection on job vacancies, job creation and job destruction in the Slovak Republic.

5 Recommendations and consequences

In this chapter, recommendations are given with respect to data collection methods on job vacancies, job creation and job destruction in the Slovak Republic. These recommendations are based on the information about potential methods for data collection used throughout Europe, as described in Chapter 4, taking notice of the specific national and economic circumstances with regard to data collection on job vacancies, job creation and job destruction that currently exists in the Slovak Republic. The recommendations are described in Section 5.1. Section 5.2 indicates consequences of these recommendations in terms of implementation.

5.1 Recommendations

1. Using a survey or using existing data

The pilot survey on job vacancies of the Statistical Office has shown that adding questions on job vacancies to a question with a different topic, namely employees and wages, may lead to low response rates. This could be caused by the fact that the person who fills out the survey could be an expert on wage levels in the company, but not be well acquainted with the number of job vacancies at the company level. The pilot survey on job vacancies, job creation and job destruction at Trexima has shown that a separate survey could lead to a higher response rate, even though Trexima includes only those companies that are also surveyed for the Average Earnings Information System (AEIS). It is therefore recommended to include questions on job vacancies, job creation and job destruction in a new and separate survey. This survey can be held by either the Statistical Office or by a private party like Trexima.

It is also recommended to make no further use of existing job vacancy data from the Labour Offices. The advantages of these data – relatively low costs to acquire the data, any high frequency of reporting possible, valuable information on individual job vacancies, like the occupations concerned – are largely outweighed by a number of drawbacks. Reporting of job vacancies to the Labour Offices is partial and selective. Not only the true number of job vacancies remains unknown, since businesses do not report all of their job vacancies to the Labour Office, but the reported job vacancies also represent a very biased selection of the true job vacancies, both by sector and skill level (or occupation). Therefore, the data on job vacancies at the Labour Offices do not meet the requirements by Eurostat. An often suggested solution would be to make reporting of job vacancies by businesses to the Labour Office obligatory, but this may prove not to be a very good idea. Firstly, the main task of labour offices is the mediation of job seekers to a suitable job, for which good information on individual job vacancies is an absolute requirement, not a complete picture of all potential job vacancies. Secondly, it is very difficult to enforce the obligation to report all job vacancies to the Labour Office, since it is not always clear whether a job vacancy exists and at what point of time. Thirdly, putting effort in obtaining a complete picture of the number of job vacancies at a company may seriously damage the relationship of a Labour Office with businesses, a relationship that is of prime importance for

finding suitable jobs for job seekers. Obligatory reporting of job vacancies by businesses to the Labour Office is therefore no common practice in Europe.

2. Frequency of the survey

It is recommended to combine two kinds of survey frequencies:

- A brief quarterly survey with questions on the number of job vacancies, the size of job creation and the size of job destruction only, and
- An extensive yearly survey at one of the four yearly quarters and including the quarterly survey, with questions on several attributes of job vacancies as well.

Of the three possibilities as described in Section 2.2 (a brief but frequent survey, an extensive but occasional survey, and a combination of the two surveys), the latter is the most elegant solution that also meets the requirements by Eurostat. Each quarter the brief survey provides good information to see the dynamics in the national labour market, and only once a year the burden of the survey to businesses is high by asking more detailed questions on job vacancy attributes. Both surveys can well be linked by asking the more detailed questions to the businesses that are already included in the brief quarterly survey.

3. Questions on the number of job vacancies, created jobs, destructed jobs

It is recommended to ask the following four questions in the brief quarterly survey:

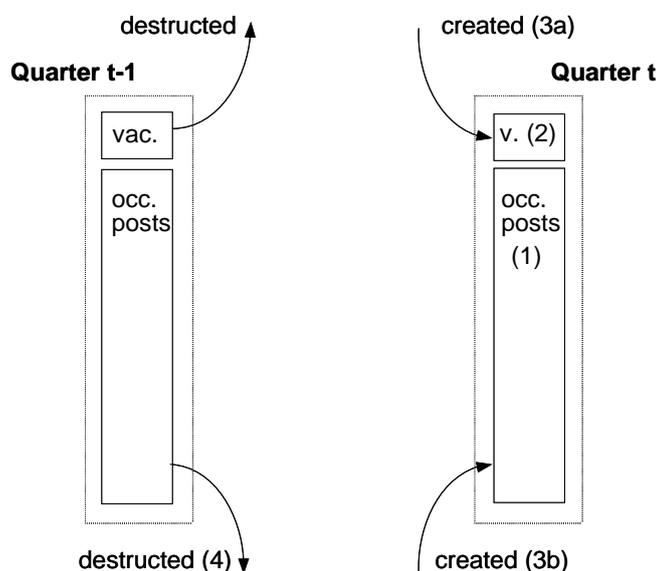
1. Number of occupied posts at the last day of the previous quarter
2. Number of vacancies at the last day of the previous quarter
3. Number of created jobs during the previous quarter, whether already occupied or not
4. Number of destructed jobs during the previous quarter

By asking these four questions only, a minimum amount of information is collected that can be used to derive the total number of job vacancies, created jobs and destructed jobs. Contrary to the current situation with respect to the job vacancy questions in the survey on employees and wages by the Statistical Office, respondents must be urged to complete all of the four recommended questions. Only in that case all the requested information by MoLSAF can be derived, as shown in Figure 5.1.

Let the previous quarter be quarter t . Question 2 asks for the total number of job vacancies at a company by the end of quarter t . Question 3 asks for the number of created jobs during quarter t , which exists of all newly created job vacancies that have not yet been occupied by the end of quarter t (3a in Figure 5.1) and the number of newly created job vacancies that are occupied by the end of quarter t (3b in Figure 5.1). Asking these concepts separately increases the number of questions and may significantly reduce the comprehension of the survey. It is easier to think in terms of newly created job vacancies during a quarter than in terms of occupied jobs that have recently been created on the one hand, and unfilled job vacancies that have recently been created

on the other. Question 4 covers only part of all destroyed jobs, but it is expected to be the major part. Question 4 is relatively easy to ask, in contrast to the number of destroyed non-occupied job vacancies, which concern the job vacancies that existed by the end of quarter t-1, which have not been filled during quarter t and have been destroyed by the end of quarter t. By asking for the much easier to provide number of occupied posts by the end of quarter t – Question 1 – and by comparing this with the stock figures for the number of job vacancies and the number of occupied posts by the end of quarter t-1, the exact number of destroyed jobs can be derived (but only from the second quarterly survey)⁵. An important disadvantage of asking for the number of occupied posts is that population totals on the number of occupied posts that are calculated from this separate survey on job vacancies, job creation and job destruction may be inconsistent with the calculated number of jobs from other major surveys, for example the labour force survey. For reporting purposes, there must therefore be made good agreements between survey managers on this matter.

Figure 5.1 Vacancies, job creation and job destruction



It is recommended to ask these questions in a very simple way and to abstain from giving lengthy definitions. In a mail survey on paper, the questions can be explained briefly in an introduction, for a survey by telephone, the questions can be explained in the letter that is sent to businesses beforehand to announce the telephone interview. To meet the requirements by Eurostat, job vacancies must be defined as posts (newly created, unoccupied or about to become vacant):

- for which the employer is taking active steps to find a suitable candidate from outside the enterprise concerned and is prepared to take more steps; and

⁵ To see this, Figure 5.1 shows that having total numbers of job vacancies and occupied posts by the end of quarter t-1 and t (stocks), and with all flows of created and destroyed (occupied and vacant) jobs known, but one, it is possible to derive that one value.

- which the employer intends to fill either immediately or in the near future.

For created jobs it must hold that these are the result of a change in company structure or an extended production. For destroyed jobs it must hold that these are the result of a change in company structure.

It is very important that responding businesses make a distinction between no existing job vacancies, no created jobs or no destroyed jobs (zero's for an answer) and the impossibility to answer these questions, for whatever reason ('can not answer' for an answer). Both answers can be distinguished from missing answers, which make businesses non-respondents. All of these answers need different ways of processing in the calculation of population totals.

4. Questions on characteristics of job vacancies, created jobs and destroyed jobs

Except for the number of job vacancies, created jobs and destroyed jobs, it is very useful to have information on the precise attributes of these jobs and vacancies. For instance, having information on the type of occupation or required skill levels, the quality of the match between labour demand and labour supply can be derived. However, detailed questions on attributes of jobs and job vacancies puts a high demand on businesses that are surveyed, since these attributes must then be provided for each of the individual job vacancies, created jobs and destroyed jobs. It is therefore recommended to limit questions on attributes to a few attributes and only for job vacancies, in order to keep the burden of filling in the survey limited. Since job creation and job destruction are flow data, that can be more or less derived from stock data on the number of jobs and the number of vacancies, the distribution of attributes among created and destroyed jobs can be derived from the distribution of attributes of occupied posts and job vacancies at two moments in time. The distribution of attributes of occupied posts can often be obtained from existing surveys. That leaves the attributes of job vacancies to be surveyed.

It is recommended to include only the following questions on attributes in the survey on job vacancies. Including these questions meets both the requirements by MoLSAF and by Eurostat (see Chapter 2):

- **Occupation.** This is a requirement by Eurostat and a very useful attribute. Not only for assessing which occupations are (becoming) important in the labour market, but it also enables the derivation of the required educational skills for filling the vacancy. That saves on asking a separate question on educational level, from which the occupation in turn cannot be derived. Occupation can be classified in very different ways. It is recommended to build an informational system in which occupations that are described by the respondent can be classified into the standard international ISCO-88 classification. This informational system needs to be build up during the first number of quarterly surveys.
- **Part-time / full time.** Job vacancies and occupied posts are currently recorded as head counts, not full-time equivalents. Part-time (and temporary) positions are therefore counted the same way as full-time (and permanent) positions. The total number of job vacancies is therefore a very limited indicator of the growth of the economy. When job vacancies are the result of full-time jobs destruction and part-time jobs creation, the

labour market is in transition rather than growing. It is therefore important to obtain information on whether newly created jobs are part-time or full-time jobs. This excludes questions on whether multiple job seekers can fill one vacant job, a desired attribute by MoLSAF. Although in principle a different concept, job sharing does have much overlap with the concept of part-time jobs. The distinction between full-time and part-time work, in terms of the number of working hours, can best be made on the basis of direct answers given by respondents. It is almost impossible to establish a more exact distinction between part-time and full-time work, due to variations in working hours between Member States of the European Union, and between branches of industry.

- **Difficult to fill vacancy.** This attribute of job vacancies is well understood by surveyed businesses and shows some recognition for the problems that businesses face in the labour market. Again, the distinction between difficult and not difficult can best be made on the basis of spontaneous answers given by respondents. Even though the resulting information is subjective, it gives a good impression of the *development* of mismatches in the labour market over time, as *perceived* by businesses.

Apart from this information, for each of the businesses that reports job vacancies, the type of economic activity and the region of location are known from the business register, on the basis of which the businesses are sampled. Together, almost all distinctions with respect to attributes of job vacancies that are desired by MoLSAF are obtained or can be derived. The only exception is the wage level of vacancies, but this is a very difficult question to ask precisely. However, wage levels are highly correlated with occupations (or rather the occupational level), and can thus also be derived by approximation.

Attributes of job vacancies are only asked to businesses that do in fact have job vacancies. The proportion of small businesses that have a positive number of open job vacancies at any given reference date is quite small and may be as low as 3 percent in some of the European countries (Eurostat, 2005). The extra burden of filling in these survey questions is therefore rather limited for small businesses.

5. Sampling stratification

According to Eurostat, the statistical unit relevant for data collection and stratification should be the local business unit. However, the majority of national statistical offices in Europe collect vacancy data from registered enterprises. This is the most convenient method, since in general enterprises are registered rather than local business units.

It is recommended to perform sample stratification for the survey among small businesses by the following three characteristics of businesses:

- Economic activity (NACE classification)
- Region (NUTS classification)
- Business size

Sample stratification based on these business characteristics allows for reliable and detailed indicators on job vacancies, job creation and job destruction by these characteristics, which meets the requirement by Eurostat and has become common practice throughout Europe. The recommendation only means a change in the current stratification practice at the Statistical Office and Trexima by adding region as a source of stratification. This is necessary, since the distribution of economic activities varies across regions in the Slovak Republic. For instance, Bratislava shows many more small businesses with real estate, renting and business activities (branch K according to the NACE classification) than the other regions. The existence of job vacancies in this branch may differ between Bratislava and other regions.

The number of strata that result from stratification depends on the level of detail in the relevant business characteristics. With a NACE classification on a one-digit level (15 categories), using the simple NUTS-2 classification (4 regions) and distinguishing 4 size classes (1, 2 to 4, 5 to 9 and 10 to 19 employees), there are already 240 strata for sampling (if all strata contain businesses). This number is increased when more detailed classifications are used. The level of detail that must be used in practice depends on the expected differences in the number of job vacancies, created jobs and destructed jobs between categories on the one hand, and the size of the resulting strata on the other. For example, businesses with 1 employee may in general have less vacancies than businesses with 2 to 4 employees, which in turn may have less vacancies than businesses with 10 to 19 employees.

The number of businesses from each of the combined economic activity / region / business size stratum that must be included in the survey must be determined by the organisation that sets out the survey. In general, this depends on the total sample size required and the size of the stratum. The larger a stratum, the lower the percentage of businesses that needs to be included in the survey. Small strata must be surveyed exhaustively (full scale survey).

It is recommended to include entrepreneurs in the survey, but only those with at least one employee (for a definition of entrepreneurs, see Box 3.1 in Section 3.1). This is in accordance with the requirements by Eurostat on the one hand and excludes entrepreneurs with the lowest expected number of job vacancies (those with zero employees). The Statistical Office does not have very positive experiences with surveying entrepreneurs and instead prefers to use data from the Labour Offices to estimate the number of job vacancies among entrepreneurs. However, this strategy is strongly discouraged, since the data from the Labour Offices are not necessarily complete or representative, their coverage may be biased by skill level, and there may be problems in an update of the registers, showing vacancies that in reality no longer exist. There is a heavy dependence on political and administrative changes, which may result in biases due to priorities assigned to labour offices. This way, the number of job vacancies at Labour Offices mainly indicates the effort that the Labour Office puts in finding job vacancies for the mediation of job seekers rather than the true number of job vacancies.

About half of the entrepreneurs with information on the number of employees in the business register of the Statistical Office has at least one employee (about 84 thousand entrepreneurs), of which 82 thousand entrepreneurs have more than one, but less than 20 employees. Entrepreneurs thus make up about 63 percent of all businesses in the business register with less than 20 employees. This would suggest including entrepreneurs in the survey on job vacancies, job creation and job destruction among small legal business units. However, entrepreneurs

(physical persons) may be completely different businesses than small legal persons, which would require a separate sampling strategy and a separate survey. This would increase the costs of the survey on job vacancies, job creation and job destruction, with some uncertainty about the significance of the results in terms of the number of job vacancies, created jobs and destroyed jobs among entrepreneurs.

A third strategy is therefore recommended, in which entrepreneurs with one employee or more are first included in the survey among small business (legal persons), and only surveyed separately in subsequent quarters if the number of vacancies by type of economic activity is significantly different from small businesses (legal persons).

The same kind of strategy may be used for profit and non-profit businesses. If the results of the first survey show that profit and non-profit businesses in the same stratum differ in their number of vacancies, than also this characteristic may have to be part of the sampling stratification.

6. Sample size

The total sample size depends on the total number of businesses in the business register, the distribution of businesses among sampling strata and the minimum number of business that are drawn from each of the strata. This has to be determined by the organisation that sets out the survey. For example, strata with only a few businesses (for instance 5 or less) can best be sampled exhaustively (all businesses in the sample), and the larger the stratum, the lower the fraction of businesses that are included in the sample. An indication of the total sample size that would result from this strategy could be set at 5 percent of the register, based on the average in Europe. This would amount to 2500 small businesses (legal persons) and an additional 4000 entrepreneurs with one or more and less than 20 employees. If a separate survey for entrepreneurs is created, the sample size might be 5000 small size firms (as in the current survey of the Statistical Office) and 4000 entrepreneurs (based on the 5 percent average).

7. Sample refreshment

No recommendations are given with respect to the exact size of the sample refreshment each year. However, particular attention must be paid to establishing a longer term contact with businesses that are included in the survey for the first time in order to quickly raise the understanding of concepts and definitions. Also, companies that go out of business during a quarter can best be replaced by another company from the same stratum the next quarter to sustain the survey size.

8. Data adjustments

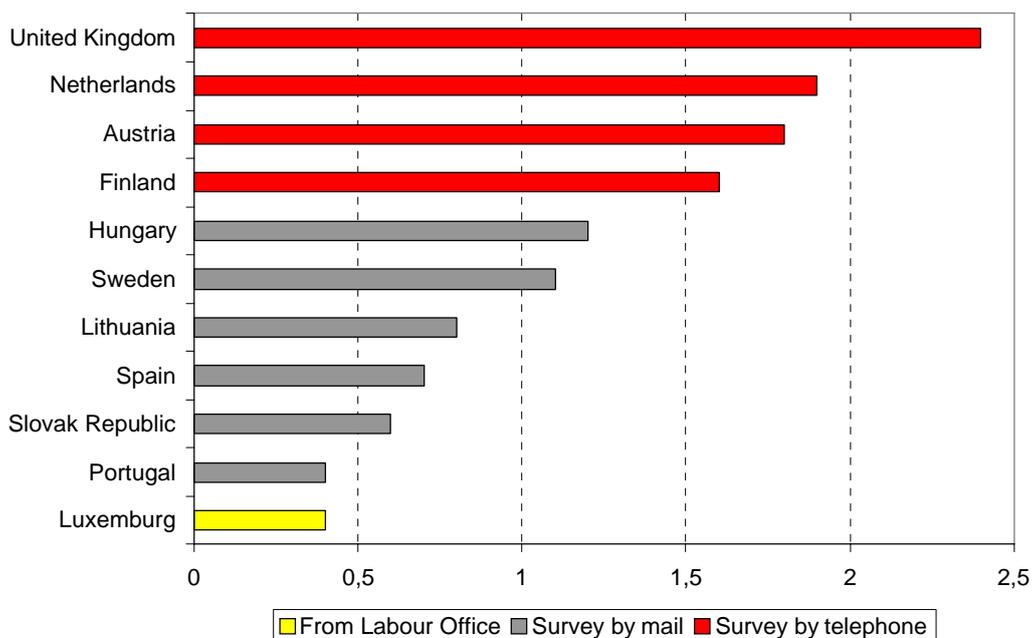
It is recommended to keep the effort in adjusting the collected data on job vacancies, job creation and job destruction limited to the cases that have large influences on the population totals. This way, the delay in reporting results is reduced. Eurostat strongly recommends to reduce the delay in delivering the results to Eurostat to 45 days after the end of the reference period. It means that not all non-respondents or respondents who report odd numbers should be called (again) to

check the data. More important than the level of effort in adjusting the collected data is consistency in adjustments over time, since this results in consistent information over time. Bias in information can never be completely prevented.

9. Survey methods

Most information that has been collected within the current research project points in the direction of telephone interviewing as the survey method with the highest response rate. For example, a comparison of the number of job vacancies that can be based on several survey methods is shown in Figure 5.2. Although differences in the number of job vacancies can be caused by a number of factors and there may also well be a correlation between the economic situation of a country and the applied survey method, the figure still suggests that telephone interviewing results in a higher number of reported job vacancies than written surveys by mail. Eurostat also indicates that telephone interviewing has large advantages over surveys on paper that are send out by mail, for instance the direct contact with respondents, which might improve the mutual understanding of the survey questions and answers, and increase the response rate. A disadvantage of telephone interviewing is that it may be more difficult to find the right person at a company to survey. But this is expected to be a minor problem among small businesses. An announcement of the telephone survey by mail may be of help. One other disadvantage of telephone interviewing can be the costs of interviewing personnel, especially when many detailed questions need to be asked. For that reason, the survey on job vacancies, job creation and job destruction is best be held short. In that case it is recommended to use a new and separate survey by telephone.

Figure 5.2: Number of job vacancies by survey method



For all small businesses (legal persons) in the business register, 72 percent has provided information on the telephone number of the authorized persons. For entrepreneurs with 1 to 20 employees, this is 54 percent of all physical persons. These fractions are large enough for enabling telephone interviewing. A combination of a survey by mail and a survey by phone is also possible. However, this mixed-mode strategy seems to be inferior to a telephone survey.

10. Reporting and the calculation of population totals

It is recommended to use the Horvitz-Thompson estimator for the calculation of population totals. This estimator is simple and effective. Special attention must be paid to the distinction between zero job vacancies, created jobs or destructed jobs, and missing information on job vacancies, created jobs or destructed jobs, to ensure the proper calculation of population totals.

Additional general recommendations:

Apart from the recommendations on methodologies for collecting data on job vacancies, job creation and job destruction in small businesses, some general recommendations on data collection with regard to these variables in the Slovak Republic can be given:

- Keep surveys as simple as possible: consistency of (the quality of) the data collection is more important than precision in the completeness of definitions and the response to surveys.
- Work on a good relationship with businesses that are repeatedly (!) surveyed.
- Put effort in updating business and trade registers from which the statistical units are drawn. This issue may be discussed with the Ministry of Finance that finances the Statistical Office, and with the Tax Office that is able to identify active businesses in the economy. There may be a role for the Ministry of Justice in enforcing the requirement of updated business and trade registers.
- Methodologies on collecting job vacancy data among larger businesses may also be improved. The response rate on job vacancy questions among these larger businesses is also low in surveys from the Statistical Office. Trexima may provide a partial solution to this problem by collecting (and calculating) information on job vacancies, job creation and job destruction among larger businesses, but the focus in this data collection is on the largest businesses (with 250 employees and more).

5.2 Consequences for implementation

Neither the Statistical Office nor Trexima has experience with telephone interviewing, but both have call-teams that are currently being used for reminding units to respond. We have asked both parties to give a cost estimation of implementing the recommended methodologies on data collection as described in the previous section. The Statistical Office has indicated that it does not have any free capacity to start up a new survey on job vacancies. Therefore, it has not provided any cost estimations. In this section a number of consequences of implementing the recommended methodologies are described.

Consequences for implementation

Based on the recommendations in section 5.1 and the costs estimations by Trexima, MoLSAF should now be better able to make decisions on the following issues:

- A new survey on job vacancies, job creation and job destruction is to be held by the Statistical Office or by a private party like Trexima;
- Whether to include entrepreneurs in a survey on small businesses or to create a separate survey for entrepreneurs;
- The sample size;
- Setting out a new survey by telephone or on paper by mail.

Important consequences from the implementation of the recommended methodology include:

- Access to business and trade registers is currently not limited to the Statistical Office, but access by private parties needs to be put down in an agreement to ensure consistency in the job vacancy data collection over time in case a private party is contracted to perform the survey;
- A telephone survey is more successful if it is preceded by a letter from MoLSAF to explain the reason of the survey and to point at the importance of the exercise (e.g. “to enable policy to combat unemployment, thereby reducing economic problems”);
- Some training on the implementation of the recommended methodologies is needed, but no major difficulties are expected. For instance, methods for the calculation of population totals are currently better developed at the Statistical Office than at Trexima, but are widely available in the literature;
- In case a private party is contracted to perform the new survey on job vacancies, job creation and job destruction, European rules may require a European tender procedure;
- Criteria for the selection of a contracted party to perform the survey are – among others – the price of the services, the quality of the services (in terms of consistency of the data collection method, response rate and methodological expertise), reliability (in terms of timely deliverance of data to MoLSAF and potentially Eurostat), and consistency with

data collection methods used among larger businesses and in other European countries. The relative importance of each of these criteria needs to be decided by the contracting party;

- Current data collection on job vacancies in larger businesses at the Statistical Office can be combined with data collection on job vacancies, job creation and job destruction at small businesses within the framework of the recommended new survey. As stated before, there is still plenty of room to improve the response rate on job vacancy questions among larger businesses as well. Since Eurostat requires that all data be delivered to Eurostat within 45 days after the end of the reference quarter, data collection for both small and larger businesses at one organisation has obvious advantages.
- Although Trexima calculates the number of created and destructed jobs in larger businesses based on information from individual jobs and with a focus on businesses with 250 employees and more, these numbers can not be added to the numbers on created and destructed jobs that result from the recommended survey among small businesses. The way in which the data is collected is completely different.
- At Eurostat, the development of methods to collect information on job vacancies is an important issue and well on its way. It is very important to monitor these developments at Eurostat, not only to learn more about optimal methods to collect reliable job vacancy data, but also to keep the data collection method in the Slovak Republic in line with European developments and requirements.

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- European Comission, Eurostat, Directorate F: Social Statistics and Information Society, Unit F-2: Labour market statistics (2005). Eurostat Document F2/JVS/11/2005
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Appendix A: Survey on job vacancy surveys

Welcome to this survey on job vacancy surveys.

With your contribution we are able to get an overview of job vacancy surveys at the statistical agencies in Europe.

Periodical surveys may change over time. Please keep the most recent survey in mind when you answer the questions.

In one of the last questions we will ask you what the plans are for a change in the survey in the nearby future.

GENERAL QUESTIONS ON JOB VACANCY SURVEYS

Question 1: Is the job vacancy survey a separate survey at your agency?

- No, integrated in another survey
- Yes, a separate survey
- No survey with questions on job vacancies exists at my agency (-> go to question 22)

In the following, when we mention the term job vacancy survey, we mean those questions in the survey that handle job vacancy questions.

In some countries two kinds of job vacancy surveys are held. One quarterly and one annually with some extra questions.

Question 2: How often are surveys held in your country? *(multiple answers possible)*

- Quarterly
- Annually
- Two-yearly
- Other frequency:

Question 3: What are the questions asked in your job vacancy surveys? *(multiple answers possible)*

If necessary: please make a distinction between the frequent survey (first column) and the less frequent survey (second column)

1	2	
<input type="checkbox"/>	<input type="checkbox"/>	Number of vacancies on a specific date in the reference quarter (e.g. the last day)
<input type="checkbox"/>	<input type="checkbox"/>	Number of vacancies <i>occupied</i> during the reference quarter
<input type="checkbox"/>	<input type="checkbox"/>	Number of <i>created</i> vacancies during the reference quarter
<input type="checkbox"/>	<input type="checkbox"/>	Number of <i>destructured non-occupied</i> vacancies during the reference quarter
<input type="checkbox"/>	<input type="checkbox"/>	Location of the vacant job
<input type="checkbox"/>	<input type="checkbox"/>	Occupation
<input type="checkbox"/>	<input type="checkbox"/>	Part-time/ full-time job
<input type="checkbox"/>	<input type="checkbox"/>	Whether the job is shared by more people
<input type="checkbox"/>	<input type="checkbox"/>	Number of people to manage in job
<input type="checkbox"/>	<input type="checkbox"/>	Required educational level
<input type="checkbox"/>	<input type="checkbox"/>	Suitability for school leavers
<input type="checkbox"/>	<input type="checkbox"/>	Duration that vacancy has been unfilled
<input type="checkbox"/>	<input type="checkbox"/>	Advertisements made
<input type="checkbox"/>	<input type="checkbox"/>	Registration at Labour Offices
<input type="checkbox"/>	<input type="checkbox"/>	Indication whether it is hard to fill the job vacancy
<input type="checkbox"/>	<input type="checkbox"/>	Other: <input style="width: 200px;" type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>	Other: <input style="width: 200px;" type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>	Other: <input style="width: 200px;" type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>	Other: <input style="width: 200px;" type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>	Other: <input style="width: 200px;" type="text"/>

Question 4: Can you give an indication of the number of firms that are included in the survey (original sample size)?

If necessary: please make a distinction between the frequent survey (first column) and the less frequent survey (second column)

Entrepreneurs (self-employed persons, e.g. sole traders) are the smallest firms possible.

	1	2
Entrepreneurs (0 employees):	<input type="text"/>	<input type="text"/>
Small size firms (1-20 employees):	<input type="text"/>	<input type="text"/>
Larger firms (? 20 employees):	<input type="text"/>	<input type="text"/>

Question 5: Can you describe in a few words how this sample is refreshed (for example: every first quarter 20% of all firms in sample is refreshed)

Question 6: Can you give an indication of the response rate of the job vacancy survey?

If necessary: please make a distinction between the frequent survey (first column) and the less frequent survey (second column)

	1	2
Percentage entrepreneurs (0 employees):	<input type="text"/>	<input type="text"/>
Percentage small size firms (1-20 employees):	<input type="text"/>	<input type="text"/>
Percentage larger firms (? 20 employees):	<input type="text"/>	<input type="text"/>

Question 7: Are you satisfied with the response rates?

If necessary: please make a distinction between the frequent survey (first column) and the less frequent survey (second column)

1	2	
<input type="checkbox"/>	<input type="checkbox"/>	No
<input type="checkbox"/>	<input type="checkbox"/>	Yes

In most countries the sample is taken from a business register and/or data from other surveys and administrative sources. We call these sources of firms in your country in short "register".

Question 8: Can you give an estimation of the number of firms in the register?

Entrepreneurs (0 employees):	<input type="text"/>	<input type="checkbox"/> No entrepreneurs in register (skip question 9)
Small size firms (1-20 employees):	<input type="text"/>	
Larger firms (? 20 employees):	<input type="text"/>	

Question 9: Are you satisfied with the register for entrepreneurs?

No, it is not up-to-date

No, for other reason:

Yes

Question 10: On which characteristics is sampling of the firms from the register based? *(multiple answers possible)*

If necessary: please make a distinction between the frequent survey (first column) and the less frequent survey (second column)

1	2	
<input type="checkbox"/>	<input type="checkbox"/>	Region
<input type="checkbox"/>	<input type="checkbox"/>	Economic activities
<input type="checkbox"/>	<input type="checkbox"/>	Number of employees
<input type="checkbox"/>	<input type="checkbox"/>	Size of turnover
<input type="checkbox"/>	<input type="checkbox"/>	Other: <input style="width: 100%;" type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>	Other: <input style="width: 100%;" type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>	Other: <input style="width: 100%;" type="text"/>

After the survey is held, the gathered information is checked for plausability and consistency. If necessary the data are adjusted.

Question 11: What is the focus when you adjust the data?

- No adjustments are made
- Selective adjustments on data that have large influence on the results
- Adjustments on all data if possible

In some countries they make use of other data to adjust the job vacancy data, e.g. data from Labour Offices.

Question 12: Do you make use of other data to adjust the job vacancy data? *(multiple answers possible)*

- No
- Yes, of historical data gathered by previous job vacancy surveys
- Yes, of data from other labour force surveys at your statistical agency
- Yes, of data from Labour Offices
- Yes, of other data:

Question 13: Is it obligatory for firms in your country to register job vacancies at Labour Offices?

- No
- Yes
- I don't know

ENTREPRENEURS & SMALL SIZE FIRMS

As mentioned before: entrepreneurs (self-employed persons, e.g. sole traders) are the smallest businesses possible.

We define small size firms as firms with less than 20 employees.

Question 14: Can you give any advice on how to collect data on job vacancies among entrepreneurs & small size firms in particular?

Question 15: How are entrepreneurs & small size firms surveyed? (*multiple answers possible*)

If necessary: please make a distinction between the frequent survey (first column) and the less frequent survey (second column)

1	2	
<input type="checkbox"/>	<input type="checkbox"/>	Written survey by mail
<input type="checkbox"/>	<input type="checkbox"/>	Written survey by fax
<input type="checkbox"/>	<input type="checkbox"/>	Contact by telephone: firms are called
<input type="checkbox"/>	<input type="checkbox"/>	Telephone data entry system: firms can call a special number
<input type="checkbox"/>	<input type="checkbox"/>	By telephone in another way: <input type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>	Electronic survey by email
<input type="checkbox"/>	<input type="checkbox"/>	Electronic survey through the Internet
<input type="checkbox"/>	<input type="checkbox"/>	Electronic survey responded by (floppy) disc
<input type="checkbox"/>	<input type="checkbox"/>	Electronic survey: other way: <input type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>	Other: <input type="text"/>
<input type="checkbox"/>	<input type="checkbox"/>	Not surveyed

Question 16: If more than one way is used: indicate which percentage of the entrepreneurs & small size firms makes use of the corresponding way

If necessary: please make a distinction between the frequent survey (first column) and the less frequent survey (second column)

1	2	
<input type="text"/>	<input type="text"/>	Written survey by mail
<input type="text"/>	<input type="text"/>	Written survey by fax
<input type="text"/>	<input type="text"/>	Contact by telephone: firms are called
<input type="text"/>	<input type="text"/>	Telephone data entry system: firms can call a special number
<input type="text"/>	<input type="text"/>	By telephone in another way
<input type="text"/>	<input type="text"/>	Electronic survey by email
<input type="text"/>	<input type="text"/>	Electronic survey through the Internet
<input type="text"/>	<input type="text"/>	Electronic survey responded by (floppy) disc
<input type="text"/>	<input type="text"/>	Electronic survey: other way
<input type="text"/>	<input type="text"/>	Other

Question 17: How do you think you would get the highest response rate with good quality data for entrepreneurs & small size firms?

<input type="checkbox"/>	Written survey by mail
<input type="checkbox"/>	Written survey by fax
<input type="checkbox"/>	Contact by telephone: firms are called
<input type="checkbox"/>	Telephone data entry system: firms can call a special number
<input type="checkbox"/>	By telephone in another way
<input type="checkbox"/>	Electronic survey by email
<input type="checkbox"/>	Electronic survey through the Internet
<input type="checkbox"/>	Electronic survey responded by (floppy) disc
<input type="checkbox"/>	Electronic survey: other way
<input type="checkbox"/>	Other

Question 18: If the way you survey the entrepreneurs & small size firms does not correspond with the way to get the highest response rate: what is the reason for this difference? (*multiple answers possible*)

- Lack of money
- Tradition: we are using the current system for some time
- Our current system is in line with national and/or international standards
- It is difficult to implement the best response system
- Other:

Question 19: If entrepreneurs are *not* surveyed in your country, what is the reason for that? (*multiple answers possible*)

- They are not properly registered in the business register
- It is impossible to collect a representative sample of the entrepreneurs
- There are too many entrepreneurs to contact
- Their response rate is too low
- They hardly have any vacancies
- Other:
- Other:

Question 20: If entrepreneurs are *not* surveyed in your country, how do you estimate the number of vacancies in these firms?

- Estimations from the number of vacancies in larger firms
- Estimations from other data, namely:
- Other:

Question 21: How do you overall consider the representativeness and reliability of job vacancy data from small-size businesses and entrepreneurs in your country?

FINAL QUESTIONS

Question 22: Do you have plans for a change in the survey in the nearby future?

Question 23: Are data collected on job creation and/or job destruction at your agency?

- No (-> go to question 25)
- Yes

Question 24: If these data are collected, do you know an email address of your colleague who deals with the data?

I deal with them myself

Question 25: Do you have any final remarks?

Thank you very much for filling in this survey. Would you please return it to d.degraaf@seo.nl?

When we have gathered the information of the other countries as well, we will send you an overview of the results.