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## **The Aggregate National Supply of Job Openings and Firms' Procedures for Filling Positions**

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The IAB is the research division of the German Bundesanstalt für Arbeit where scientists of different economic and social science disciplines work. The range of research topics can be characterized briefly as follows:

- observation of and forecasts for the German labour market
- labour market statistics
- labour market theory and policy
- evaluation of employment programmes
- regional and international labour markets
- occupation sociology
- research in skills and qualifications
- technological development and the labour market
- business and personnel management

# **The Aggregate National Supply of Job Openings and Firms' Procedures for Filling Positions**

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## 1. Introduction

The demand side of the labour market in Germany was long neglected with regard to statistics on and analysis of uncovered labour demand, placing diagnostic and prognostic estimates on shaky ground to a great extent. Research efforts to shed light on this “blind spot” were particularly called for during phases when the economy was booming, as companies complained about a labour shortage, particularly a lack of skilled workers. There were frequent complaints about supposed or actual structural discrepancies on the labour market, functional weaknesses, and a lack of transparency.

Statistics on job openings registered with the Labour Offices were increasingly criticised because they only partially reflect uncovered demand on the labour market. The calls for complete, up-to-date statistical documentation of *total* uncovered requirements for labour and the structure of such demand became increasingly audible. A “reporting system on the aggregate national supply of jobs” was needed.

The Institute for Employment research (IAB – Institut für Arbeitsmarkt- und Berufsforschung) followed up on those suggestions and in 1989 conducted the first representative survey of establishments with the main objective of combining information on unregistered openings with that of the openings registered by Bundesanstalt für Arbeit (BA) in order to determine the aggregate national supply of job openings<sup>1</sup>. The survey has been conducted during the fourth quarter of every year since that time. It was expanded to include the new German *Länder* in 1992. The early surveys were conducted for BA by Gesellschaft für Konsumforschung (GfK) of Nuremberg, as well as ifo Institut für Wirtschaftsforschung of Munich. Economix Research & Consulting of Munich has surveyed the companies since 2000.

Efforts to conduct a quarterly survey of the aggregate national supply of jobs, organised by Eurostat, are currently underway at the European Union (EU). Information available so far on this complex of questions is very different in the participating countries. Some countries (such as Spain, Netherlands, and Germany) are currently conducting different types of surveys while others (such as Great Britain) are still in the introductory phase, and still others are not yet doing any studies.

## 2. Theoretical basis and practical feasibility of the study

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<sup>1</sup> Companies in Germany are not required to register their unfilled positions with the Labour Office.

Compensatory processes on the labour market are considerably influenced by the individual supply and demand situation. The scope of the labour supply at the aggregate national level has been determined for many years using the IAB concept for potential labour force. The covered demand for labour at the aggregate national level is measured by the number of employed persons. Uncovered demand comprises three components: registered job openings, unregistered job openings, and latent job openings. While the first two components represent the counterpart to the registered unemployed and the active hidden unemployment of the potential labour force (see Fig. 1), the last one as “passive hidden job openings” is to some extent the counterpart of the passive hidden unemployment of the labour supply, because the companies will not actively offer and fill these positions, unless an appropriate applicant was available<sup>2</sup>.

Information going beyond current statistics on registered positions, including a periodic “reporting system on aggregate national labour requirements”, can be obtained only from companies and administrations, because they actually decide on the deployment of technical capacities and labour. Therefore, broad-based, representative, national establishment surveys were conducted.

The point of departure of the survey was the staffing requirements of enterprises and administrations. Those requirements can mean two things from the viewpoint of the individual company or administration:

- What are the “hiring requirements”? What is the total number of all planned hires needed for a given time period in light of anticipated departures or departures planned by the company itself (fluctuation, migration, illness, periods without work, etc.) in order to reach or maintain intended staffing levels? How many more (or fewer) employees is that compared with current levels? This would provide information about *net staffing requirements*.
- What staffing level is the company seeking, either now or for a foreseeable period, in order to provide the expected production/performance output, taking into account the trend

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<sup>2</sup> The analogy to a hidden reserve on the labour supply side (potential employed workers) initially applies only formally to the term itself. In terms of content, the concept of potential employed workers presupposes full employment conditions. In contrast, economic conditions at the time of the respective survey and requirements for applicants from the company’s viewpoint apply to latent job openings. To that extent, the two categories are on different levels of the consideration.

for productivity and working time? These *gross staffing requirements* reflect the total volume of movement. They are also of interest and indispensable in several regards, for example for productivity calculations.

However, it must be remembered that the sum of all individual company demand planning is not identical to the development potential of entire sectors or even the economy as a whole. The aggregates derived from such individual company data tend to be too high, because the planned staffing increases in expanding companies cannot simply be added up and offset against job losses as these may occur precisely as a consequence of such expansion. However, it is also possible to underestimate aggregate national staffing requirements because the formation of new companies naturally cannot be taken into account.

The decision to use company surveys does imply limitations to the quality and quantity of the information from the outset:

- The list of questions must be kept within narrow limits to encourage sufficient participation by companies. Specific investigations cannot be expected.
- Only limited recall can be assumed in the case of questions about events in the past.
- Experience indicates that the ability and willingness of respondents to predict company trends is limited.
- With regard to “qualitative” questions and assessments, it must be remembered that answers can sometimes be influenced by the current public debate.
- Judgements by the companies concerning problems in filling positions represent only one side of the coin. An overall picture cannot be obtained unless job seekers are also included.
- With regard to the case numbers required here, no face-to-face interview but only a postal survey was justifiable, both for cost reasons and due to the time spent by companies.
- For cost reasons, the number of included companies must be limited. That in turn reduces the scope for analysis, for example, from the sectoral and regional viewpoint.

It is fundamentally impossible to use company surveys to determine precisely how many workers in the individual economic sectors and regions or at the national level are being sought beyond the individual existing level of employment at the time of a survey. However, this method can be used to obtain indicators showing the development and the different intensities of demand in the economic sectors and regions and during certain time periods and can provide sufficiently reliable information about the aggregate national supply of job openings for participants in the labour market.

### 3. Objectives and content of the survey

The “aggregate national supply of job openings” or “the total number of job openings” takes centre stage in the public debate, independent of whether they are registered with the Labour Offices or not. What does this mean, and what information is truly being sought?

First, a time limit is needed. For example, a distinction should be made between positions to be filled immediately (job openings) and positions that have already been offered but are not to be filled until later. That is because only the job openings can be compared with the number of registered unemployed (who are looking for a job immediately and so must be available). At the same time, positions to be filled later for which companies are looking for employees at the time of the survey also count as part of the aggregate national job supply at this point in time.

The survey must also find out about possible functional weaknesses in the labour market, in order to identify starting points for any targeted efforts to promote the balance of supply and demand on the labour market. The following information is extremely important to measure the efficiency of the labour market:

- How long it takes to fill job openings
- The type of problems involved and the extent to which they affect the filling of positions
- The extent to which it is impossible to fill job openings and the main reason for this
- How companies respond to such problems
- Whether there are external restraints on company activities and what types of restraint are involved (indicators for problems in filling positions)

In the discussion about labour requirements, manpower shortages, and problems in filling positions, the question also arises of whether further potential remains for employment and growth and what can be done to tap any existing potential. Problems in filling positions due to intersectoral and intrasectoral structural transformation in subsectors of the economy – although to differing extents – may exist even in periods of overall underemployment and weak demand for labour. Therefore, the survey also asked about the following:

- The extent to which a company’s activities are affected by external reasons
- What kind of reasons were generally involved

A distinction was made among external reasons: lack of orders or of appropriate workers, delivery problems with upstream suppliers, and (for companies in eastern Germany) financing problems, ownership issues, and a lack of infrastructure.

The companies could choose from any of the following responses regarding those restrictions: overtime/special shifts, temporary work/part-time work, hiring of additional temporary staff,

streamlining, extending delivery dates/placing orders with subcontractors, not accepting orders, and an open category. This information on company measures and strategies can be compressed into indicators for the strains between supply and demand on the labour market.

To learn more about the extent of impediments to company activities, the companies were asked whether they would have hired more workers over the last 12 months if a sufficient number of people with the desired qualifications had been available and, if so, how many. This question is asked of all companies, but primarily involves companies experiencing a labour shortage. The question covers workers who would have been hired permanently and/or for a shorter time (seasonal or temporary staff), as well as the length of time they were employed over the past year. This information can ultimately be used to determine a retrospective *additional employment potential* that might be seen as an indicator for the uncovered aggregate national demand for labour. The absolute size of the additional employment potential depends on the economic situation. However, a certain base exists in the form of job openings coming about in expanding companies due to frictional and structural reasons.

The *time structure of position filling processes* can also offer valuable clues on the efficiency of the labour market. The survey is in part based on the most recently filled position, with a distinction as to various categories. The process involved in filling a position is most thoroughly described as *search time in the broad sense*. This category indicates how much time – in calendar days – passed before a job opening could be filled. Important decisions are taken during that period, including the time point of the decision in favour of a certain candidate (indicated by the date on which the employment contract is signed) and the earliest time point when the position is to be filled (the date when the employee is to start work).

By comparing those time points with the beginning of the search for candidates or the time it ends because the employee begins work, the following time categories can be derived: *search time in the narrow sense*, *position filling time*, and *job opening time*. In terms of arithmetic, the search time in the broad sense is the sum of the search time in the narrow sense and the position filling time (see Fig. 2).

The human resource policy and the business administration interests of the company are aimed at keeping those time periods as short as possible to minimise friction costs. An indicator for the success of those efforts is the proportion of job opening time to search time in the broad sense (the relative length of the job opening). The smaller the value of that indicator, the lower the friction costs of a new hire probably are.

In concrete individual cases, the time period needed to recruit applicants and fill a position depends on the features of the position to be filled (required qualifications, job requirements re-



lated to time and pay, etc.). But the availability and the profiles of the job seekers also play an important role (such as age and qualifications).

Another area of emphasis in the survey is the *channels used in the search* for an appropriate candidate to fill a job opening. A distinction is made among the following channels: individual classified advertisements, job offers on the Internet (included in the survey in the year 2000 for the first time as a new way to recruit applicants), response to classified ads of job seekers, Labour Office (including the self-information systems for employers and employees – AIS and SIS), private employment agency, notice posted at the gates of the business, internal job opening notice, selection from unsolicited applications/list of candidates, and through a company's own employees.

A separate block of questions in the survey was devoted to companies' acceptance and use of BA's SIS information system (starting in 1992 in western Germany and 1994 in eastern Germany). SIS is a computer-supported self-information system that compiles lists of job openings for job seekers. It was progressively introduced into the Labour Offices starting in 1991 and is now available to the public on the Internet. The number of positions registered with the Labour Office rose when the SIS was introduced.

Surveys in the *New German Länder* were supplemented to include questions on labour market policies. Due to the difficult situation on the labour market, a series of labour market policy programmes had been implemented there on a massive scale, and new instruments had also been developed. So additional questions were asked about job creation schemes known as *ABM* and structural adaptation schemes known as *SAM* (previously § 249 h AFG [German Promotion of Employment Act]) in order to find out about the companies' views of those instruments.

The survey in 2000 also asked companies about marginal work (*geringfügige Beschäftigung*). The aim was to query the companies to determine their responses to the possible effects of the revised law on marginal work ("DM 630 jobs"). Finally, special questions about the effects of the newly introduced legal entitlements to part-time work were included in the 2001 survey. As an example the questionnaire for the 2001 survey is attached as Fig. 3.

#### **4. Survey design**

The written surveys were conducted in two parts. The primary purpose of the first part was to obtain an overview of the aggregate national supply of jobs broken down by economic sectors, company sizes, degrees of qualification, and regions, as well as to determine the causes

of and responses to obstacles to production (main questionnaire). The second part is intended to describe the extent and type of problems incurred when filling positions, as well as the steps involved in the position filling process (supplementary questionnaire). The supplementary surveys are sent to companies that have hired employees in the past 12 months.

The representative samples of companies and administrations from all economic sectors (ranked by company size, which is based on the number of employees) are taken from the BA's establishment file on employees required to contribute to the social security insurance scheme in the form of a ranked random selection. This was usually around 14,000 companies each in western and eastern Germany over the past few years of the survey. The disproportionate random sample in the eastern part of the country is justified by the upheaval in the 1990s. The average return rates were around 30% in western Germany and around 33% in eastern Germany. The surveys were initially formatted differently in eastern and western Germany, but they have been kept as uniform as possible over the past few years. The supplementary questionnaire was identical in the 2000 surveys.

The structures of the companies participating in the surveys differ from the basic population with regard to important features such as company size, sector, and number or qualification structure of the registered job openings. That results from the disproportionate choice and the specific response behaviour of the companies that were contacted. A weighting/extrapolation procedure is used to offset this for the most part, thereby ensuring that the results are representative.

The weighting/extrapolation is based on three distributions:

- Companies according to 22 economic sectors and 6 company sizes (company concept)
- Employees required to contribute to the social security scheme according to 22 economic sectors and 6 company sizes (employee concept)
- Registered available positions according to 22 economic sectors

For presentation of the results, the 22 economic sectors are combined into 15. The extrapolation considers both the statistics on the registered positions and those on employees required to contribute to the social security scheme. That ensures that the results of the survey on the basis of the ranked random sample correspond to the distribution of registered job openings by economic sector and the distribution of companies or employees in the basic population. The specific extrapolation factors are determined by an iterative adjustment procedure to optimise the weighting according to both criteria. The result is benchmark figures that correspond to the basic population.

The data for the supplementary questionnaire are also extrapolated according to the company and employment concept by using the weights of the main questionnaire. In addition, weighting with the number of new hires by the companies during the last 12 months is done to obtain representative statements for the total of all hires during that period.

## **5. Conclusions**

The results confirm the widespread conjecture that only a minor portion of all available job openings listed in the surveys are registered with the Labour Offices. They show details of the trend for and structure of the unregistered positions. The share of job openings registered with the Labour Offices is about one-third of total supply. There was an upward trend during the observation period, but the year over year development changes anti-cyclically. Job openings that need to be filled immediately are registered more frequently than positions to be filled later. In eastern Germany, the Labour Offices are noticeably more involved in the efforts of companies/administrations to recruit staff than they are in the west. This is also due to the more widespread subsidised employment in the east; jobs for the ABM and SAM are filled exclusively through the Labour Office.

In western Germany the number of vacancies, the barriers to economic activity, and problems in filling positions primarily reflect the economic trend during the data collection period. An economic upturn regularly increases the number of jobs offered by companies, while a weaker economy reduces it. The trend for eastern Germany has been so strongly characterised by the problems of the transformation process involved in the change of systems that economic ups and downs are not yet visible.

On average between 10% and 20% of companies in western Germany were looking for staff during the survey period. A lower level of search activity was observed in years with weak economic trends, such as 1993 or 1997-98, while it was higher in years that experienced up-swings, such as 1990-91 and 1999-2000. The search activity of companies in eastern Germany was higher in the mid-1990s, but has been lower than the level in western Germany since 1999.

Only one-quarter of companies in western Germany reported external restrictions to economic activity at the time of the “reunification boom” in 1990-91, but that portion rose to 40% in 1993 (a recession year) and dropped to one-third in subsequent years. During the years of increasing prosperity, the main barriers were considered to be on the supply side, i.e., there were complaints about too few suitable workers. In contrast, the demand side of the product markets – in other words, too few orders – took centre stage in years of economic slowdown.

Statements about barriers to activity were at about the same level in eastern Germany as in western Germany. However, the primary problem during the *entire* observation period was considered to be the lack of orders. In autumn 2000, every seventh company in the west but only every seventeenth in the east (also) mentioned a lack of workers as a reason for restricted economic activities.

The longer-term view of the supply of job openings by qualification groups in western Germany shows a declining trend in the demand for semi-skilled and unskilled workers, while the demand for white collar workers in qualified jobs is increasing. In contrast, the proportion of skilled workers has remained quite stable in spite of annual fluctuations. Those trends are not as marked in the *New German Länder*, based on the economy as a whole.

All in all companies are relatively unaffected by a labour shortage. Those who are use a whole package of measures. This applies equally to companies in the eastern and western parts of the country. The preferred business management strategies to compensate for a lack of staff are overtime and special shifts. However, a large proportion of companies – fewer in the east than in the west – also refuse orders or the provision of services, although this is primarily designated as “less strong”. Other business management methods such as streamlining, hiring temporary employees, placing orders with subcontractors, and the like are used less frequently.

## **6. Final remarks**

The IAB survey is initially a supplement to the BA’s business statistics. It is used to determine the scope and structure of the aggregate national supply of job openings. It also indicates problems encountered by companies in filling positions, highlights company responses to such problems and provides additional knowledge related to barriers to economic activities of companies, particularly due to a labour shortage. The determination of time structures when filling positions provides greater insight into the processes involved in recruitment of staff by companies. The role of the Labour Offices’ services in filling positions is also shown. That also makes the results of the annual survey relevant for decisions related to business policy of the BA. The need for current information is met by changing the questionnaire to supplement the substantially unchanged set of key questions. All of that helps to increase transparency on the demand side of the labour market. A portion of the indicators, such as those that pinpoint difficulties experienced by the companies in filling positions or reasons for unsuccessful efforts to recruit appropriate candidates, require a broader and deeper analysis of the survey material. The same applies to a regionally differentiated analysis, although that is limited by the sample size.

There are also efforts and attempts at the level of the European Union to collect information on the aggregate national supply of job openings. For example, the EU Commission is considering having all EU Member States conduct quarterly job opening surveys. The survey concept suggested by Eurostat is to a great extent based on the concept of the annual IAB survey. In 2001, Eurostat asked the IAB to conduct a feasibility study with respect to enrichment of content and the periodicity of the current survey.

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## 8. Annex

Figure 1

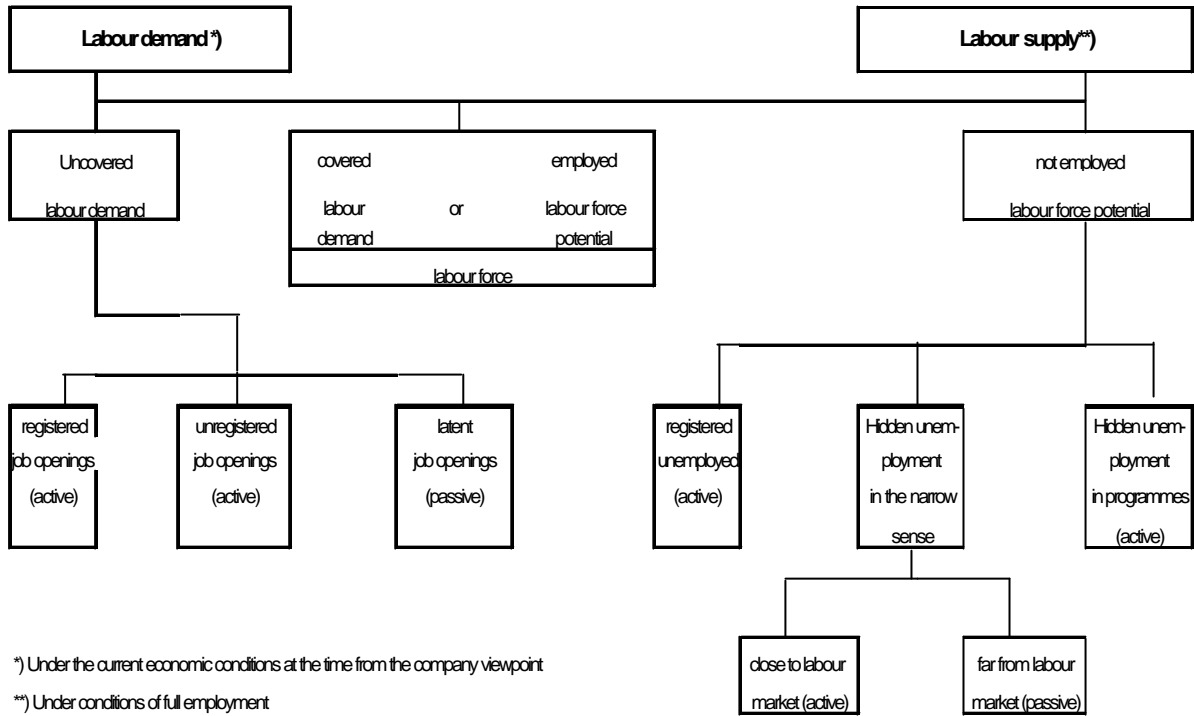


Figure 2

**Time structure of firms' procedures for filling position**

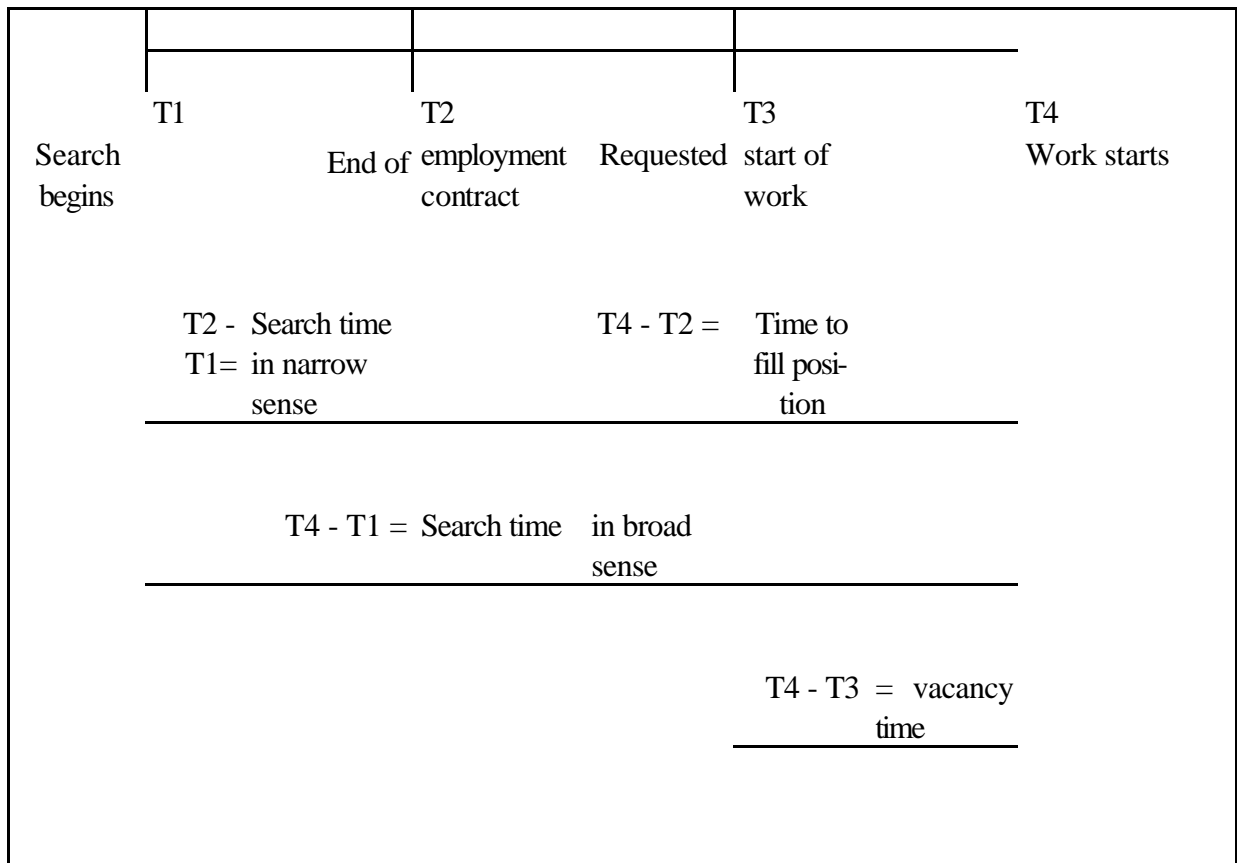


Figure 3

**Main focus of the content of the IAB survey on the aggregate national supply of job openings in 2000**

1. Scope and structure of the total job openings
  - a) Vacancies (positions to be filled without delay)
  - b) Positions to be filled later according to qualification groups, replacement and additional requirements, job openings according to the most important occupations; registration with the Labour Offices
  
2. Problems in filling job openings (involves questions concerning the efficiency of the labour market)
  - a) Global indicators on problems in filling job openings
    - Barriers to production/activities: Degree affected and reasons
    - Additional employment potential: extent of barriers



Latent demand for labour (passive “hidden” job openings)

- b) Problems in filling positions and the trend for employment expanding, stagnating, shrinking companies, new companies
- c) Time spent filling positions
- d) Company responses to labour shortage
- e) Difficulties in filling job openings
- f) Unsuccessful search for suitable employees

### 3. Special surveys

Use of computer-supported job information services (SIS) by companies/administrations

Job Creation Measures (ABM and SAM) in eastern Germany

Spread of marginal employment (effect of revision of the law in 1999)

### 4. Features of the last hire

- a) Channels used to recruit candidates
- b) Age, gender, qualification of new hire
- c) Working hours and conditions, type of employment contract, reasons for hiring
- d) Reasons for unsuccessful search, company response to unsuccessful search



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