

# The Netherlands

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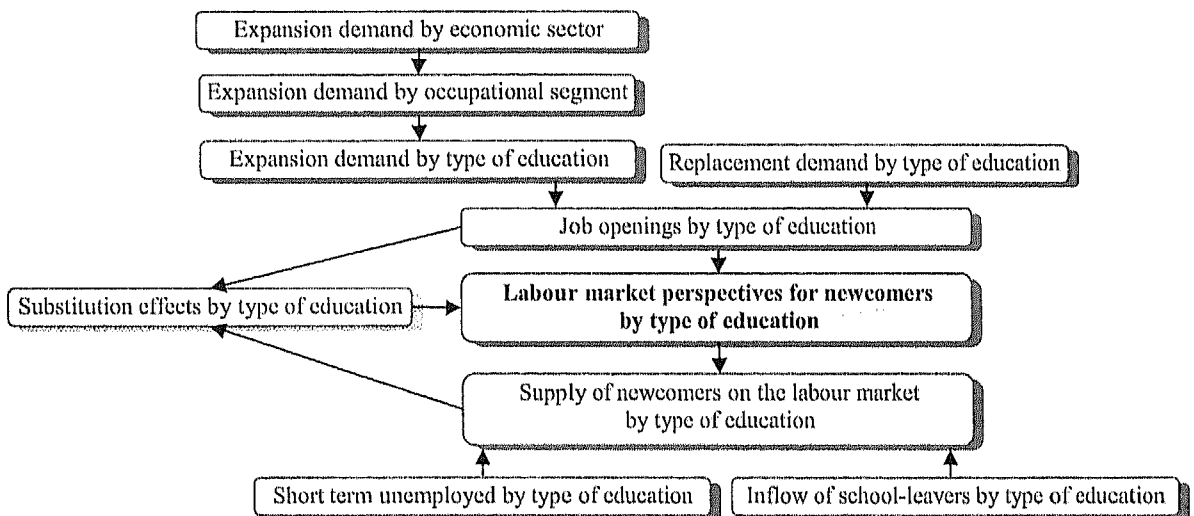
**Question 1:** How are skills defined in skill needs forecasting approaches in your country?

Skills are defined by more than 100 different occupational groups and types of education. The occupational groups are in some models (for expansion and replacement demand) aggregated to 43 occupational segments or 27 educational categories. The forecasting results are often presented by using classifications of 11 occupational classes or 27 educational categories.

These classifications cover the whole spectrum of skills on the labour market and are compatible with the classifications of Statistics Netherlands (CBS – *Centraal Bureau voor de Statistiek*) and, therefore, with ISCED and ISCO.

**Question 2:** Which main method is currently used for mid/long-term forecasting of skill needs at macroeconomic level in your country?

Figure 1: ROA's labour-market forecasting model



Source: De Grip, Borghans and Smits, 1998.

Figure 1 gives a schematic review of the labour-market forecasting model. One flow volume important for the demand side of the labour market is expansion demand, which reflects the movement in employment levels in a particular occupational class or for a particular type of education. Forecasts of expansion demand are based on employment level forecasts for economic sectors produced by the CPB Netherlands Bureau for Economic Policy Analysis. Because particular occupational classes within an economic sector grow more rapidly than others, ROA translates these changes in economic sectors into expansion demand per occupational class. Then the implications of predicted growth in various occupational classes for expansion demand for each type of education are determined. Allowance is made at this point for any shifts occurring in the educational structure of occupational classes (including upgrading within occupational classes). Expansion demand per type of education refers to the number of people with a particular educational background that employers would like to be able to employ. The

actual change in employment levels per type of education generally differs with this because changes on the supply side affect relative scarcities and lead to substitution.

Labour-market demand consists not only of expansion but also of replacement demand, which arises when workers retire, leave the labour force under an early retirement scheme or because of a disability, withdraw from the labour market temporarily, or switch to another occupation, etc. However, replacement demand only arises if the departure of an employee actually leads to a vacancy for a new entrant. If the departure of a worker is taken as an opportunity to cut employment levels, no replacement demand results. These flows out of the labour market are irrelevant for newcomers.

Thus, only parts of the flow leaving the market create replacement demand. There is also an important difference between replacement demand per occupational class and per type of education, because occupational mobility has an influence on replacement demand per occupational class, but not on replacement demand per type of education. Switching occupations has no effect on the educational structure of employment. However, when workers complete part-time studies for a higher level or different qualification, this represents an outflow of workers to another educational category (type of education). In these cases, replacement demand does arise in the educational category under which a worker's previous education was counted.

If employment levels rise, expansion demand and replacement demand together compose the job openings for newcomers to the labour market. If they fall, job openings can only arise because of replacement demand.

To be able to show future labour-market prospects for newcomers to the labour market, we have to compare job openings for newcomers with the expected supply of newcomers. The latter consists of the future flow of school-leavers entering the labour market and the outflow from post-initial training courses during the forecast period, plus the supply of short-term unemployed persons waiting to enter the market at the start of this period. It is assumed the long-term unemployed, who have been looking for work for longer than a year, no longer constitute serious competition for school-leavers.

An indication of future labour-market prospects for newcomers to the labour market is calculated, for each type of education, by comparing the expected flows of demand and supply with each other. This indicator shows any expected discrepancy between demand and supply for each type of education. Excess supply does not necessarily imply the group in question will automatically become unemployed, or a supply shortfall does not automatically lead to unfilled vacancies. In practice, school-leavers with a type of education for which supply exceeds demand suffer from a worsening of their position. They are more likely to have to accept work below their level, get less favourable contracts, be paid less and more likely to work part-time involuntarily (Wieling and Borghans, 2001). In such situations, employers normally adjust their demands and recruit people with a higher educational background. However, if there is a supply shortage, school-leavers will not have to accept a job at a lower level, for lower wages, etc.

Because of substitution processes, there are fewer job openings for those suffering from 'crowding-out' with types of education in excess supply. However, for those with educational backgrounds closely related to types of education in short supply, there will be extra job openings. These passive substitution effects are thus important determinants of labour-market prospects for types of education.

**Question 3:** Which methods/models are used for the input information on macroeconomic forecasting and (sectoral) employment projections?

Macroeconomic employment forecasts and employment level forecasts for economic sectors are produced by the CPB Netherlands Bureau for Economic Policy Analysis, the official institute of economic forecasting for the Dutch government. However, recent medium-term forecasts are not always available. To correct for actual business cycle effects, ROA often combines the short-term sector forecasts with the medium or long-term sector forecasts, after consulting CPB.

**Question 4:** Does the skill needs forecasting method only include forecasts of total demand or also expansion demand and replacement demand?

The skill needs forecasting method includes forecasts of total demand as well as forecasts of expansion demand and replacement demand.

**Question 5:** Does the method consider the supply side, and possibly interactions between supply and demand?

The forecasting method includes the supply side, as well as interactions between supply and demand.

**Question 6:** Does the approach also consider (exogenous) factors such as impact of technologies, work organisation, socioeconomic conditions, globalisation/relocation of jobs, etc.?

Most of these factors are accounted for in the macroeconomic and sector modelling by CPB. In the ROA model of the occupational structure of 13 economic sectors the impact of changing technologies (measured by R&D and capital investments) is accounted for and scale (value added) on the occupational employment shares per sector. In the ROA model of the educational structure within occupations upgrading is accounted for. In the replacement demand model changes (including forecasts) of labour force participation rates (per age-gender class) are accounted for.

**Question 7:** Which classifications are in use at different stages of forecasting?

See the answer to question 1.

We differentiate between 13 economic sectors which are compatible with ISIC/NACE.

**Question 8:** Data sources and quality

- (a) Which data and data sources are used at different stages of forecasting?
- (b) Please indicate the quality of data input.
- (c) Please mention the minimum length of time series required where applicable.
- (d) Please – in sample surveys – specify the sample, its representativeness, and the regularity/frequency of the survey.
- (e) Where data come from the national census, please indicate its frequency and possible combination with other data sources.
- (f) How do you organise access to these data?

ROA uses national data sources. Both use of national data sources and forecasting with a general – as distinct from partial – model, represent the top-down approach by ROA. By using these, ROA ensures its labour-market forecasts are consistent with authoritative forecasts which provide the basis for policy decisions on important social and economic issues in the Netherlands. The data sources used cover all segments of the labour market, are consistent with other

important national economic developments, for example GDP growth, employment growth, demographic trends, and can be consistently differentiated to lower levels of aggregation. These data sources are available nationally on a yearly and coherent basis.

The use of national forecasts applies especially to changes in employment, capital investments and value added in various sectors of industry, and forecasts of participation rates by age-gender class. These forecasts are officially published by the CPB Netherlands Bureau for Economic Policy Analysis.

An important data set is the LFS of CBS. The LFS provides information on the number of working people, analysed by economic sector, occupation, training, age, gender and working hours. The LFS is a 1 % sample of the Dutch population between 15 and 64 years old. CBS does not allow publishing of figures below 5 000 persons per cell. Access to the data is provided by working on site at CBS. Matrices of sector x occupation (13 x 43) are available since 1988, although with some breaks. Recently, CBS has compiled a new data set based on the LFS between 1996 and 2003. This data set is used for compiling the replacement demand by occupation and education, and for further disaggregating the expansion by occupation and education. For 2004 a new break is expected with regard to the type of education, due to another way of surveying.

Forecasts of the flows of school-leavers entering the labour market match the *Referentieramingen* (reference forecasts) compiled by the Ministry of Education, Culture and Science for courses in the 'regular' (full-time initial) education system. ROA disaggregates these forecasts by using supplementary data from education matrixes of CBS and information on the number of students and graduates in various types of education. These data are based on pupil, student and graduate counts by schools and universities, and cover the whole regular system of education. These data are directly available in a similar format since 1997 and 1990 for secondary education and tertiary education, respectively.

Supplementary data concern the school-leavers information (first destinations). ROA is coordinating several extensive surveys on the match between initial education and first destinations of school-leavers on the labour market. This means that representative information is available on graduates across the full range of full-time education. Almost all graduates from tertiary education are interviewed, and about 10 % of the graduates in secondary education. These data are available since 1996.

Question 9: What is the output of the forecast?

Expansion demand:

- (a) sector forecasting: 13 economic sectors (CPB);
- (b) occupational structure with explanatory variables: 13 economic x 43 occupational segments (LFS, two-digit ISCO);
- (c) differentiating occupational structure (random coefficient model): from 43 occupations segments to 127 occupational groups (LFS, three-digit ISCO);
- (d) forecast of educational structure: 127 occupational groups x 110 types of education (LFS, three-digit ISCO and ISCED);
- (e) upgrading: 43 occupational segments x 27 educational groups (LFS, two-digit ISCO and ISCED).

Replacement demand:

- (a) cohort modelling of occupations: 127 (or 43) occupational groups (segments when reliable data are lacking) x 10 age classes by gender (LFS, two- or three-digit when reliable data are lacking);
- (b) cohort modelling of types education: 110 (or 27) types (groups when reliable data are lacking) of educations x 10 age classes by gender (LFS, two or three-digit when reliable data are lacking).

Inflow on the labour market:

- (a) forecast by education: about 6 groups per level of education (Ministry of Education);
- (b) differentiating by education to 110 types of education (graduate counts, education matrix and first destinations, CBS and ROA).

NB: more than half of the cells in matrices are empty, since these combinations do not occur.

Question 10: What is the period of the forecast?

Period of the forecast is five years.

Question 11: How often is the forecast repeated?

The forecast is repeated every two years.

Question 12: Are there procedures for the ex post evaluation of the quality of results of the forecast? How do you assess the quality (accuracy, reliability, robustness) of the output?

The results of the forecast are evaluated at the end of the forecasting period. The evaluation is based on three criteria (Granger and Newbold, 1986):

- (a) Are the forecasts better than the available alternatives?
- (b) How good are the forecasts relative to naive forecasts?
- (c) Can the forecasting method be improved so a better forecasting quality may be expected?

Question 13: What is the use/target group of the forecast?

Two main functions of labour-market forecasts are: policy and information (Van Eijls, 1994). The policy function refers to the usefulness of labour-market forecasts for government policy-makers, public employment services and employment agencies, employers' organisations, unions and educational organisations. Policy-makers often want to be informed of supply and demand developments at a more aggregate level. ROA biennially publishes a report *The labour market by education and occupation to 200x*, which includes analyses of expected labour-market developments in the light of particular policy issues. There is also a digitalised data set made available for ROA's own use and presenting all forecast and other labour-market information (first destinations and information from the LFS) in a systematic way. This information system allows users to select their own tables, for example to get a detailed table of a particular labour-market segment or to compare various types of education or occupational groups with one another.

The information function is primarily intended to assist with vocational and educational guidance. This improves the functioning of the labour market, since individuals are better able to adjust their human capital investment decisions to labour-market prospects of types of education (Borghans, 1993). Also, firms may use labour-market forecasts as 'early warnings' on future recruitment problems to anticipate human resources policies. The information focuses on medium-term labour-market forecasts, to give those making choices on further studies, the

best possible information on the state of the labour market when they complete their studies. Two expertise centres (National Careers Guidance Information Centre [LDC] and Choice) and the national employment agency (CWI) incorporate ROA's labour-market information in various information products for vocational and educational guidance and counselling. Besides civil servants from many different ministries (e.g. education, social affairs, economic affairs, agriculture) and public employment services, educational institutes, personnel managers, advisory councils, etc., all use different parts of the information system for their decision-making.

**Question 14: Who does the forecast?**

The forecasting is conducted by ROA.

**Question 15: Who pays for the forecasting work and the necessary data?**

The research is carried out by a team of about 10 researchers (about four full-time employees per year). There is an advisory committee of professional experts headed by an independent chairman (university professor). Financial matters are discussed and negotiated in a committee of the financing partners. The project was originally (in 1985) financed on a five-year base, later on a three-year base. Nowadays, the budget and activity plan is negotiated every year, although there is gentlemen's agreement to continue the project for the forthcoming years. The budget is split into two parts: a base part and an additional part consisting of the delivery of information for specific users. The base part is financed now by the Ministries of Education and Agriculture, CWI, LDC, Randstad (a temporary employment agency), and some institutes with specific tasks in the field of education and the labour market. Additional activities are financed by an institute producing and publishing information products for students' choices (Choice) and by CWI. All labour-market information is available upon request. However, to prevent free riding, large clients (e.g. professional or trade organisations, large business firms) have to pay for the labour-market information in case of extensive requests. In case of small requests for labour-market information by, for example, journalists of newspapers or periodicals, the information is provided free of charge.

**Question 16: What are your ideas for establishing a forecasting approach at European level? How should this activity be organised and cooperation arranged, who should be involved, should there be a platform (e.g. at Cedefop) for cooperation?**

It is important to think about the goals of an European forecasting system. These determine, for example, the level of aggregation, the forecasting period and the way of publishing the results.

The use of data sets that are available in all EU Member States is important (e.g. LFS). The approach should be top-down. Similar classifications (ISCO and ISCED) should be used for all countries.

If one of the goals is to benchmark forecasting results, just a few institutes (perhaps only one) should conduct the forecast. All other national institutes should provide the necessary data or should be involved in consulting. The coordination and consulting activities could be organised by Cedefop.

A European forecasting system will probably always be complementary to national forecasting.

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