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Evaluation and interpretation of the third continuing vocational training survey

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Foreword

Since the Copenhagen declaration in 2002, enhanced European cooperation in vocational education and training has substantially reshaped national policies. Vocational education and training is recognised as an important and flexible element of lifelong learning, rapidly connecting changing labour-market demands with relevant education and practically-oriented learning at the workplace. The new strategic statement for European policies laid down in the Bordeaux communiqué of November 2008 (European Commission, 2008a) addresses this fundamental role of vocational education and training.

Technological progress and structural labour-market change demand not only anticipating new skill needs but also continuously renewing and adapting knowledge, skills and competences for an ageing labour force (Cedefop, 2008b). Continuing vocational training provided by enterprises is at the heart of this process, helping at the same time to raise productivity, modernise work practices and facilitate innovation. Promoting training in enterprises needs in-depth insights into training policies and practices in enterprises, the role of social partners and the relevance of various public instruments. The European survey of continuing vocational training in enterprises, CVTS, is a unique source of internationally comparable data in this respect.

This report provides the first detailed comparative analyses of data from the third European survey of continuing vocational training in enterprises. It also includes a comprehensive evaluation of data quality from the European perspective to improve the survey.

I believe that data and analysis in this publication will help in understanding the complexity of training provision in enterprises and the role of different actors. Results substantiate the importance of, and need for, effective framework conditions and targeted policy measures to support enterprises and hence promote effective continuing vocational training.

Aviana Bulgarelli
Director of Cedefop

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- Department for Children, Schools and Families (United Kingdom).

Selected results of the study were presented during Cedefop's workshop on the continuing vocational training survey (CVTS), held on 29 and 30 June 2009 at Cedefop, Thessaloniki, and are used by the Eurostat task force on the preparation of the fourth CVTS.

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Executive summary

The European continuing vocational training survey (CVTS) gives a unique insight into the conditions and provision of training in enterprises. It is the only data source that provides internationally comparable, detailed statistics on the volume, content and cost of training in enterprises, and on their training policy and management. This report provides a detailed comparative analysis of the results of the third survey (CVTS3, 2005) across EU Member States and Norway. The survey covered enterprises with 10 or more employees in sections C to K and O of the statistical classification of economic activities (NACE Rev.1.1) (Council of the European Communities, 1990). Assessment of developments over time, comparing results with the previous survey (CVTS2, 1999), is done whenever possible, but hampered by sometimes severe methodological changes in CVTS3. The analysis uses aggregated data published in Eurostat's online database; that has limitations not only in terms of available tables and breakdowns, but also in in-depth multivariate analysis. In this respect, the availability and analysis of microdata is fundamental to relevant conclusions drawn by policy-makers and researchers. Therefore, the value of this analysis is enhanced in several instances with anonymised CVTS3 microdata from nine Member States. The availability of these microdata offered a new perspective for the analysis that gives very interesting, and sometimes unexpected, results. In short, European countries are converging in terms of continuing vocational training (CVT) provided by enterprises. However, this principally positive statement means also that only some countries show a positive trend, while others perform worse when comparing 1999 and 2005.

Chapter 1 of this report uses radar charts to give an overview of countries' performance in providing CVT according to four main dimensions: incidence, participation, intensity and expenditure. The three country groups – high, medium and low performers – are relatively stable over time. However, some countries changed groups: generally, high performers in 1999, especially the Scandinavian and west European countries, showed lower performance in 2005, while the other two groups mostly show moderate to high improvements.

The Czech Republic and Slovenia are two of the great winners in Europe when comparing CVT performance in 1999 and 2005; both changed to the group of high performers. Luxembourg can be also considered as a new high performer, mainly due to the significant increase in CVT participation in 2005 (13 percentage points compared to 1999).

Almost all of the high performers in 1999 lost significantly in all dimensions apart from France. Whereas reductions in incidence are less significant, reductions in the other three dimensions, intensity, participation and expenditure, are more dramatic. Finland lost 0.42 in intensity, Sweden lost 0.25 in participation, and the Netherlands 0.41 in expenditure in relation to the benchmark of 1999. It is difficult to verify the assumption of major changes in the Scandinavian VET model. For Denmark, some authors argue that the traditional Danish model of VET is under pressure (Jørgensen, 2008; Lykketoft, 2006; Sørensen and Møller,

2007). However, CVT performance in the Scandinavian countries is still high and the level of decline may be partly affected by data quality problems described in Chapter 7.

The number of countries in the group of medium performers in 2005 has increased compared to 1999. This group is less uniform as there are different types of developments. Estonia increased its CVT performance slightly, while Belgium, Germany, the Netherlands and Finland show losses in most dimensions. Performance in Austria, excluding incidence for methodological reasons, stagnated. Malta and Slovakia are new entries with their first participation in CVTS. Thus, the group of average performers mirrors roughly one general European trend in CVT: improvements mostly in eastern Europe and declines mostly in western Europe.

Almost all low performers increased in incidence and participation since 1999, though the variation of change is broad. The increase in incidence ranged from only one percentage point in Bulgaria to 29 in Romania. Bulgaria increased participation by only two percentage points, Portugal by 11. The picture is less clear for intensity and expenditure. Overall, most low performers showed improvements in their performance between 1999 and 2005. The best example is Romania, the lowest performer in 1999, which has improved in all four dimensions and particularly in incidence and expenditure. The lowest performer in 2005 is Greece. Almost at the bottom of the ranking in nearly all dimensions in 1999, performance has decreased further still.

Chapter 2 provides an in-depth analysis of enterprise policy and management of continuing training in enterprises. The analysis is based on the relevant qualitative questions covering formal procedures and organisational elements within enterprises, and are important in understanding how enterprises organise, provide and evaluate their training. It was argued that similar questions in the CVTS2 could be used for assessing professionalisation in providing CVT within the enterprises (Grünewald et al., 2003, p. 59).

Different models to assess the professionalisation of CVT provision are discussed, considering various dimensions such as demand analysis, implementation and evaluation. The use of certain instruments and methods in planning and organising can be seen as an indication of professional training provision. However, for CVTS3, it might be more relevant to speak about ‘formalisation’ because additional dimensions of professionalisation, such as the characteristics of the training personnel, are not covered.

The least formal element used in EU level CVT provision is the training centre (15 % of training enterprises) while a specific person or unit in charge of training is the most frequent (42 %). Of the planning elements, training plans are most frequently used (34 % of training enterprises) whereas only one fourth of training enterprises assess future skill needs (26 %). The most frequently used evaluation methods are assessing occupational performance after training and measuring participant satisfaction (37 % of training enterprises).

Overall, enterprise size seems to have a strong effect on the extent to which CVT provision is formalised: large enterprises have a much more formalised approach than small ones. The sector of economic activity seems to have less of an effect.

As enterprises very often use combinations of different elements and methods, the rare use of some single tools should not be over-interpreted. Yet, there seems to be no set of

tools which would suit the diverse needs. This also challenges the assumption that it would be possible to construct a sensible formalisation indicator for all training enterprises.

Cluster analysis for seven countries confirms the hypothesis that the use of formalisation instruments increases the volume and intensity of CVT provision. Enterprises with highly formalised CVT provision provide training to more employees and more hours in courses than enterprises that use formalisation instruments in a selective or marginal manner. Results confirm the principle advantages of microdata analysis in drawing relevant conclusions for both policy and research. The pure use of aggregated data and national averages does not reveal such patterns.

Several strategies are used to increase participation of adults in learning. Improved cooperation among stakeholders in CVT is contributing to this goal, but public measures can also provide incentives and support for training provision.

Chapter 3 considers the role of collective agreements and works councils as well as public measures in employer-provided CVT. At EU level, only 12 % of training enterprises are covered by written national or sectoral agreements between social partners that explicitly include CVT among their subjects. The more detailed analysis of the role of enterprise, works councils or other formal structures involving employee representatives in the management of CVT is based on anonymised microdata for eight countries. Results show that enterprises are less likely to be covered by agreements between the social partners than to have formal structures, such as work councils. The proportion of enterprises with agreements between social partners ranges from 3 % in the Czech Republic and Belgium to 23 % in France, with works councils or another formal structure involving employee representatives from 10 % in the Czech Republic to 37 % in Spain. However, work councils or other formal structures are rarely involved in training management. The proportion of training enterprises where employee representatives play a role is below 10 % in half of the countries analysed, and only in Italy slightly above 20 %. For enterprises where employee representatives are involved in training provision management, results show that their role is limited to general issues such as objective setting. The budgeting process and the selection of external training providers are generally out of their scope.

Despite limited involvement in training management, employee representatives and agreements between social partners seemingly have a positive impact on both CVT participation and intensity.

Public measures covered by CVTS3 include publicly-funded advisory services, financial subsidies towards the costs of training, tax relief on training expenditure, procedures to ensure the standards of trainers and the provision of recognised standards and frameworks for qualification and certification.

In 2005, 36 % of EU training enterprises stated that at least one of these public measures had an effect on their planning, policy and practices for CVT. The figure is above 50 % in six countries (Belgium, Greece, France, Cyprus, the Netherlands and Portugal), though a maximum of 20 % in four others (Germany, Estonia, Lithuania and Romania).

Large and medium-sized training enterprises feel that public measures have an effect on training provision more than small ones do. This is true in all countries with disparities specifically high in some of the eastern and southern countries where the performance in

CVT provision is low. This might be an indication that public measures are not always specific enough and well targeted, and that their effectiveness should be under close scrutiny. Few enterprises feel that public financial subsidies have an effect on training provision. This is generally true for small enterprises, and particularly true for all new Member States, except Cyprus, despite 'too high training cost' ranking high among the reasons enterprises in some of these countries provide for not having organised CVT in 2005 (Chapter 5).

To benefit from public measures for CVT provision, enterprises need comprehensive information about the various specific measures, eligibility criteria and procedures for application. The efforts to be invested in such procedures can be a hurdle for small enterprises that do not have specific personnel in charge of training. Results presented in Chapter 2 show that small enterprises are already less likely to use formalisation instruments in training provision, with only about one third of small training enterprises having specific staff in charge of training. The pronounced relevance of enterprise size to public measures is a strong signal to policy that the target group of small enterprises might not be addressed adequately yet.

Chapter 4 provides an analysis of the role of the various forms of training beyond courses. Different types of non-formal and informal learning are considered important by politicians and researchers alike, increasingly so for the future. A widespread argument in the discussion suggests that 'traditional' forms of CVT, namely courses, may be replaced by so-called 'other forms' of CVT taking place in a work environment or at the workplace. It is an advantage that, from the start, CVTS concepts and coverage are not limited to training courses. Information and data is also collected on 'on-the-job-training, job-rotation/exchanges, learning/quality circles, self-directed learning, attendance at conferences/workshops/trade fairs.

In most European countries, enterprises do not increasingly provide 'other forms' of CVT. The political and scientific debate about 'other forms' being increasingly important forms of learning is not reflected in the CVTS results; there is no principle revolution to work-placed learning or increase in the provision of organised 'other forms'. At EU level and in most of the countries there was a downward trend regarding the provision of various 'other forms' of CVT with average involvement decreasing from 52 % in 1999 to 49 % in 2005.

Comparing the provision of courses and 'other forms' does not reveal a general trend towards 'other forms' either. At EU level, the incidence of courses and 'other forms' is almost identical in 1999 and 2005. Even in the few countries where the incidence of 'other forms' was notably above that for courses in 1999, differences have diminished in favour of courses. CVTS3 results do not corroborate the belief that small enterprises might provide in general more frequently 'other forms' than courses. Patterns in countries suggest that the provision of 'other forms' of training does not replace the provision of courses but complements it.

More important, in all countries except Denmark, participation rates in courses are notably higher than those in on-the-job training, which ranks first for 'other forms'. Even in countries where the proportion of enterprises that provide 'other forms' is relatively high, participation rates are well below those for courses. In the EU-27 generally and in most

Member States, the provision of CVT via courses is still the preferred way of upgrading employee knowledge, skills and competence.

Chapter 5 contains analyses of enterprises not providing CVT. CVT provided by enterprises is one of the main pillars of lifelong learning, contributing to employability, safeguarding against unemployment and possibly also leading to benefits like increased job satisfaction, improved career prospects and wage gains. For enterprises, CVT is a means of raising productivity, modernising work practices and facilitating innovations. Many studies show that adult training has a positive impact on enterprise productivity, on profitability, market share and stock market value, and on their competitiveness. Many studies also confirm substantial gains for employers from vocational training in their enterprise, even from general training that, through worker mobility, is useful in other firms. Enterprises that do not provide training for their staff are waiving possible returns of such an investment; employer-provided training can yield higher returns than training financed by employees themselves. Concern about enterprises not providing CVT is justified from social and economic viewpoints.

Both in 1999 and 2005 the EU proportion of non-trainers was 39 %, ranging in 2005 from 15 % in Denmark to 79 % in Greece. There are pronounced differences between the northern and western Member States, with non-trainers increasing since 1999, and southern and eastern Member States, where they decreased in almost all countries. In principle, results mirror those described in Chapter 1. They reveal disparities between the different economic sectors with ‘financial intermediation’ having the lowest share of non-trainers. High variation within sectors indicates that other factors affect training incidence. Results show the established pattern regarding the gap in training provision and enterprise size: in all countries, small enterprises are more frequently non-trainers than large enterprises. However, in countries such as Denmark and Austria this gap is small compared with some southern and eastern Member States (sometimes exceeding 50 percentage points). Results regarding incidence of non-training show more similarities between countries for large than for small enterprises.

The CVTS also provides data on reasons for not providing training. Results are discussed in Chapter 5 and show that non-trainers most frequently do not see a need for training whereas real obstacles, such as ‘no time’ or ‘too high cost’, much less frequently prevent training. Patterns do not differ between small and large enterprises, with costs cited as an obstacle more often by large than small enterprises. Cost is also the most cited obstacle in nearly all new Member States.

The high number of non-trainers in 2005 that did not see any need to train their staff confirms CVTS2 results that many enterprises did not have a need for new skills during the last three years. This finding suggests that enterprises frequently do not perceive a need to update and enlarge the skills and competences of their staff. From a policy perspective, strategies to foster lifelong learning in enterprises would need first to raise enterprises’ awareness of skill needs. Costs of CVT courses and difficulties releasing employees from work might be relevant only after enterprises are aware of skill and training needs.

The extent to which training behaviour changes over time is another important aspect analysed in Chapter 5. Results based on microdata analysis for selected countries show that

about 20 % of enterprises do not maintain their approach to training over two years (incidental trainers). However, in nearly all countries, most enterprises do not change their training behaviour: either they continue to provide training or they do not. Nevertheless, incidental provision of CVT is more frequent in small and medium-sized enterprises than in large enterprises. For both policy and research, incidental trainers are an interesting group as the barrier to providing training regularly is more easily overcome than for permanent non-trainers. Whereas the latter most frequently do not see needs for training, incidental trainers emphasise obstacles such as time, difficult assessment of training needs and lack of courses. Adequate policy measures to foster enterprise-provided CVT might consider differences between temporary and permanent non-trainers, and specifically address lack of awareness of training needs and obstacles. The analysis presented in this chapter is a first suggestion, but more detailed analysis of reasons for not providing training would need to be complemented in future by considering framework conditions, for example labour-market conditions and the training market.

Chapter 6 focuses on the costs and funding of CVT courses in enterprises. The real total monetary expenditure (TME) on CVT courses comprises direct cost and the balance of contributions to, and receipts from, training funds. Overall, enterprises in Europe in 2005 invested less in CVT courses than in 1999. In most of the northern, western and southern countries, total monetary expenditure as a proportion of labour costs was lower in 2005 than in 1999, and the decrease is quite substantial in Italy, the Netherlands, Finland and Sweden. However, in most of the eastern countries, expenditure on CVT courses in 2005 was higher than in 1999.

Analysing total monetary expenditure reveals differences between economic sectors. More remarkable is the variation across countries within sectors, most pronounced in ‘other community, social and personal service activities’. At EU level, small enterprises spend 0.7 % of total labour costs on CVT courses, compared to 0.8 % in medium-sized enterprises and 1.0 % in large ones; analysis shows that this applies to most countries. The situation in Denmark is noteworthy as small enterprises spend 0.9 % of total labour costs on CVT courses, large enterprises 2.0 % and medium-sized enterprises even 2.4 %. Estonia is the only country where small enterprises spend slightly more than large enterprises.

Overall enterprise spending on CVT courses per employee over time decreased significantly. At EU level, spending per employee in all enterprises decreased by more than a quarter, from 358 purchasing power standard (PPS) in 1999 to 260 PPS in 2005. Despite the increase in spending in almost all new Member States, it remains very low compared to northern and western countries, specifically in Bulgaria, Latvia, Lithuania and Romania. Analysis in Chapter 5 shows that in these countries costs are cited most frequently among the obstacles for not providing training. Greece and Portugal have not only seen reductions in spending, but now rank behind most new Member States. Analysing spending in only those enterprises providing courses reveals that spending per employee has halved in Greece since 1999. Disparities in proportions of labour cost spent on CVT courses between size classes are principally reflected in the spending per employee. In all countries except Estonia, small enterprises invest less per employee than large enterprises on CVT courses.

It is debatable if lower spending is a general indication of worsening CVT provision, as a final judgement would have to consider also its efficiency and effectiveness. Further, better functioning training markets could result in reduced prices and total expenditure. However, the trend of less spending on CVT, together with the reduction in other key CVT indicators described in Chapter 1 might imply a general worsening of European CVT provision, especially in western and northern Europe. This development is a clear signal for national and European policy to intensify efforts in promoting CVT for enterprises. Considerations of country patterns and size of the enterprises should eventually result in tailor-made instruments and measures.

Chapter 7 provides a detailed quality evaluation of CVTS3 from the European perspective. This evaluation assesses implementation of the European methodology and commonly agreed concepts within national surveys and the possible impact of deviations on the comparability of the statistical results across countries. It also goes into details of sampling and, together with the analysis of response rates, its potential impact on the bias of estimates. Identifying questions or variables that caused major problems and increased the burden on respondents was a key issue of quality evaluation, as was the influence of data collection methods and duration, and the status of the survey.

In general, the CVTS3 questionnaire was too burdensome for respondents, possibly having an impact on unit response rates as well as item response rates. In CVTS3, data on initial vocational training have been gathered for the first time in addition to data on CVT. Comparability of these data is problematic as the broad concept of initial vocational training gave significant scope for implementation in countries.

A specific analysis of sample stratification shows the potential bias in estimates of key indicators due to broad size stratifications. Summary multivariate quality evaluation also considers non-response as a whole, the range of response rates and their link to training incidences by enterprise size, as well as the correction for non-response. Although it is up to users of CVTS3 data to decide on how to handle and analyse the data, conclusions are drawn for key groups of countries. Finally, various recommendations are given to improve the quality of CVTS, specifically to lower response burden and to increase comparability across countries.

1. Key CVT indicators at a glance

1.1. Defining key CVT indicators: incidence, participation, intensity and expenditure

The continuing vocational training survey (CVTS) delivers a wide range of information about enterprise-based training. Four key indicators help to underline important aspects of continuing vocational training (CVT). These are:

(a) incidence: training enterprises providing any type of CVT in all enterprises (%);
(b) participation: employees in all enterprises participating in CVT courses (%);
(c) intensity: total number of hours of CVT courses in the total number of hours worked by all employees in all enterprises (per 1 000 hours worked);
(d) total monetary expenditure (TME): total costs of CVT courses (direct costs plus contributions minus receipts) in total labour costs of all enterprises (%).

Incidence and participation are frequently used indicators in CVT research and policy analysis. Incidence delivers the most fundamental information of whether an enterprise provides CVT at all. This indicator – unlike others – is binary: either a firm provides training or it does not. The participation indicator indicates the chances of the country workforce receiving employer-provided CVT. Incidence and participation are well known indicators, also used by researchers to point out differences in CVT provision between large and small and medium-sized enterprises (SMEs) (Leber, 2002).

CVTS provides other important information. Time and money are important elements in CVT investment: intensity and TME detail these two factors.

Several cost indicators can be calculated using CVTS data. Both TME and total costs have advantages for drawing an overall picture of patterns and structures of enterprise training. The total costs indicator describes the total of CVT costs as a proportion of total labour costs of all enterprises, and includes real expenditure on CVT and an estimate of potential personnel absence costs (PAC). The TME indicator, however, excludes this PAC estimate, which is susceptible to bias. Further, assuming that contributions and receipts are exclusively linked to CVT, it measures more adequately enterprises' expenditure on CVT than direct costs alone.

In the radar charts used in this chapter, using TME – and not total costs – offers the additional advantage of avoiding implicit weighting: total costs include PAC (based on hours in training) and, by using total cost, the hours in CVT would contribute to two axes.

The choice of these indicators was prepared by previous work in the project CVTS2 revisited (Behringer et al., 2008). Other combinations of indicators or definitions of their measurement are also legitimate and reasonable. For example, participation could be defined as:

> all training participants/total of all employees of all training enterprises;

or intensity could be defined as:

> hours in CVT courses per participant.

Definitions and choices are mainly based on the wish to have indicators at national rather than enterprise level, to inform possible policy choices. Thus, concerns point more towards information on enterprises providing training in a country, on the the workforce participating in employer-provided CVT, and on the investment of time and money from the enterprise resources in a country. In contrast, hours per participants can indicate training structures, but not national investment in training in relation to time resources.

Further, even if the CVTS3 manual (Eurostat, 2006) definition of training includes courses and other forms of CVT, due to the difficulties in measuring other forms, the main indicators used for the radar charts in this chapter refer solely to CVT courses (with the exception of the incidence indicator).

Focusing, not just on one, but on all four chosen indicators delivers a more holistic picture of CVT, shown in Table 1. Such a table is informative, but difficult to interpret. It is even more difficult to find groups of countries with similar results. The radar chart approach in the next section helps illustrate the results for all four indicators in a more intuitive way.

Table 1 **CVTS3 results for incidence, participation, intensity and TME**

2005	Incidence	Difference ([a])	Participation	Difference ([a])	Intensity	Difference	TME	Difference ([a])
BE	63	-7	40	-1	9	1	0.6	-0.1
BG	29	1	15	2	3	0	0.7	0.0
CZ	72	3	59	17	8	2	0.9	-0.2
DK	85		35		9		1.7	
DE	69	-6	30	-2	6	1	0.6	-0.2
EE	67	4	24	5	4	1	1.0	-0.3
EL	21	3	14	-1	2	-1	0.3	-0.2
ES	47	11	33	8	5	-1	0.6	0.0
FR	74	-2	46	0	8	-2	1.4	0.2
IT	32	8	29	3	5	0	0.6	-0.5
CY	51		30		4		0.9	
LV	36	-17	11	-1	2	0	0.5	0.3
LT	46	3	15	5	3	1	0.7	0.2
LU	72	1	49	13	9	1	0.8	-0.1
HU	49	12	16	4	3	0		
MT	46		32		7		0.9	
NL	75	-13	34	-7	8	-3	1.0	-0.7
AT	81		33	2	5	0	0.8	0.0
PL	35	-4	21	5	4	2	0.7	0.2
PT	44	22	28	11	4	0	0.5	-0.1
RO	40	29	17	9	3	1	0.7	0.4
SI	72	24	50	18	8	4	0.9	0.2
SK	60		38		7		0.8	
FI	77	-5	39	-11	6	-5	0.8	-0.5
SE	78	-13	46	-15	10	-2	0.9	-0.6

([a]) Value difference between 1999 and 2005 in percentage points.

NB: Norway and the UK are excluded for CVTS3 because of limited comparability.
Denmark is excluded for CVTS2 because of limited comparability.
Austria is excluded for CVTS2 because of limited comparability due to underestimation of 'other forms'.
Hungary is excluded for TME since the cost data for some sectors were outside any reasonable ranges.
Poland covered only the Pomorskie region in CVTS2.
For Ireland CVTS3 data were not available.
Cyprus, Malta and Slovakia took part only in CVTS3.

Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

1.2. Measuring CVT country performance using radar charts

1.2.1. Methodological remarks

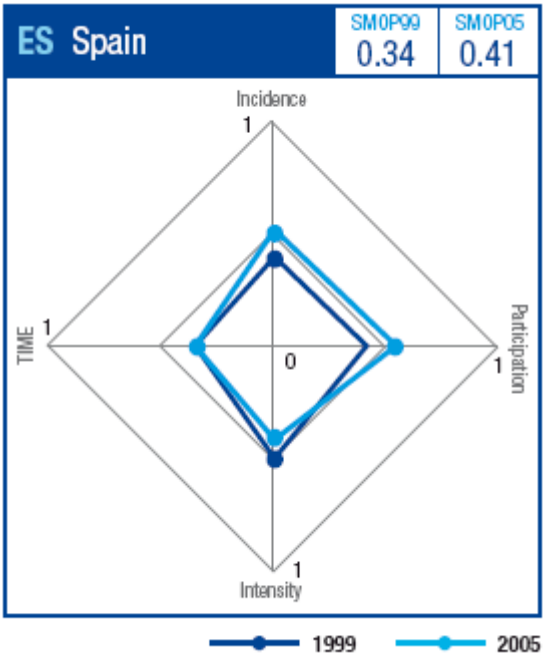
The radar chart approach can help to identify patterns in CVT. Radar charts can be used both to identify specific patterns of statistical data and as benchmarking tools for comparative analysis. It is one of several special analytical tools developed in connection with benchmarking in the private and public sectors. The priority here is to illustrate succinctly the main features of CVT nationally.

Two features of the radar chart approach are important: it provides an intuitive presentation of multiple performance indicators, and the surface area, formed by the axes, can be used as a composite performance indicator (surface measure of overall performance or SMOP). The SMOP (Mosley and Mayer, 1999) is calculated from the mathematical formula for the area of a polygon: in this case – with four indicators – the results can be

regarded as four triangles with angles of 90 degrees ([1]). SMOP values range between a minimum of 0 and a maximum of 2. Part of the SMOP calculation involves determining an average SMOP, because slightly different SMOPs are possible, contingent on the chosen position of the axes (see also Mosley and Mayer, 1999). The SMOP presented in the following graphs is the average of all three possible SMOP values. The SMOP is a quantitative indicator of the overall performance of a country's firms regarding CVT, relative to other countries but should be considered as an orientation, used mainly with other graphs or analysis.

The radar charts use four indicators: incidence, participation, intensity and TME, with 1999 the reference year for benchmarking. The four indicators sit on the four axes of the diagram; each axis ranges from 0 to 1, with 1 indicating the best value. The value 1 is given to the best national result for the respective indicator in 1999. For example, Sweden has the best incidence rate of 91 % in 1999, which means that 91 % of all Swedish enterprises provided CVT courses in 1999. This is represented by the value 1 for incidence in the radar charts and other countries results are measured relative to this 91 %. For example, Spain had an incidence rate of 47 % in 2005. An incidence of 47 % equals 52 % of the Swedish result (91 %) and is, therefore, represented by the relative value 0.52 in the radar chart. Radar chart values for the four indicators in the following text are always given in relative terms to the benchmark (equals 1), if not otherwise indicated.

Figure 1 **Example of a radar chart**



Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

([1]) The mathematical formula for the SMOP of four axes:
SMOP = ((P1*P2) +(P2*P3) +(P3*P4) + (P4*P1)) * sin 90°/2,
or of more or less than four axes:
SMOP = (P1*P2)+(P2*P3)+ (P3*P4)+ (P4*P5)+ (P5*P6) +....+ (Pn*P1)) * sin (360/n)/2

Similar calculations are made for every axis. Sweden sets the benchmark three times, with the Netherlands setting the benchmark for TME. For each indicator the highest single country performance was used as the benchmark. Benchmarks are not normatively defined as goals: they could have been defined for incidence and participation as 1. The values on the axes are graphical expressions of the relationships between the country in the diagram and the best performer for each axis.

A different methodological approach would be to use highest and lowest performance for each axis, so that countries would are located between the best and lowest performer. This approach is also valid and, from a purely methodologically perspective, even better, but certainly less comprehensible. The approach taken has the advantage that each value is measured in relation only to the benchmark ([2]).

Certain theoretical and practical problems that should be considered when using radar charts are outlined below.

1.2.1.1. *Equal weighting of the four indicators*

The importance of the individual indicators is likely to vary according to the issues tackled; it is debatable if all indicators should be given the same importance. Further, it is likely that indicators are interrelated (e.g. costs and intensity) so the radar charts may inflate the differences between the countries. For costs and intensity, it is also questionable if a higher value for these indicators is positive: high costs can be caused by an ineffective training system or a monopolistic provider structure. Nevertheless, an assumption is made that higher investment of time and finances is better than lower investment, at least at the levels currently observed.

When putting different indicators into one graph, attention should be given to differences in the scales. It is theoretically possible that all national values are very close one another for one indicator, while they are widespread for another indicator. 2 displays the range of values between highest performers (benchmark) and lowest performer in 1999. For example, Romania had a value of 0.3 % for TME in 1999 compared to the top value for the Netherlands of 1.7 %. This 0.3 % is equivalent to 0.176 of 1.7 % (2).

The observable differences between the four indicators in 1999 and 2005 are not large (Figures 2 and 3). Changes have occurred for incidence and participation, while the values for intensity and TME are stable; only the countries changed but not the values. Romania was the lowest performer for intensity and TME in 1999, while Greece was the new lowest performer for both indicators in 2005, because of reduced investment for intensity and TME in Greece.

Comparing the four ranges independently for 1999 and 2005 figures, the differences are stable. The largest range of 1999 (incidence: 87.9) was 5.6 percentage points larger than the smallest range of 1999 (intensity: 82.3). In 2005, the difference was 6.6 percentage points between the largest and the smallest range.

([2]) Radar charts of selected countries are presented throughout the text. Radar charts for all countries are in Annex 1.

Figure 2 **Range between the lowest performer 1999 and benchmark 1999**

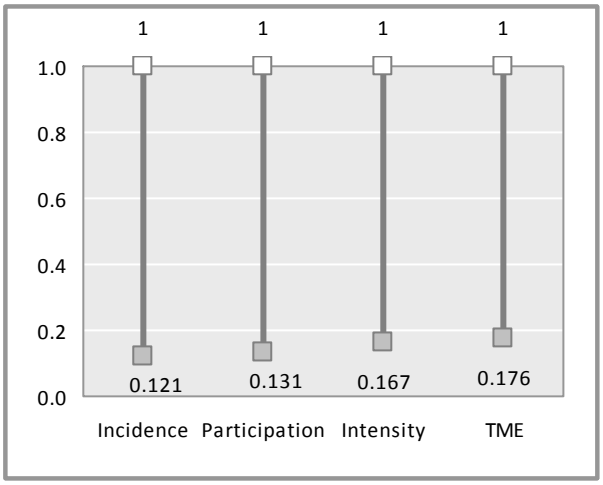
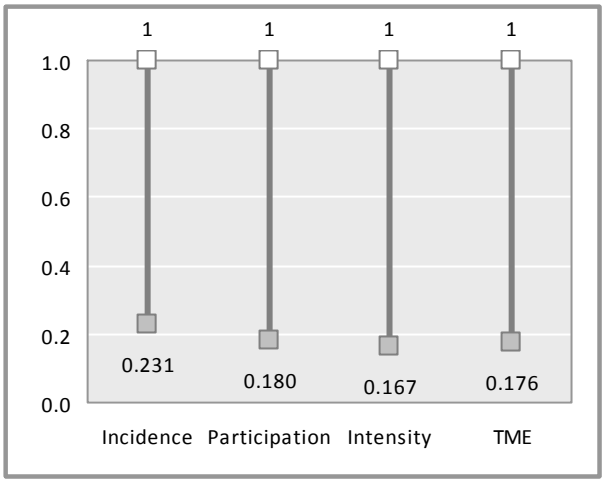


Figure 3 **Range between the lowest performer 2005 and benchmark 1999**



Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

1.2.1.2. *The importance of the chosen benchmarking approach*

This benchmarking approach makes it possible to compare the CVTS results of different countries ([3]) by expressing country results in comparison to the best performing (benchmark) country. However, this does not mean that benchmark country systems are optimal. It would have been difficult to define normative goals from political or scientific perspectives. For example, incidence and participation could have been defined by a benchmark of 100 % but such an incidence and participation is unrealistic. The definition of a normative benchmark for intensity and TME would be even more problematic: which values should be used and what would be the justification?

Nevertheless radar charts are a useful tool for providing succinct overviews, illustrating selected results, and perhaps inspiring hypotheses for further research.

1.2.2. Data used for analysis

All data were obtained from Eurostat's online database ([4]); certain points are worth underlining. First, it was important to use data on costs that are sensitive to economic differences between the CVTS countries, so training costs relative to national labour costs were chosen. This avoids problems of differences in purchasing power and wage levels.

Moreover, the UK figures for costs were exorbitant in 1999 (almost twice as much as the second highest figure), perhaps related to the fact that UK cost data in 1999 were taken from another survey. Eurostat indicated in the past that these data are not comparable with the other CVTS data. Thus, the UK cost data was not used for the radar chart analysis in 1999. The UK data for CVTS3 is of limited comparability (Chapter 7) and therefore the UK is

([3]) It is important to note that the benchmarks cannot be used to compare single enterprises to each other. The values relate to national averages.

([4]) The data were extracted on 20 November 2008. The data were saved and archived, since the Eurostat online database is a dynamic databank which means that data are often revised and updated after corrections.

excluded from the radar chart analysis. Denmark is also excluded for 1999, since 1999 data are of limited comparability over time and across countries; Denmark sampled firms in 1999 (local unit), and enterprises in 2005 (enterprise unit). Similarly, Norway is excluded for 2005, since the local rather than enterprise unit was used. Hungary was excluded for the TME dimension since the cost data for some Hungarian sectors was outside any reasonable range at the date of data extraction. Austria was excluded for the incidence dimension, because of inadequate coverage of other forms of CVT in 1999. Finally, no Eurostat data were available for Ireland for 2005 at the time of writing.

1.3. Benchmarking CVT country performance

1.3.1. Structures of CVT performance in 1999

In 1999, three groups of countries were similar in terms of the values of the indicators and the SMOP (Behringer et al., 2008). These are shown in Table 2.

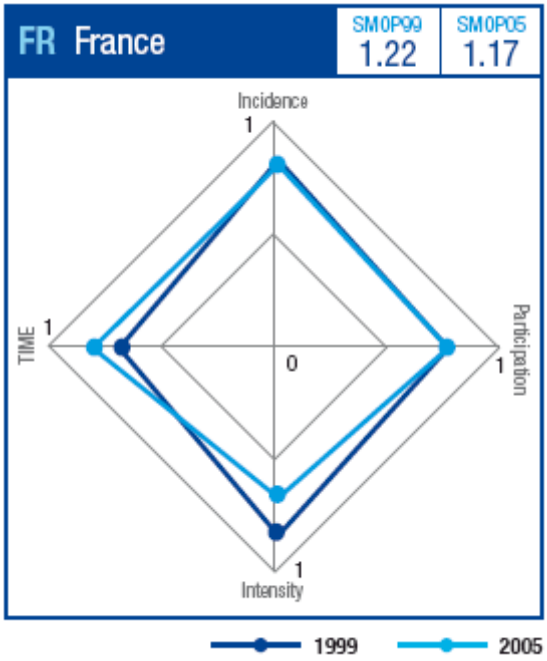
Table 2 **Ranking of countries according the SMOP of 1999**

High performers (SMOP>1.00)		Average performers (1.00>SMOP>0.50)		Low performers (SMOP<0.50)	
SE	1.88	CZ	0.84	SI	0.40
NL	1.57	LU	0.81	IT	0.37
FI	1.44	BE	0.78	ES	0.34
NO	1.43	DE	0.61	LV	0.25
FR	1.22	EE	0.51	HU	0.22
IE	1.21			PT	0.18
				BG	0.17
				PL	0.16
				LT	0.15
				EL	0.12
				RO	0.04

Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

First are the high performers in northern Europe and parts of western Europe, comprising the Scandinavian countries (Finland, Norway and Sweden) plus Ireland, France and the Netherlands. The Scandinavian countries and France had quite equally high performance indicated in all four dimensions of their radar charts. In the Netherlands one dimension (participation) was less well developed and in Ireland two dimensions (participation and intensity) were less developed but both countries were still better than all other non-Scandinavian countries.

Figure 4 **Radar chart for France**



Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

The second group consists of average performers in most parts of central Europe, including the Czech Republic, Germany and partly Luxembourg, generally displaying a similar structure with high incidence, very low participation and intensity, and moderate TME. The Czech Republic was the highest performer of this group. Belgium did not match this group completely, since TME was considerably lower.

Finally, there are low performers in southern and eastern Europe comprising Bulgaria, Greece, Spain, Italy, Latvia, Lithuania, Hungary, Poland, Portugal, Romania and Slovenia. These countries can be divided into three sub-groups. First, Greece, Romania and partly Poland achieved low results for every indicator, although Poland had a higher incidence rate. Second, Bulgaria, Italy and Portugal had higher values on the TME indicator and less good results for the other indicators. Third, Latvia, Lithuania and Hungary had good results for TME and incidence, while participation and intensity were low. Spain and Slovenia could not be allocated to a subgroup, because they showed remarkably distinct forms.

These three groups were not identical but in many ways paralleled existing theoretical models of regional affinities (Esping-Andersen, 1990, for welfare systems; Rokkan, 1999, for the geo-politics of state systems; Leney et al., 2004, on European integration).

1.3.2. Changing patterns of CVT performance over time

Comparisons of performance using the SMOP for 2005 data show a new distribution of countries among the three groups (Table 3).

Table 3 **Ranking of countries according the SMOP of 2005**

High performers (SMOP>1.00)		Average performers (1.00>SMOP>0.50)		Low performers (SMOP<0.50)	
DK	1.32	NL	0.86	CY	0.46
FR	1.17	FI	0.74	ES	0.41
SE	1.09	BE	0.73	IT	0.32
CZ	1.08	SK	0.72	PT	0.30
LU	0.98	AT	0.65	PL	0.27
SI	0.98	MT	0.61	LT	0.25
		DE	0.53	RO	0.24
		EE	0.52	BG	0.19
				LV	0.13
				EL	0.08

NB: Luxembourg and Slovenia are slightly below 1, but demonstrate the same characteristics as the other high performers and were categorised as high performers (see text).

Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

CVT either stagnated or, more generally, decreased for the former best performers. The former low performers, meanwhile, mostly improved their performance. This results in convergence of best and worst results, although overall stagnation is observable at European level.

Because of this convergence, the new high performers group is to be found at a lower level and has new members: the Czech Republic, Denmark, France and Sweden, which have a SMOP above 1. Luxembourg and Slovenia are close to the new high performers with SMOPs of 0.98 and they share some strong similarities with the Czech Republic when looking at the shape of its four dimensions. Therefore, they are allocated to the high performer group, though the SMOP is slightly below the threshold (1). Both differences and similarities can be found concerning the shape of dimensions between the two 1999 high performers (France and Sweden), and the 2005 high performer Czech Republic. The old high performers show higher incidence rates (0.84 and well above) than the new high performer. The old high performers lag behind in participation (0.57 to 0.75), while the new high performers show values between 0.80 (Luxembourg) and 0.97 (Czech Republic). For intensity, only Sweden retains the old high performer typology (0.83). In 2005, the other countries of the old high performers' group have low intensity rates, compared to the new high performers (values between 0.67 to 0.75). In 2005, Denmark and France have high values for the TME dimension; other countries have lower rates of TME (between 0.47 and 0.53).

The old high performers France and Sweden are characterised by very high incidence and by high participation ([5]). They have either a high degree of intensity and a low degree of TME or a high degree of TME and a low degree of intensity (see high intensity/low TME example for Sweden in Figure 5). Many enterprises here are active in providing training, although the numbers of participants involved and the time and financial resources invested

([5]) Caution should be exercised when comparing Swedish participation rates over time. The Swedish quality report (p. 63) points to an overestimation of Swedish CVTS2 results and an underestimation of Swedish CVTS3 results.

have mostly decreased between 1999 and 2005. The new high performers (Czech Republic, Luxembourg, Slovenia) are defined by a pattern of high incidence and of very high participation, moderate intensity and a still rather low TME (see as example Figure 6). These countries achieved better results than in 1999 in almost all dimensions with only few exceptions for individual dimensions. The improvements in relation to participation and intensity are especially impressive.

For methodological reasons, Danish data are excluded in 1999 (a diverging definition of the sampled unit in CVTS2). Still, the Danish case is special because in 2005 Denmark achieves good results for incidence, TME and partly also for intensity, while participation is low at 0.57. It is surprising that Danish CVT seems to have been selective in 2005, despite Denmark being well known for its inclusiveness in educational issues. Even so, there have been critical voices from Denmark in the last few years. These see the Danish model of high investment in education and a high level of inclusion changing for the worse (Jørgensen, 2008) and under pressure from within: 'in my opinion, the greatest challenge facing "the Danish model" is not the pressure from globalisation but the declining support to the model among the population' (Lykketoft, 2006, p. 30). Further research is needed to determine whether there is really such a fundamental change happening in Denmark in relation to vocational education and training (Sørensen and Møller, 2007).

Figure 5 **Old high performer**

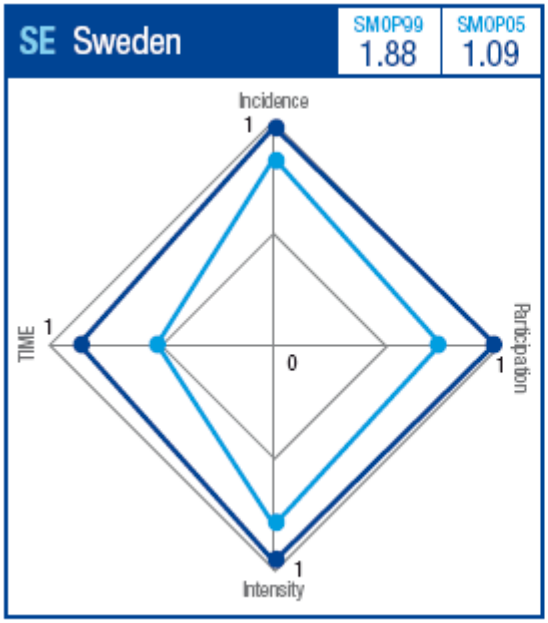
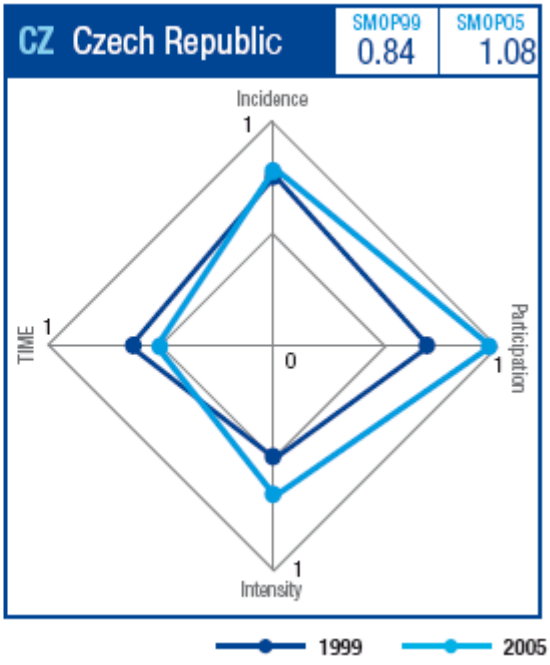


Figure 6 **New high performer**



Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

The new group of average performers has almost doubled its size. In 1999 it comprised Belgium, the Czech Republic, Germany, Estonia and Luxembourg. The Czech Republic and Luxembourg moved to the new group of high performers. Belgium, Germany and Estonia, stayed in the group of average performers, while the Netherlands and Finland dropped from

the high performers down to the group of average performers. Austria, not considered for 1999, is in the group of average performers, while Malta and Slovakia are countries surveyed for the first time in CVTS3.

In total, the whole group of average performers can be split into three different sub-groups and one outlier. First, Malta and Slovakia, surveyed for the first time in CVTS3, which scored equally with average values on all four dimensions (see example in Figure 7). Second, Germany and Austria (see example in Figure 8) which with a high incidence rate and moderate values on the three other dimensions still have a diamond structure, already seen in 1999 with CVTS2 (Behringer et al., 2008).

Estonia, the Netherlands and Finland can almost be subsumed in the second group, but their chart evokes a trapeze structure with two high values and two (different) low values (see example in Figure 9) so these three make a third subgroup. The combinations of high values are different for the three, although in each one of the high values is for incidence:

(a) the Netherlands: high values for incidence and intensity;
(b) Estonia: high values for incidence and TME;
(c) Finland: high values for incidence and participation;

Belgium does not fit into any of the sub-groups (Figure 10) and is, somehow, an outlier. Here, intensity is the highest dimension with a value of 0.75, incidence and participation are equally high with 0.69 and 0.66, while TME is very low with 0.35. Belgian enterprises seem to invest much time in CVT but not much money.

Figure 7 **Average performer – group 1**

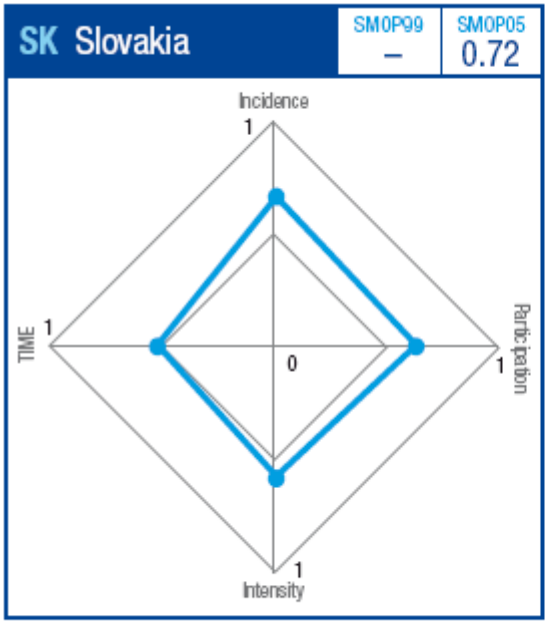
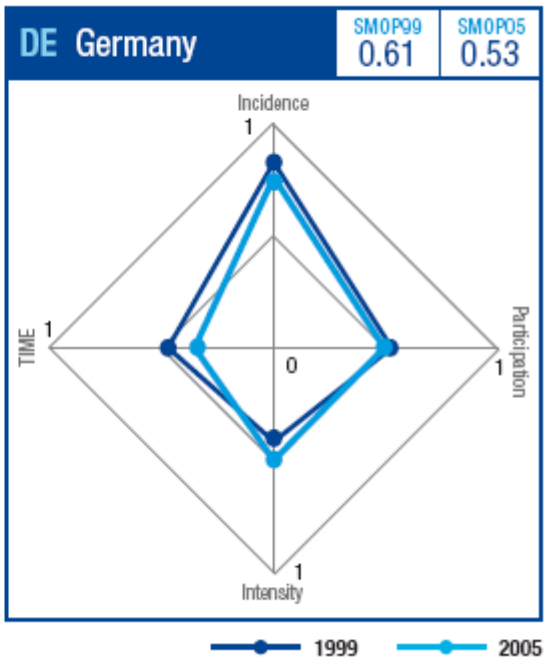


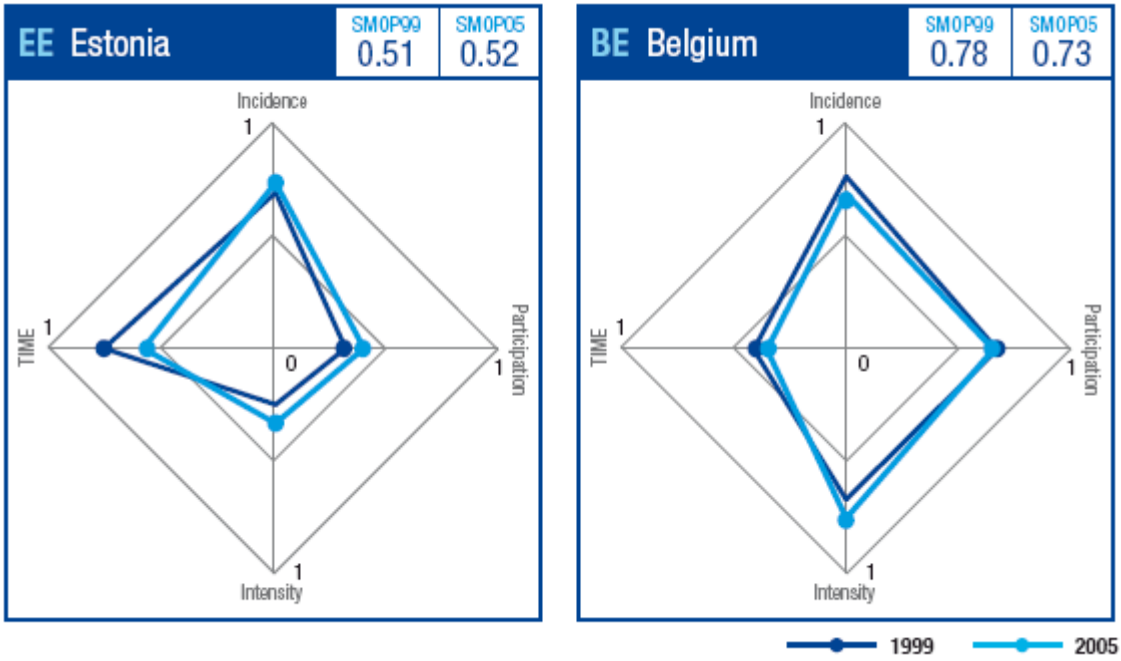
Figure 8 **Average performer – group 2**



Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

Figure 9 **Average performer – group 3**

Figure 10 **Average performer – exception Belgium**



Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

The new group of low performers comprises all south European countries (Greece, Spain, Italy and Portugal, with the exception of Malta) and the rest of the new EU Member States (Bulgaria, Cyprus, Latvia, Lithuania, Poland and Romania). All of them were also low performers in 1999. The countries can be reorganised into two sub-groups and two exceptional cases. First, Bulgaria, Latvia, Lithuania, Poland and Romania with moderate incidence and TME, but with a low participation and intensity (see examples in Figures 11 and 12). The Romanian results are impressive, because the country shows increases in all four dimensions and especially incidence and TME.

Then come Greece, Spain and Portugal with average incidence and participation, but with lower intensity and TME (see as examples Figures 13 and 14). Although the graph for Greece has a shape similar to the Spanish and Portuguese ones, the Greek values for all dimensions (between 0.17 and 0.23) are well below Portugal and Spain (between 0.29 and 0.54). The Greek SMOP has a value of 0.08 for 2005 (Spain: 0.41, Portugal: 0.30) and has even decreased since 1999 by a value of 0.04. Greece is the only country out of the group of low performers which did not increase its performance for three indicators.

Cyprus and Italy did not fit into any of the subgroups. Cyprus has moderate values for incidence, TME and participation, and low intensity (Figure 15). On the ‘diamond structure’ it resembles Austria and Germany in the group of average performers, but Cyprus has a lower SMOP (0.46) than Austria (0.65) and Germany (0.53). Italy displays low incidence and TME, but moderate participation and intensity (Figure 16). The strong reduction in TME in Italy is remarkable but, unfortunately, no explanation is available.

Figure 11 **Low performer – group 1**

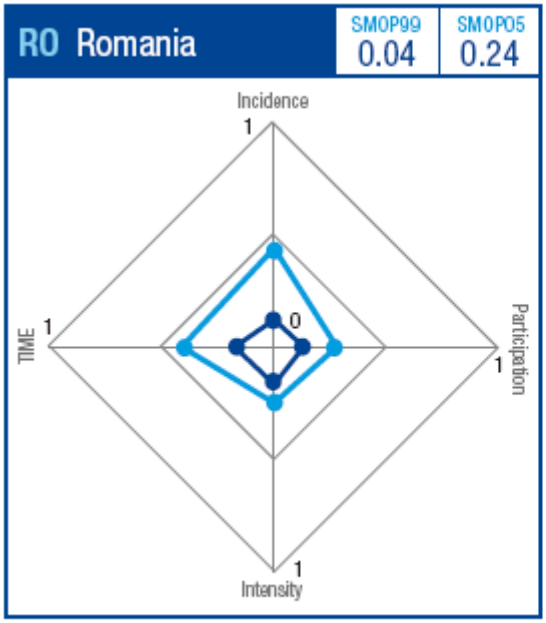
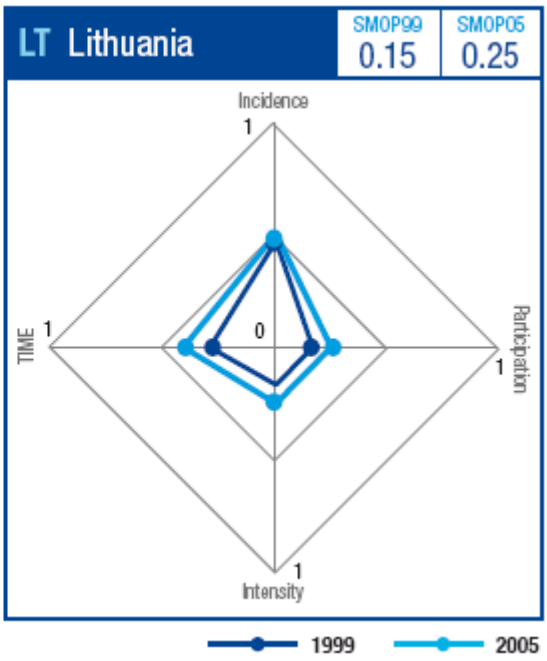


Figure 12 **Low performer – group 1**



Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

Figure 13 **Low performer – group 2**

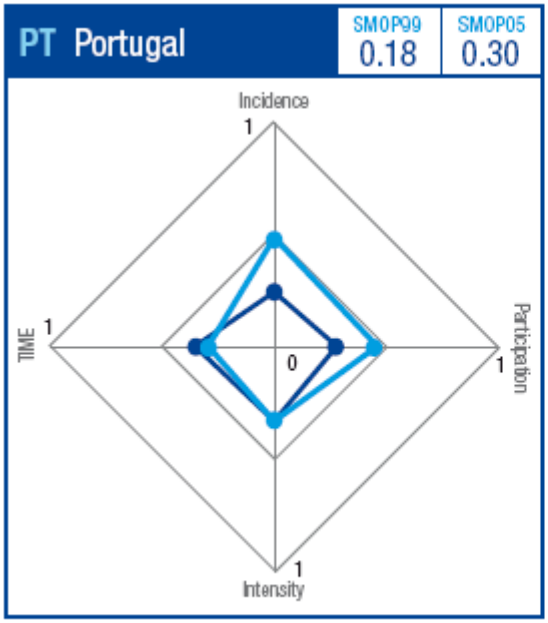
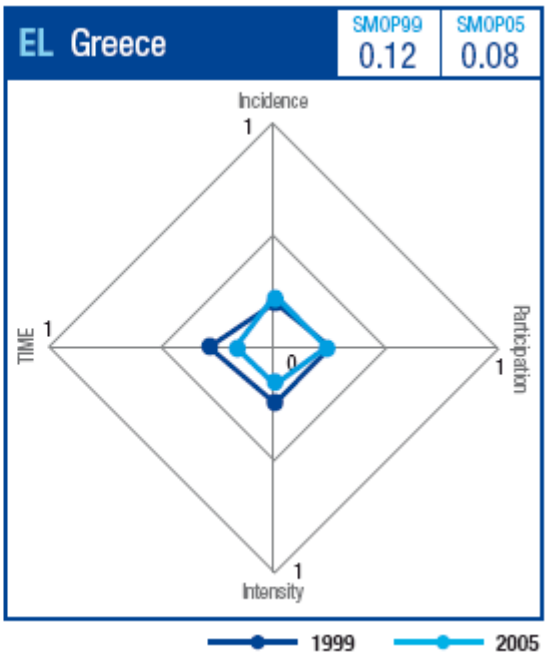


Figure 14 **Low performer – group 2**



Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

Figure 15 **Low performer – exception Cyprus**

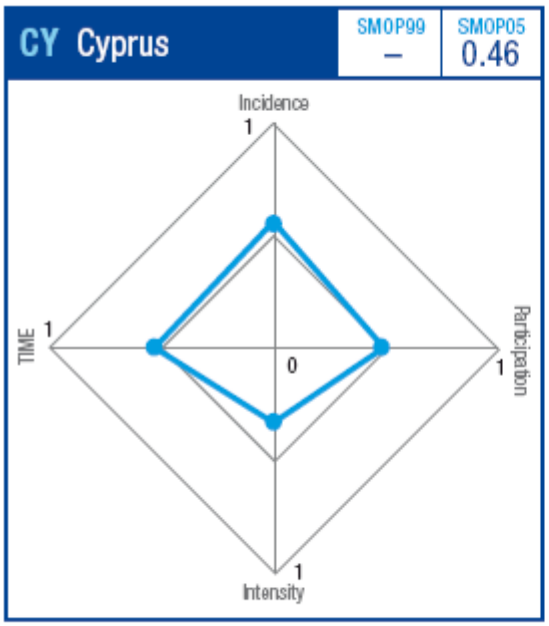
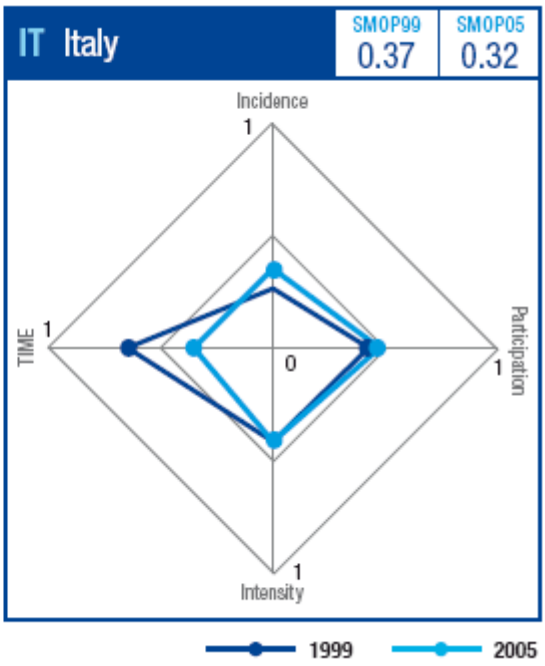


Figure 16 **Low performer – exception Italy**



Source: Eurostat, CVTS3, date of extraction 7.4.2008 and 20.11.2008; BIBB calculations.

2. Professional management of CVT in enterprises

2.1. Introduction

The main purpose of CVTS is to collect quantitative indicators on CVT in enterprises. There are also several supplementary qualitative questions on issues such as the influence of technological and organisational changes on enterprises or the reasons not to train.

This chapter concentrates on the qualitative questions in section D 'training policy of the enterprise' in CVTS3 which consider formal procedures and organisational elements within enterprises; these are important in understanding more about the ways in which enterprises organise, provide and evaluate their training. Similar questions from the CVTS2 could be used to assess professionalisation within enterprises (Grünewald et al., 2003, p. 59). This chapter considers this argument and generally discusses which conclusions can be drawn from the results to these questions.

2.1.1. Formalisation versus professionalisation in training in enterprises

Questions on 'training policy of the enterprises' ask mainly for institutionalised or formalised features of the organisation of CVT by enterprises. This includes whether a training centre, training plan or training budget exists, if there is a specific person or unit responsible for CVT, if there are formalised procedures for skills needs assessment, and if the effect of training is evaluated. Such questions can give an overall picture of the formalisation of the CVT process within enterprises. These elements of formalisation are seen as essential to the 'professionalisation' of CVT within enterprises, indicating that the training processes are continuously organised over time, are independent of the acquired tacit knowledge of an individual, are transparent, and contain feedback mechanisms and rules for continuous quality improvement. According to one commentator: 'it is expected that a systematic use of management techniques to execute the different tasks within the organisation of training lead substantially to better results than without any systematisation. It is expected that enterprises with such instruments profit from them in two ways: first, the instruments should help to define the appropriate quantum of training, avoiding to miss benefits from a useful expansion of the activities and to suffer losses by investing too much in CVT. Second, the instruments should help to improve effectiveness and efficiency of CVT. Losses coming from wrong decisions in the execution of training measures (e.g. wrong measures, wrong suppliers, wrong participants) should be avoided' (3s research laboratory 2005, p. 13).

Professionalised CVT provision uses specific tools and methods which, in turn, become an indicator of whether a task was organised in a professional way. It is associated with quality management approaches, which demand formalisation of processes.

Nonetheless, CVTS3 did not investigate other dimensions of 'professionalisation' such as those in charge of CVT, or their professions (Cedefop and Germe, 1991; Gieseke, 2005; Gross, 2003; Combe and Helsper, 2007; MacDonald, 1995; Nittel, 2000):

(a) appropriate educational (academic) background;
(b) good current knowledge of the profession;
(c) high levels of individual work autonomy;
(d) codes of professional conduct or codes of ethics;
(e) high organisational status;
(f) belonging to associations.

Other authors relate 'professionalisation' in CVT provision to access to professional resources (Büchter and Hendrich, 1996). Formalisation is a central feature of discussions on quality management, while it plays no or only a minor role in discussions on professionalisation. In the absence of such aspects in CVTS3, it is not possible to speak of 'assessing professionalisation' in relation to section D of CVTS3 other than in a limited, narrowly focused sense. Thus, it would be better to speak of 'formalisation' in relation to these questions.

2.1.2. Measuring the formalisation of training provision with CVTS

There are several proposals for an internal structure of the questions on training policy. For example, Grünewald et al. (2003, p. 59) proposed a structure for CVTS2:

(a) demand analysis (variables on assessing skill needs);
(b) implementation of CVT (variables on training plan and on training budget);
(c) evaluation of CVT (variable on evaluating the effects of CVT).

Demand analysis was understood as the level of goal setting, implementation as the level of input quality and evaluation as the level of success control. The question of the existence of a training centre was not discussed in this context. Grünewald et al. (2003, p. 59) considered these five variables of CVTS2 mentioned above as a good basis to develop a concept for measuring professionalism in CVT.

In contrast, Radinger and Pauli (2004) used a diverging approach on CVTS2 variables. They see 'professionalism and institutionalisation' in having a training plan, a training budget, a training centre and a collective agreement. They exclude the variables on demand analysis and on evaluation. However, they include the variable on training centre and the variable on collective agreements in their model.

Arguments have been put forward both in favour and against the approaches of Grünewald et al. (2003) and of Radinger and Pauli (2004). The fact that these authors do not refer their structuring to an existing theory or to other references in literature – at least, none is mentioned in their texts – causes concern. This can be explained in the sense that CVTS is not based on a theory of CVT, but the result of a complex consultation process with various actors with different interests. However, this leads to an eclectic structure of the CVTS questionnaires and its associated advantages and disadvantages.

3s Research Laboratory (2005), tried to link the questions on training policy in CVTS3 by referring to literature on human resource management (Becker, 2005). As a result, 3s Research Laboratory (2005, p. 15) sees three different fields of professional action:

(a) phase A 'planning': the demand analysis includes budgeting and the detailed formulation of the goals of the single training measures;
(b) phase B 'executing': the professional selection of the training offers and the professional implementation of training measures;
(c) phase C 'assessing': the professional measurement and assessment of the results and the support of the transfer of the acquired skills to the working process.'

The authors of 3s Research Laboratory allocate the CVTS3 variables D4 (assessment of future skill needs), D5 (employee interviews on training needs), D6 (training plan) and D7 (training budget) to phase A ([6]). Assigned to phase B is only D2 (person/unit in charge of CVT). Phase C is covered by the four variables D8 to D11 which deal with evaluation. Also, each phase is given a different weight (A: 0.5, B: 0.2, C: 0.3) and used for calculating a professionalism indicator (3s Research Laboratory 2005, p. 15). The variables D1 (training centre) and D3 (external advice) are not used for this indicator on professionalism, but have been related to a separate external category 'infrastructure/decision-makers'. Overall, 3s Research Laboratory (2005, p. 15) states: 'there are different models discussed in the literature to systematise the elements of the training process. Despite small differences and the use of different terms, the models are quite similar in their core contents.' The first part of the quote is obvious when only looking at the three models discussed here, but the second part of the quote seems questionable when looking at the overview in Table 4.

Table 4 **Overview of models to construct an indicator of professionalism in the CVT organisation**

Grünewald et al. (2003) on CVTS2: professionalisation	Radinger and Pauli, 2004 on CVTS2: professionalisation and institutionalisation	3s Research Laboratory 2005 on CVTS3: professionalisation
Demand analysis -assessing skill needs	- training plan - training budget - training centre - collective agreement	**Planning** - training plan - training budget - future skills - employee interviews
Implementation - training plan - training budget		**Executing** - person/unit in charge of CVT
Evaluation - evaluation		**Assessing** - evaluation

Radinger and Pauli's proposal is based on the inclusion of four variables without further distinctions or weights. In contrast with the other authors, they include the variable on collective agreements, even if this does not fit so well with professionalisation, and only partly with institutionalisation.

Evaluation is included by the all except Radinger and Pauli, while implementation and execution differ across models. Grünewald et al. locate training plan and training budget here, while 3s Research Laboratory includes the new CVTS3 variable D2 on person/unit in charge of CVT, though this might also be located under planning and assessing CVT. In the

([6]) See description and codes of CVTS3 variables in Annex 2.

3s model, the planning category is far larger than in Grünewald et al. It also includes the variables on training plan and training budget allocated to planning, together with the new variable on employee interviews.

These similarities and differences between the three models should be borne in mind when trying to develop an indicator on professionalisation or formalisation. Further, it is debatable if a holistic concept of professionalisation or formalisation can be applied to large and small enterprises simultaneously. Small enterprises are organised differently and do not have the resources for a unit solely dealing with CVT; such an arrangement is much easier for large enterprises. Thus, the discussion on developing an indicator for formalisation might acknowledge the organisational differences between SMEs and large enterprises. The assumption is that even SMEs can have professional organisation of CVT, although this CVT organisation may be more informal. This assumption could be the starting point for further research, but will not be further discussed here.

2.2. Methodological remarks

2.2.1. Limitations in comparing results over time

It is important to underline an essential change in the questionnaire between CVTS2 and CVTS3. While questions on training policy in the CVTS2 (sections B and C) were asked of all enterprises, the D section of CVTS3 was only asked of training enterprises (courses and/or other forms). The reason was the intention to reduce response burden for the non-training enterprises. In consequence, the data on training policy in CVTS3 can only be used for analysis of training enterprises and not to compare training and non-training enterprises (Radinger and Pauli, 2004; Käpplinger, 2007).

It is unreasonable to assume that all non-training enterprises do not have any of the instruments/methods mentioned in the training policy section of CVTS3. Yet it is also unreasonable to assume that non-training enterprises use as many instruments/methods as training enterprises. For example, according to CVTS2, in 1999 4 % of non-training enterprises in the EU-25 had a training plan, 4 % a training budget and 3 % a training centre. The figures were especially high in France, even for non-training enterprises: 35 % of the non-trainers had a training budget, probably because of the French funding system; 23 % of the UK non-trainers had a training centre in 1999 (CVTS2) which they normally used partly with other enterprises. Thus, even if it might appear a reasonable assumption that non-training enterprises do not use the elements of questions D1 to D11, there are some suggestions otherwise at EU-25 level and, even more so, nationally. France decided even for CVTS3 to ask some of the D questions to non-trainers. The results for question D2 demonstrate that even 19.5 % of French non-trainers have a person or unit in charge of CVT (see also discussion on incidental trainers in Chapter 5).

Many changes have been made between CVTS2 and CVTS3. New questions have been introduced (CVTS3: D2, D3, D5), questions have been dropped (CVTS2: B3) or questions have been merged/modified (CVTS2: B1, B2, C7). The wording of almost all questions has been revised and answer options have been changed (introduction of some four-point-scales

instead of only binary answer options). Thus, the potential for comparing CVTS2 and CVTS3 results is limited, beyond the fact that 2005 data only cover training enterprises. In particular, comparisons are:

(a) partly possible for D1 (training centre), D6 (training plan) and D7 (training budget) (Table 5);
(b) partly possible with significant limitations for D4 (future skills needs) and D8 to D11 (four evaluation questions);
(c) not at all possible for D2 (specific person), D3 (external advisory service) and D5 (structured interviews).

Overall, the general picture is diverse. The proportion of training enterprises with a training centre was higher in 14 countries in 2005 compared to 1999, and lower in four. The proportion of training enterprises with training budgets is also higher in most countries (11 countries) in 2005 compared to 1999, while decreasing in seven countries. It is different for training plans which were used less in 13 countries and only increased in use in six. Nevertheless, some of the marked differences between 1999 and 2005 in the table appear questionable. No thematic or methodological explanation for these changes is available, but methodological national differences (wording of questions, concept applied, sample) is possible.

2.2.2. CVTS3 variables on enterprise training policy

National quality reports were required to provide information about item response rates for so-called key variables. Even if, in general, questions in section D on enterprise training policy were not classed as key variables – and item response rates were not required – certain national quality reports provided this information relating to questions D1-D11:

(a) Austria: 97 % to 100 % (Statistik Austria, 2007, p. 30);
(b) Bulgaria: 99 % (National Statistics Institute, 2007, p. 15);
(c) Finland: 90 % (Statistics Finland, 2008, p. 12);
(d) Lithuania: more than 95 % (Statistics Lithuania, 2007, p. 30);
(e) Norway: 82 % to 86 % (Statistics Norway, 2008, p. 27);
(f) Sweden: 86 % to 87 % (Statistics Sweden, 2007, p. 50-51).

Available figures seem to indicate that item response rates are relatively good for questions D1 to D11 since they are above 80 % and often even close to 100 %; this suggests that quality problems caused by high item-non response rates are not expected for questions D1 to D11. However, this might be evaluated based on information from all countries and, for CVTS4, reporting of item non-response rates for all CVTS variables should be considered.

Table 5 **Training enterprises using a training centre, plan and budget in 1999 and 2005**

	Training enterprises with								
	training centre			training plan			training budget		
	1999 (%)	2005 (%)	Diffe-rences*	1999 (%)	2005 (%)	Diffe-rences*	1999 (%)	2005 (%)	Diffe-rences*
BE		15			36			31	
BG	7	16	+9	22	32	+10	15	21	+6
CZ	7	9	+2	32	26	-6	23	26	+3
DE	5	7	+2	28	22	-6	22	26	+4
EE	5	6	+1	19	17	-2	19	21	+2
IE	16			53			30		
EL	28	23	-5	51	24	-27	48	31	-17
ES	13	21	+8	40	34	-6	21	24	+3
FR	13	15	+2	51	40	-11	61	58	-3
IT	25	32	+7	60	44	-16	35	29	-6
CY		22			28			31	
LV	5	11	+6	10	18	+8	7	22	+15
LT	4	6	+2	16	19	+3	15	16	+1
LU	16	25	+9	32	30	-2	27	37	+10
HU	4	4	+-0	26	25	-1	16	19	+3
MT		17			29			35	
NL	10	9	-1	27	23	-4	28	27	-1
AT		9			25			28	
PL	2	4	+2	15	27	+12	13	19	+6
PT	14	21	+7	34	43	+9	22	24	+2
RO	9	13	+4	38	18	-20	38	24	-14
SI	4	17	+13	76	37	-39	75	32	-43
SK		7			33			43	
FI	14	8	-6	31	24	-7	34	34	0
SE	16	11	-5	28	38	+10	54	47	-7

* Differences between CVTS3 and CVTS2 in percentage points

NB: Denmark, Norway and the UK are excluded because of limited comparability.
CVTS3 data are not available for Ireland.
Poland in 1999 covered only Pomorskie region.
Belgium and Austria data for CVTS2 are unreliable.
Cyprus, Malta and Slovakia took part only in CVTS3.

Source: Eurostat, CVTS3, date of extraction 9.2.2009; BIBB calculations.

Further problems with question D3 on the use of external advisory services should be mentioned. The Estonian data might be misleading, since additional examples imply that the question asks mainly if enterprises use the Internet as an external information channel. This is very different from the original concept of asking for external professional advice. Further, France states in its quality report (Céreq, 2007, p. 14) that additional examples were needed by interviewees in connection with question D3, suggesting a need to improve the wording of this question and to add a definition of ‘external advisory service’ to the glossary of the CVTS4 manual.

2.3. Training formalisation in enterprises

Table 6 gives an overview of different elements used in enterprise training policy (questions D1 to D11). At EU level, the most rarely used elements are training centres (15 %), while a specific person/unit in charge of training is most often present in training enterprises (42 %). Training enterprises appear to consult external advice rarely (19 %).

From the planning elements, training plans/programmes are most often used (34 %), ahead of training budgets (32 %), employee interviews about training needs (30 %) and future skill assessment (26 %).

The most frequent forms of evaluation are the assessment of occupational performance and measuring participant satisfaction (37 %). Business performance is rarely measured (21 %), while evaluation tests are more frequent (31 %).

Individual country performance (Table 6) is sometimes surprising. There are some extreme outliers such as Denmark for D1 training centres at 47 percentage points above EU-25 average and Estonia for D3 external advice at 57 percentage points above EU-25 average, although methodological reasons explain this difference in the latter case (Table 6: footnote). The Danish results, meanwhile, might be explained by the high level of institutionalised CVT provision by a corporatist system with strong State regulation (AMU system; Sørensen and Møller, 2007, p. 27-29). Perhaps this reflects the sharing of the AMU training centres, but this assumption would need more analysis.

One might assume that the best performing countries for the key indicators in quantitative terms (Chapter 1) would also be the best performing in use of formalised instruments. This assumption is challenged, however, when looking at the best and worst three countries in Table 6. Countries such as Bulgaria, Greece, Italy, Cyprus, Latvia, Poland, Portugal or Romania belong to the best three countries in some instances, although they were among the low performers in quantitative terms. Exactly the opposite is the case for good performers in quantitative terms: countries such as Denmark, Finland, the Netherlands, Norway or Sweden.

It may be a matter of perspective whether formalised CVT instruments are frequently used by training enterprises or not: values around 40 % (Table 6, D8, D10 and D2) are neither low nor high. It is important to analyse how these instruments are distributed in individual enterprises or groups of enterprises. For example, in Austria in 1999:

(a) 5.0 % of all Austrian enterprises used six elements;
(b) 15.5 % of all Austrian enterprises used five elements;
(c) 13.2 % of all Austrian enterprises used four elements;
(d) 13.9 % of all Austrian enterprises used three elements;
(e) 13.9 % of all Austrian enterprises used two elements;
(f) 20.2 % of all Austrian enterprises used one element;
(g) 18.2 % of all Austrian enterprises used no elements.

(3s Research Laboratory, 2005, p. 30-31).

Almost 50 % of the Austrian enterprises used half or more of the six formalisation elements researched in the CVTS2. This shows that enterprises very often use combinations

of different elements as a kind of toolbox. The low percentage for one single tool should be seen in this context.

Table 6 **Use of formalisation instruments in training enterprises in 2005 (%)**

Question/element		EU-27 average	Highest three performers		Lowest three performers	
D1	Training centre	15	DK	62	LT	6
			IT	32	PL	4
			LU	25	HU	4
D3	External advice	19	EE ([a])	76	HU	8
			LV	47	SE	7
			CY	40	AT	7
D11	Measuring business performance	21	EL	43	NL	9
			RO	40	HU	8
			BG	37	FI	6
D4	Future skills assessment	26	EE	38	LT	10
			FR	34	DK	9
			EL	33	HU	9
D5	Employee interview about CVT	30	NO	46	SK	18
			FR	38	DK	18
			PL	36	HT	12
D9	Evaluating participants knowledge with tests	32	EL	46	AT	14
			BG	44	DE	13
			PT	44	EE	13
D7	Training budget	32	FR	58	EE	21
			SE	47	PL	19
			SK	43	LT	16
D6	Training plan	34	IT	44	LV	18
			FR	40	RO	18
			SE	38	EE	17
D8	Measuring participant satisfaction	36	IT	59	SK	19
			FR	47	LT	18
			RO	46	HU	11
D10	Occupational performance of participants	37	EL	53	CZ	17
			PL	53	FI	16
			PT	52	DE	16
D2	Specific person or unit in charge for CVT	42	IT	55	FI	16
			PT	54	NL	13
			LU	53	EE	7

([a]) The Estonian data on question D3 is of limited comparability: the question asks mainly if enterprises use the Internet as an external information channel, very different from the original aim of this question (asking for external professional advice).

NB: Percentages in the table refer to the summation of the two answers 'always' and 'often' of a four-point-scale or the answer 'yes' of binary scales. Norway and the UK are excluded because of limited comparability. For Ireland CVTS3 data are not available.

Source: Eurostat, CVTS3, date of extraction 13.1.2009; BIBB calculations.

There seems to be no set of tools which most training enterprises uses equally but different combinations suited to the diverse needs of enterprises. This indicates that there might be no universal strategy of formalising training organisation for all enterprises, but there are distinct strategies in line with the diverse needs of different enterprises. This also challenges the assumption that it would be possible to construct a sensitive indicator on

formalisation for all training enterprises. This is especially true for the differences between small and large enterprises, but also likely to be true within same size enterprise groups or by sector of activity (NACE groups).

2.4. Enterprise size and sector: relevance to training formalisation

Table 7 gives an overview of the results from questions D1 to D11 by size of enterprise. It is clear that large training enterprises more often use the different elements of D1 to D11 than smaller ones. More large training enterprises use these elements, especially true for training budgets (43 percentage points difference between small and large enterprises), training plans (42 percentage points difference) and whether having a specific person or unit responsible for training (37 percentage points difference). It is understandable that these elements would be connected to enterprise size since their existence is more of a necessity when frequently offering training, whereas a small enterprise with infrequent training may not need such elements.

The gap is comparatively small for external advice (8 percentage points) and assessment of business performance (11 percentage points), which is also intuitive. If a small enterprise does not have a person in charge of training, an option may be to consult an external expert. Even more important, large enterprises seem to have enough internal expertise to need no external advice at all. This seems to be supported in that 73 % of all large training enterprises with 250 and more employees have a specific person/unit in charge of CVT, but only 26 % make use of external advice.

Overall, enterprise size seems to have a strong effect on the extent to which CVT provision is formalised. Perhaps formalised elements of CVT provision are often not relevant for small enterprises due to size.

The sector of activity seems to have less of an effect on the formalisation of CVT provision, at least when disaggregating into six groups of economic activity (NACE6) as in Table 8.

The differences between the various sector groups are mostly small. The main exception is the finance sector, which is clearly above average values for most elements (e.g. training centre, employee interview, training budget, training plan and participant satisfaction). The finance sector seems strongly to favour formalised means in the organisation of CVT.

Excluding the finance sector, differences between the five remaining groups are small, for example, four percentage points for training centres or three percentage points for external advice. The differences are only larger for training budget, employee interviews and specific person or unit. This suggests that formalised elements of CVT organisation are generally equally spread over different sectors of activity with the exception of finance and some of the formalised elements just mentioned. However, these six groups (NACE6) could be disaggregated much further. An analysis of more NACE categories would be more differentiated.

Table 7 **Formalisation instruments in different size classes of training enterprises in EU-27 in 2005 (%)**

		Total	Employees			Difference between 250+ and	
			10-49	50-249	250+	10-49 (percentage points)	50-249 (percentage points)
D1	Training centre	15	13	18	34	21	16
D3	External Advice	19	18	20	26	8	6
D11	Measuring business performance	21	20	24	31	11	7
D4	Future skills assessment	26	23	33	50	27	17
D5	Employee interview about CVT	30	26	39	53	27	14
D9	Evaluation test	32	30	37	45	15	8
D7	Training budget	32	26	48	69	43	21
D6	Training plan	34	28	47	70	42	23
D8	Participant satisfaction	36	34	47	67	33	20
D10	Occupational performance	37	34	41	50	16	9
D2	Specific person/unit responsible	42	36	52	73	37	21

NB: Percentages in the table refer to the summation of the two answers 'always' and 'often' of a four-point-scale or the answer 'yes' of binary scales.

Source: Eurostat, CVTS3, date of extraction 13.2.2009; BIBB calculations.

Table 8 **Formalisation instruments in training enterprises in EU-27 in 2005 by NACE (%)**

Sector of activity (NACE)		Total	C, E, F, H, I	D	G	J	K	O
D1	Training centre	15	15	13	17	31	16	15
D3	External advice	19	20	18	17	17	19	19
D11	Measuring business performance	21	21	23	21	19	22	20
D4	Future skills assessment	26	25	24	23	38	29	33
D5	Employee interview about CVT	30	26	26	29	50	38	37
D9	Evaluation test	32	32	31	31	34	33	34
D7	Training budget	32	26	30	30	57	39	44
D6	Training plan	34	32	36	30	52	36	36
D8	Participant satisfaction	36	34	37	37	52	42	43
D10	Occupational performance	37	36	36	35	41	36	41
D2	Specific person/unit responsible	42	39	41	38	57	44	49

NB: Percentages in the table refer to the summation of the two answers 'always' and 'often' of a four-point-scale or the answer 'yes' of binary scales.

C mining and quarrying
D manufacturing
E electricity, gas and water supply
F construction
G wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
H hotels and restaurants
I transport, storage and communication
J financial intermediation
K real estate, renting and business activities
O other community, social, personal service activities

Source: Eurostat, CVTS3, date of extraction 13.2.2009; BIBB calculations.

2.5. Cluster analysis on formalisation of CVT provision

2.5.1. Methodological remarks

Multivariate cluster analysis seeks to identify homogeneous subgroups of cases in a data set (Abonyi/Feil, 2007). It is used, for example, when a researcher does not know the number of subgroups in advance but wishes to find subgroups and then analyse group membership. Cluster analysis seeks to identify a set of groups which both minimise within-group variation and maximise between-group variation.

Analysis is done by a two-step clustering approach, using SPSS software. One important reason for choosing two-step clustering was the large data set of 11 variables from seven CVTS3 countries (n = 51.943), also a motivation to develop two-step clustering (Garson, 2009, p. 11). Another reason was that the number of clusters was automatically generated by the algorithm and did not have to be predefined (as in K-means clustering). Log-likelihood distance was used as a distance measure. The variables D1 to D11 of CVTS3 were used, transforming the binary variables D1, D2, D6 and D7 to the same data level as the other variables D3, D4, D5 and D8 to D11 ([7]). Merged microdata sets from Belgium, the Czech Republic, Germany, Spain, France, Italy and Romania were used. The Estonian data set was excluded from the analysis because of the data comparability problems with the question D3 on external advice.

The independence of variables, one basic assumption of cluster analysis, was checked by creating a bivariate correlation matrix of the 11 variables. The highest Pearson correlations were between D4 (assessment of future skills needs) and D5 (employee interviews) with 0.625 as well as D9 (assessing skills) and D10 (assessing occupational behaviour) with 0.584. All other correlations were well below 0.5 and close to zero. The independence of variables was generally respected, although 'two-step clustering is fairly robust even when the assumption of independence is violated' (Garson, 2009, p. 19). Two-step clustering (such as K-means clustering) depends on the sequence of observations in the data set. To control such sequence effects, randomisation of the sequence of observations was combined with multiple runs. This stability analysis proved that the four clusters are stable across different orders of the data set.

Cluster analysis is a multivariate method, but also a heuristic approach to finding an order within microdata. One disadvantage is that cluster analysis can be easily influenced by methodological changes, hence variability of models and results are often high. No single solution is possible since the choice of variables, distance measures and data levels affect the results significantly. However, even with a heuristic approach, the logic and relevance of results is a significant argument in favour a certain model. This cluster analysis showed that all the different cluster analyses shared the common feature of two main groups of clusters: training enterprises with a high degree of formalised CVT provision and training enterprises with a low degree of formalised CVT provision.

([7]) Special thanks to Michael Wiedenbeck and Cornelia Züll of the Center for Survey Design & Methodology of Gesis – Leibniz Institute for the Social Sciences in Mannheim (Germany), who gave important methodological support to this analysis in general and especially on this issue of data level handling.

2.5.2. Cluster patterns in the formalisation of CVT provision

The clustering produced four subgroups describing the use of formalised means of CVT organisation at enterprise level:

cluster 1: enterprises with highly formalised CVT provision and a focus on external training (intensive users with external training);

cluster 2: enterprises with highly formalised CVT provision and a focus on internal training (intensive users with internal training);

cluster 3: predominantly output-oriented evaluators (selective users);

cluster 4: the minimalists in formalisation.

Enterprises in clusters 1 and 2 make comprehensive use of these means, while those in cluster 3 make selective use and those in cluster 4 make almost no or only rare use of formalised means. This would seem to indicate that the use of formal means is widespread in the seven selected countries but this would be misleading since the four clusters are very unequally distributed in the countries.

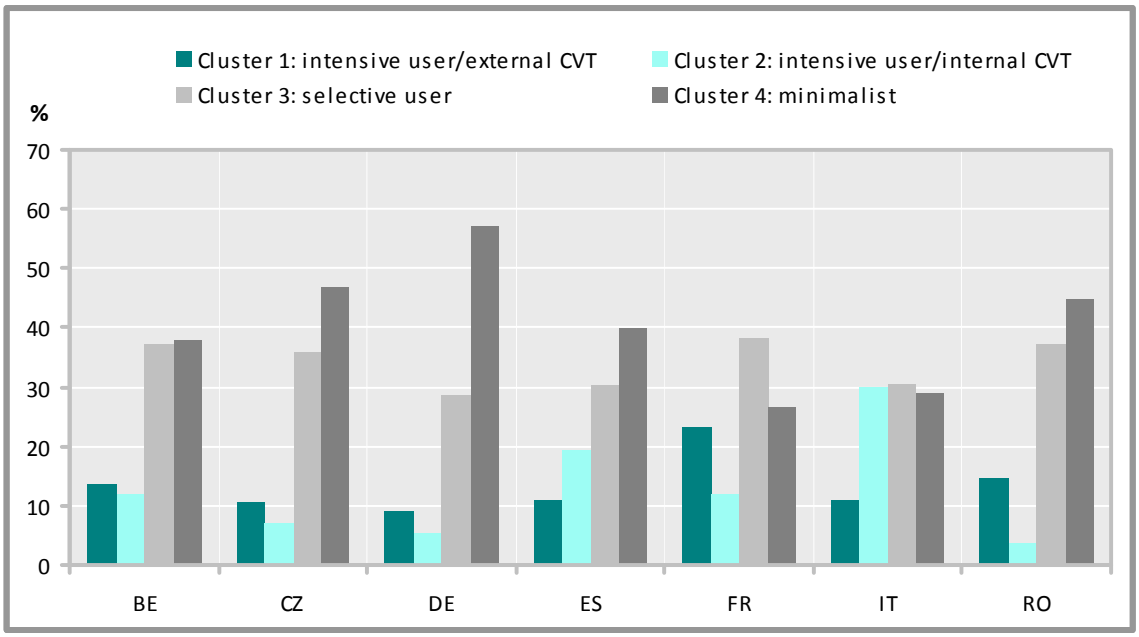
Figure 17 shows that clusters 3 and 4 are the largest in almost all countries yet the shares of all training enterprises are between 29 % (Germany) and 38 % (France) for cluster 3 and 27 % (France) and 57 % (Germany) for cluster 4. Together, selective users and minimalists represent a total 59 % (Italy) and 86 % (Germany) of training enterprises. Intensive use of formalised means is thus only typical for a minority of enterprises in the seven countries studied.

One exception is Italy, with a high share of enterprises in the intensive cluster 2 (30 %) and the overall highest proportion of intensive users (41 %). Another is cluster 1 for France, but the intensive users of formalised means are a minority in all countries. This minority status is likely to be even stronger if non-trainers are included in the analysis, as it is unlikely that a significant number of non-trainers are intensive users; this holds even avoiding, as mentioned in Section 2.2, the assumption that non-trainers do not use any formalised means.

Cluster 1 (enterprises with a highly formalised CVT provision and a focus on external training) is characterised by intensive use of formalised means. From the CVTS3 variables, D1 to D11 only D1 (training centre), D3 (external advice) and D11 (measuring impact on business performance) are used rarely or not at all. The rare use of D3 and D11 are more or less common features for all four clusters, although highest for cluster 1.

Cluster 2 (enterprises with a highly formalised CVT provision and a focus on internal training) is similar to the first cluster. The main difference is in the use of a training centre (question D1). While no enterprise in cluster 1 has a training centre, all enterprises in cluster 2 have a training centre. This is a sharp distinction for a cluster analysis and indicates that the enterprises in cluster 2 have, at least partly, different organisation of CVT from the enterprises of cluster 1. Enterprises in cluster 2 make much more use of internal training offers than the enterprises of cluster 1, which prefer to invest in external training. For example in Spain, enterprises with a training centre spent 453 hours more on internal training than enterprises without a training centre, while enterprises without a training centre spent 254 hours more on external training than enterprises with a training centre.

Figure 17 **Cluster distributions by country in 2005**



NB: Values used for the cluster analysis refer to the summation of the two answers 'always' and 'often' of a four-point-scale or the answer 'yes' of binary scales for questions D1 to D11.

Source: Anonymised national microdata of CVTS3; BIBB calculations.

Assessment of future skills needs (D4) and employee interviews (D5) are less often carried out by training enterprises in cluster 2 than in cluster 1. Variables D1 to D11 are generally less often used in cluster 2 than in cluster 1. Despite this difference, training enterprises in both clusters make intensive use of formal means of CVT organisation. The overall formalisation is similar in clusters 1 and 2, but this formalisation is combined with different modes of internal or external CVT provision.

Cluster 3 (predominantly output-oriented evaluators) is characterised by a strong focus on evaluation. The variables D8 to D10 (measuring satisfaction, assessing skills, assessing occupational behaviour) are often used, and the others more rarely. Only D2 (person/unit in charge of training), D6 (training plan) and D7 (training budget) are frequent characteristics. It is likely that enterprises in this cluster have a predominantly high interest in training output, while elements of need assessment and of skills analysis are not often used. Small enterprises (10-49 employees) are more often found in cluster 3 than in clusters 1 and 2. Presence in cluster 3 reflects the high interest of many small enterprises in evaluation and effective training, while other features of a formalised CVT organisation are under-represented.

Cluster 4 (minimalists in formalisation) are reluctant and abstinent in using formalised means. None of the different means is used by the majority or even a significant number (e.g. more than 20 %) of enterprises. Nonetheless, these enterprises do provide training despite the reluctance to formalise CVT provision.

2.5.3. Distribution of enterprise size and sector across clusters

There are two sector groups (NACE) in which formalised means for the provision of CVT are generally more intensive. These sectors are finance and electricity, gas and water. In the finance sector, most enterprises are intensive users of formalised means in Germany, France and Italy, for example, 54.6 % of French enterprises or 58.4 % of Italian enterprises. Many enterprises in the finance sector also belong to cluster 1 or 2 in the other countries (Belgium: 45.9 %, Spain: 40.9 %, Czech Republic: 31.9 %). Overall, the finance sector is the most active user of formalised means.

In the electricity, gas and water supply sector, most enterprises are intensive users of formalised means in Belgium, France and Italy (Spain just fails to join this group). For example, 59.3 % of French enterprises in this sector belong to cluster 1 or 2. It is different in the three other countries: in the Czech Republic only 22.4 % of enterprises are intensive users of formalised means, in Romania only 22.2 % and in Germany only 17.4 %. It is interesting to note the differences in the use of formalised means between same sectors in different countries.

Within countries, no other groups use formalised means more than finance or electricity, gas and water supply. The lowest use of formalised means can often be observed in the construction, hotels and restaurants, and transport, storage and communication sectors. For example, only 2 % of German enterprises in construction can be found in the cluster 1 or 2 of intensive users. There are large differences between countries. The sector in which formalised means are used least intensively varies between countries. It is hotels and restaurants in the Czech Republic and Romania, construction in Germany and Spain, other community, social and personal service activities in Belgium, transport, storage and communication in France, and wholesale and retail trade in Italy. This underlines the importance of analysing the role of sectors nationally or cross-nationally.

A much more unequal distribution than for sector of activity can be observed for size, as becomes obvious when comparing small and large enterprises (Figures 18 and 19). The general tendency is similar in all countries, namely that the share of small enterprises is highest in clusters 3 and 4, while large enterprises are mostly located in clusters 1 and 2 (exceptions being the Czech Republic, Germany and Romania with high shares of large enterprises in cluster 3). These figures clearly demonstrate that the use of formalised means is connected to enterprise size. For example, only 1.7 % of large enterprises in France belong to the abstinent cluster 4.

Table 9 **Distribution of intensive users and selective users or minimalists by NACE and country in 2005 (%)**

	C, D	E	F	G	H	I	J	K	O
Belgium									
Intensive users	24.5	55.6	28.4	21.6	14.9	25.7	45.9	37.2	11.8
Selective or minimalists	75.5	44.5	71.6	78.4	85.0	74.4	54.1	62.8	88.2
Czech Republic									
Intensive users	20.5	22.4	12.2	14.2	10.9	15.4	31.9	23.7	16.2
Selective or minimalists	79.5	77.6	87.8	85.8	89.1	84.6	68.1	76.3	83.9
France									
Intensive users	34.3	59.3	25.7	14.2	10.9	15.4	31.9	23.7	16.2
Selective or minimalists	65.6	40.7	74.3	85.8	89.1	84.6	68.1	76.3	83.9
Germany									
Intensive users	12.8	17.4	2.0	20.3	20.7	8.4	50.7	13.1	10.3
Selective or minimalists	87.2	82.5	97.9	79.7	79.2	91.6	49.3	86.8	89.7
Italy									
Intensive users	38.7	51.2	37.6	37.2	41.9	47.9	58.4	46.0	42.3
Selective or minimalists	61.3	48.8	62.5	62.8	58.1	52.1	41.6	53.9	57.7
Romania									
Intensive users	14.6	22.2	16.5	22.0	5.8	17.5	23.6	22.9	19.6
Selective or minimalists	85.4	77.7	83.4	78.0	94.2	82.5	76.4	77.0	80.5
Spain									
Intensive users	29.9	49.4	25.8	30.2	32.4	32.3	40.9	30.9	35.8
Selective or minimalists	70.1	50.5	74.2	69.8	67.6	67.8	59.1	69.2	64.2

NB: Values used for the cluster analysis refer to the summation of the two answers ‘always’ and ‘often’ of a four-point-scale or the answer ‘yes’ of binary scales for questions D1 to D11.

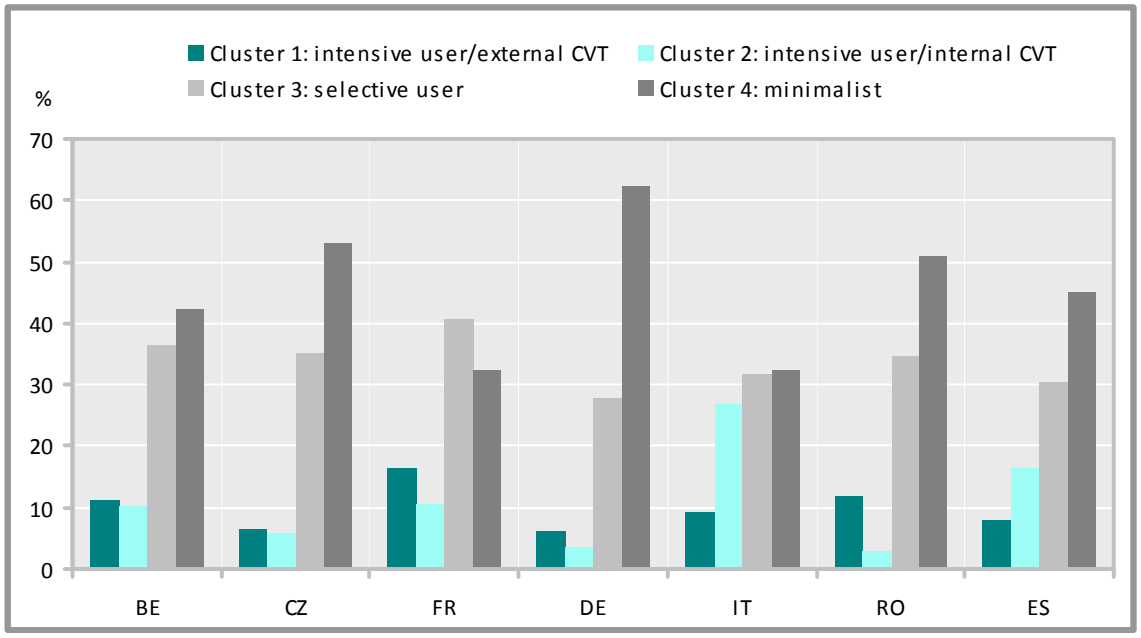
Intensive users: Clusters 1 and 2
Selective or minimalists: Clusters 3 and 4

C mining and quarrying
D manufacturing
E electricity, gas and water supply
F construction
G wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
H hotels and restaurants
I transport, storage and communication
J financial intermediation
K real estate, renting and business activities
O other community, social, personal service activities

Source: Anonymised national microdata of CVTS3; BIBB calculations.

A significant size effect certainly exists, but there are also small enterprises which use formalised means to organise CVT. The cluster analysis with microdata was fruitful in shedding light on the distribution of the diverse group of small enterprises which is often treated as a homogenous group. This is also true for large enterprises. Instead of comparing large and small enterprises it might be more interesting to compare different groups of small enterprises, as when comparing them for incidence and participation. There are many non-trainers in the group of small enterprises, but there are also very active small enterprises, often even more active than large enterprises. It would be an interesting approach to compare different groups of small enterprises, analyse their characteristics and learn in this way from best practice.

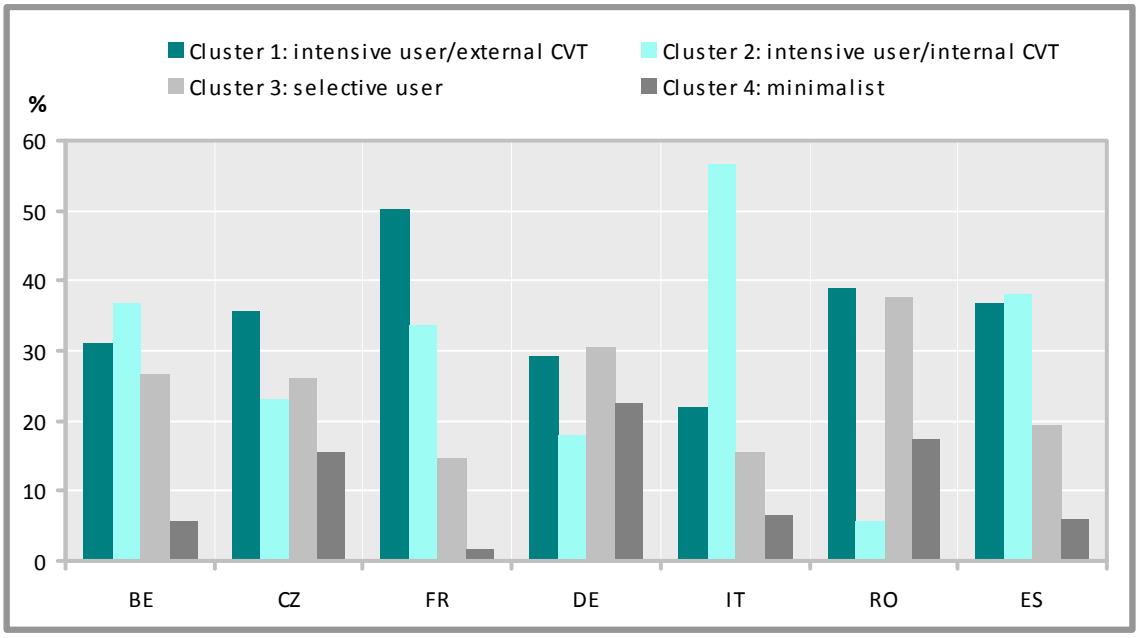
Figure 18 **Cluster distribution of small enterprises (10-49 employees) by country in 2005**



NB: Values used for the cluster analysis refer to the summation of the two answers 'always' and 'often' of a four-point-scale or the answer 'yes' of binary scales for questions D1 to D11.

Source: Anonymised national microdata of CVTS3; BIBB calculations.

Figure 19 **Cluster distribution of large enterprises (250 and more employees) by country in 2005**



NB: Values used for the cluster analysis refer to the summation of the two answers 'always' and 'often' of a four-point-scale or the answer 'yes' of binary scales for questions D1 to D11.

Source: Anonymised national microdata of CVTS3; BIBB calculations.

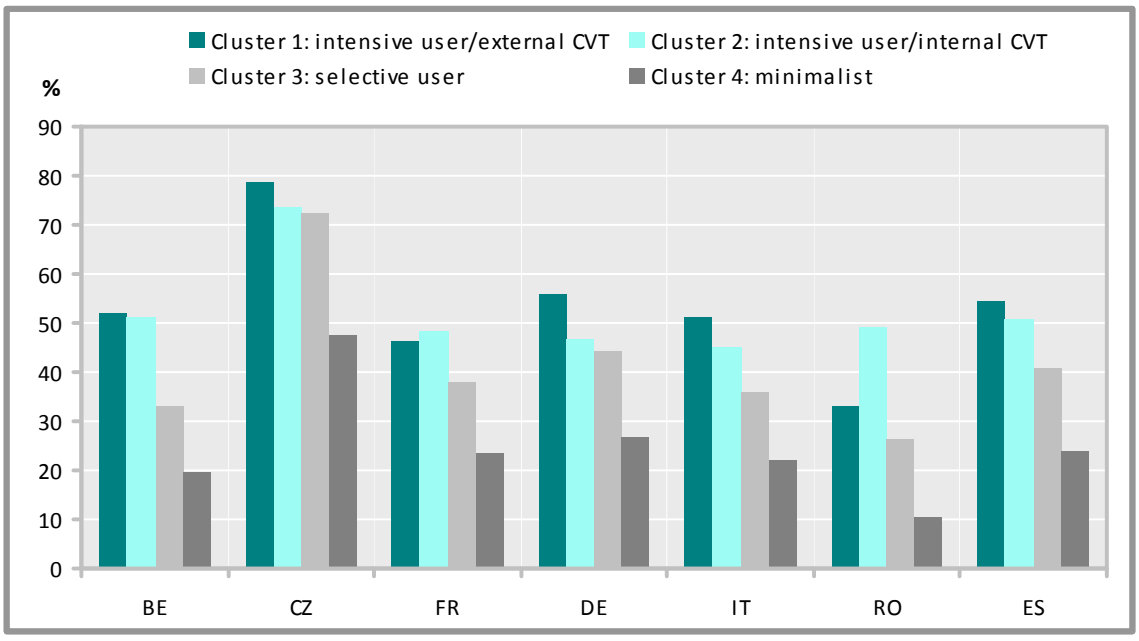
2.5.4. Comparison of key CVTS3 indicators across clusters

Another interesting consideration from the microdata is whether formalisation of CVT organisation is linked to more intensive provision of CVT (in quantitative terms). Hypothesis 1 (formalisation leads to more training) is reasonable in that a high level of formalisation indicates a high general importance of CVT provision and so supports high levels of CVT provision. However, hypothesis 2 (formalisation leads to less training) is also reasonable in that a high level of formalisation leads to a high level of effective, good quality CVT provision and possibly a reduction of CVT provision.

Since all enterprises analysed are training enterprises, the incidence indicator is superfluous: incidence is 100 % for all clusters. However, the clusters exhibit clear trends for participation and intensity (Figure 20), especially between the clusters 1 and 2 of intensive users and cluster 4 of minimalists.

In the training enterprises of the intensive clusters, participation rates and training intensities are clearly higher than in the abstinent cluster. This is true for all seven countries. The differences in average training hours and training participation between the two intensive clusters are relatively small. In most countries, enterprises in cluster 1 are more active in relation to participation and intensity, but in France, Belgium and – especially –Romania results point in a different direction. In all countries, selective users in cluster 3 sit between clusters 1 and 2 on one side and cluster 4 on the other.

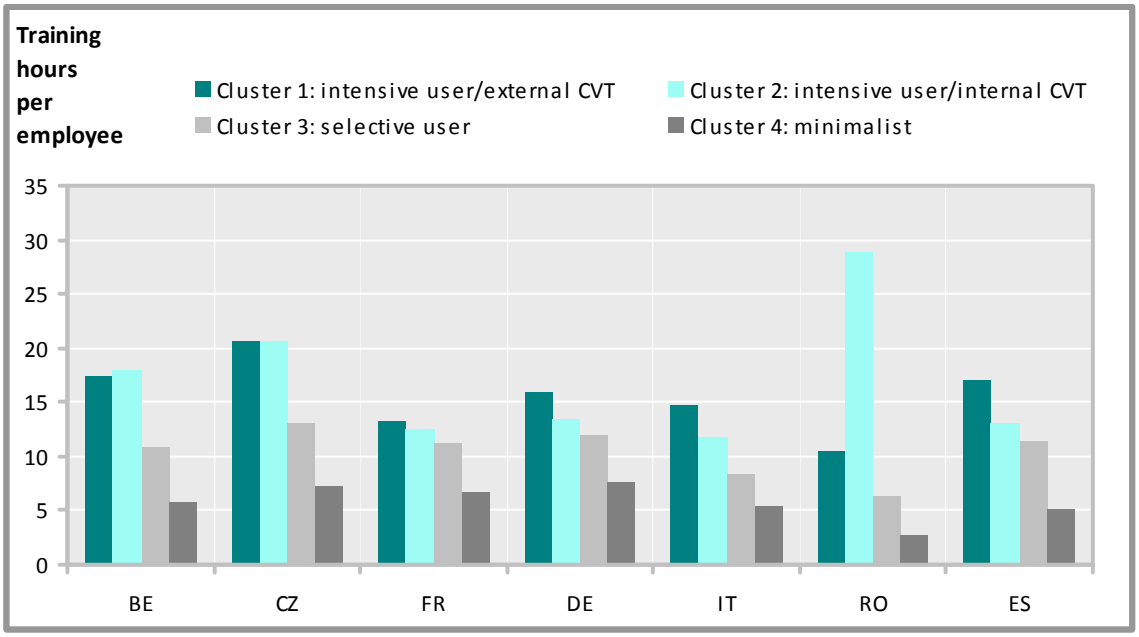
Figure 20 **Participation in CVT courses in the four different clusters in 2005 (%)**



NB: Values used for the cluster analysis refer to the summation of the two answers 'always' and 'often' of a four-point-scale or the answer 'yes' of binary scales for questions D1 to D11.

Source: Anonymised national microdata of CVTS3; BIBB calculations.

Figure 21 **Training hours in CVT courses per employee in the four clusters in 2005**



NB: Values used for the cluster analysis refer to the summation of the two answers 'always' and 'often' of a four-point-scale or the answer 'yes' of binary scales for questions D1 to D11.

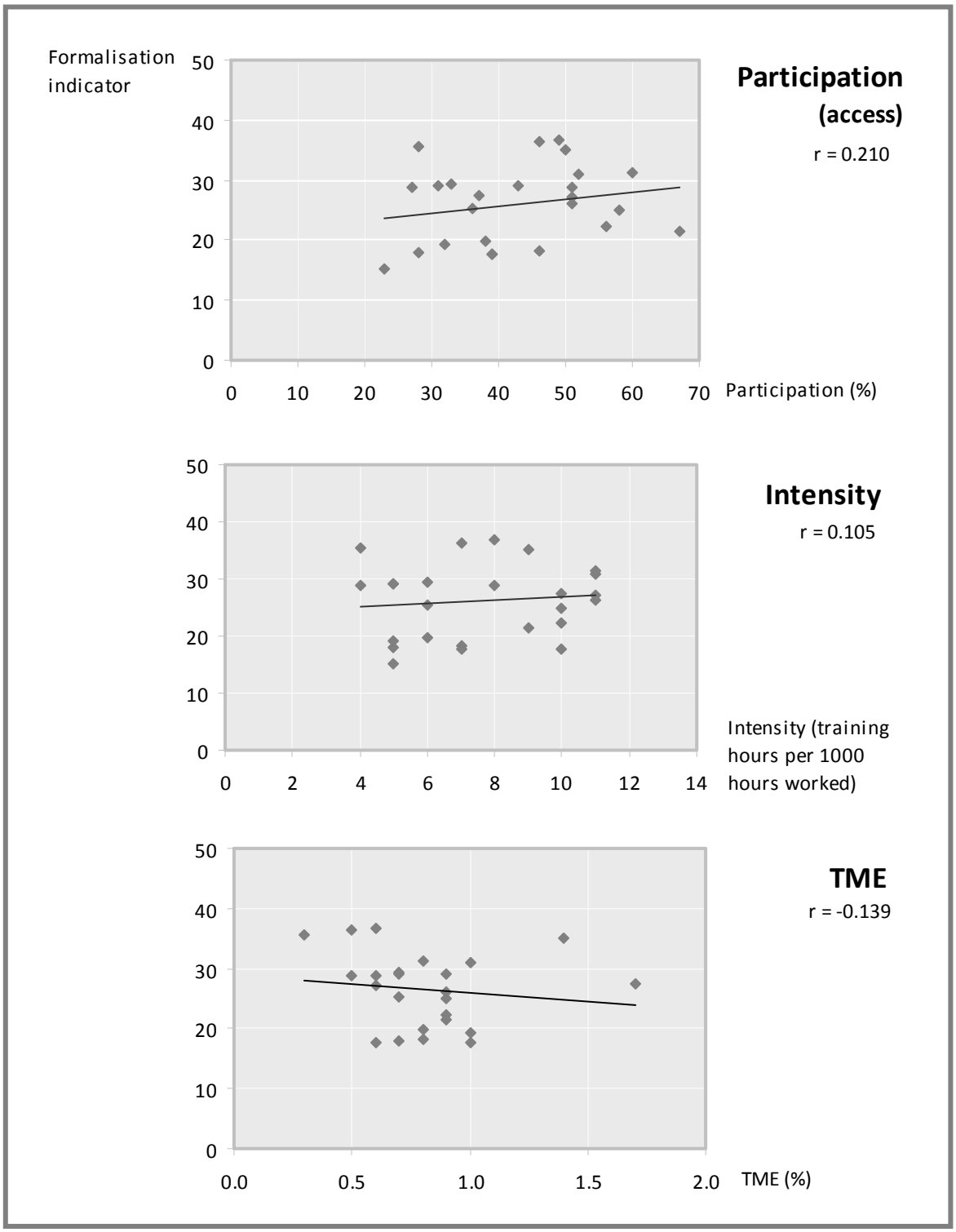
Source: Anonymised national microdata of CVTS3; BIBB calculations.

These results indicate that hypothesis 1 (formalisation leads to more training) is more likely to be valid than hypothesis 2 (formalisation leads to less training). This result is interesting, since the correlation analysis between the use of formalised means ([8]) and participation, intensity and TME is more equivocal when just using national averages from the Eurostat online database (Figure 22).

This analysis shows no strong positive or negative correlation, although it is interesting to observe the prefix for TME. Overall, the weak correlations could partly result from different national shares of non-trainers not questioned on training policy. Alternatively, the effects of formalisation do not become visible nationally because of various other effects (e.g. economic situation, role of social partners, political situation). Only at enterprise level do the effects of formalisation become visible and important, with the microdata showing the connection between training provision and formalisation. This demonstrates clearly the importance of microdata in arriving at meaningful analytical results.

([8]) The formalisation indicator in the following graphs was calculated by the summation of all national values for D1 to D11 and the division by 11. Thus, this formalisation indicator is an average value for all national values for the variables D1 to D11.

Figure 22 **Correlation between formalisation and participation, intensity and TME in 2005**



NB: Values used for the formalisation indicator refer to the summation of the two answers 'always' and 'often' of a four-point-scale or the answer 'yes' of binary scales for questions D1 to D11.

Source: Eurostat, CVTS3, date of extraction 13.2.2009; BIBB calculations.

3. Joint agreements and public measures for CVT

3.1. Introduction

Increasing participation in lifelong learning is one of the core elements of the Lisbon strategy. Currently, less than 10 % of adults in the EU participate in lifelong learning. This is well behind the benchmark of 12.5 % to be achieved by 2010, and progress is slow (European Commission, 2008b).

Several strategies are used to increase participation in adult learning. First, enhancing cooperation among CVT stakeholders is contributing to this goal (for a more detailed discussion see Eurofound and Cedefop, 2009). Second, public measures can provide incentives and support for the provision of CVT. Third, there are strategies for promoting the attractiveness of adult learning, disseminating good practice, and fostering peer-learning activities.

Several issues are discussed in this chapter, starting with the role of collective agreements and works councils in employer-provided CVT. Here the possible link between social dialogue, works councils and CVT is of interest, as is the role works councils play in the enterprise's CVT management process. Next, public measures are analysed, with a focus on enterprise views of the effects of these measures, unintended size effects being another important issue.

3.2. Methodological remarks

This chapter focuses on questions D12 to D14 of the CVTS3. There are only limited opportunities for comparing time series on this topic. CVTS2 asked if the enterprise was party to a joint agreement with employees or their representatives, and if so, if it was a formal agreement between the social partners. CVTS3 asked for written national, sectoral or other agreements between social partners, with agreements between the employer and the works council at enterprise level excluded from this definition. In separate questions, CVTS3 asks about the role of a social structure involving employee representatives in an enterprise's management of CVT, but there is no corresponding question in CVTS2. Similarly, the question on public measures and their effect on enterprise planning, policy and practices in respect of CVT was also new in CVTS3.

With so many differences in wording and filters, the comparability of results is severely tested. Further, in CVTS2 all enterprises were asked this question, while in CVTS3 it was only targeted at training enterprises.

While data are available on both the existence of an agreement between social partners (D12) and the effect of public measures (D14), broken down by broad size or broad sector of

activity (NACE), at the time of writing, no further breakdowns were available. Moreover, no data are available on formal structures involving employee representatives (D13).

Even if, in general, D questions on the training policy of enterprises were not classed as key variables – and item response rates were not required – certain national quality reports provided this information, for example:

(a) Bulgaria: D12, D13, D14: 99 % (National Statistics Institute, 2007);
(b) Finland: D12, D13,D14: 89 %-91 % (Statistics Finland, 2008);
(c) Sweden: D12, D14: 85 %-86 %; D13: 59 %-65 % (Statistics Sweden, 2007);
(d) Norway: D12: 82 %; D13: 26 %-86 %; D14: 85 %-86 % (Statistics Norway, 2008, p. 27).

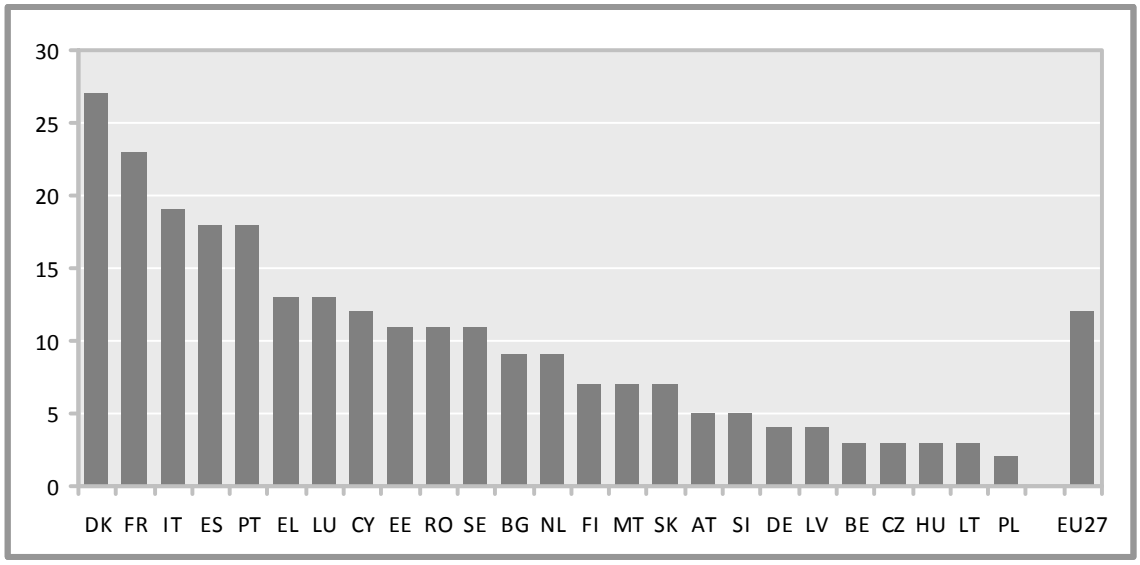
The available figures indicate fairly good item response rates for questions D12 and D14. However, Norway and Sweden indicate very high item non-response for question D13. In Norway, item non-response peaks at 74 % for one of the items in D13. This might suggest quality problems with question D13 in other countries too, and might be evaluated for all countries if, for CVTS4, reporting of item non-response rates for all CVTS variables is considered.

3.3. Incidence of social partner training agreements

According to CVTS3, around 12 % of respondents in enterprises with 10 or more employees know the enterprise is covered by written national/sectoral or other agreements between the social partners that explicitly include CVT plans, policies or practices. As Figure 23 shows, there are pronounced differences between countries: in Denmark and France, more than 20 % of the enterprises report on such an agreement. In the Mediterranean countries, i.e. Greece, Spain, Italy and Portugal, they are also more frequently reported than on average. At the bottom of the league are mostly countries in eastern Europe, but also Belgium, Germany and Austria.

These figures should be interpreted with caution. First, a substantial proportion of enterprises answered ‘do not know’ to this question. The national microdata made available by countries shows that in all countries except Italy (where the figures is 0 %), around one in five enterprises do not know whether or not they are covered by national or sectoral agreements. In Estonia and Spain, most enterprises answer ‘do not know’. What is measured in this question is not the existence of national/sectoral collective agreements on CVT, but the enterprises’ knowledge of it. For example, France has a national agreement relating to training and involving all enterprises. That only 23 % of the French enterprises in CVTS report on such an agreement is a strong indicator that the existence of this agreement is not well known. This is a good example of ‘measurement errors’ when data are not valid.

Figure 23 **Training enterprises with written national/sectoral agreements between social partners in 2005 (% of all training enterprises)**



NB: Norway and the UK are excluded because of limited comparability. Data are not available for Ireland. Countries are sorted according to the incidence of written national/sectoral agreements in descending order.

Source: Eurostat, CVTS3, date of extraction 17.6.2009.

3.4. Staff committee/works council and training management

Analysis of enterprise works councils or other formal structures involving employee representatives, and their role in CVT management, is based on national microdata. Results for available countries show that formal structures involving employee representatives are more frequent than written national or sectoral agreements between the social partners that explicitly include CVT among their subjects (Figure 24). Enterprises with a works council or other formal structure involving employee representatives ranges between 10 % in the Czech Republic and 37 % in Spain.

Again, there are considerations regarding data quality. In France, for example, formal structures involving employee representatives are compulsory for enterprises with more than 50 employees. In the data set, 81 % of medium-sized enterprises, and 96 % of large enterprises indicate that their enterprise had such a formal structure. Even if this is not exactly what might be expected, based on the knowledge of the institutional context, the data quality regarding the formal structure is better than that on the agreement between social partners. It appears that respondents in enterprises have better knowledge about the actual situation in their enterprise than about the institutional context.

In most countries analysed, the works councils or other formal structures often do not play a role in enterprise CVT management ([9]). In Belgium, the Czech Republic, Germany and

(9) Enterprises with a formal structure involving employee representatives, such as a committee or works council, were asked whether this formal structure played a role in respect of six elements of the enterprise's CVT management process. It was defined as a role of the works council in CVT management if this question was answered in the positive for at least one of the aspects of the process.

Estonia they are involved in at least one management aspect in roughly one third of the training enterprises where they exist. It is slightly different in Spain and France, where in roughly half of the enterprises where works councils exist, the latter are involved in CVT management. In Romania, the works councils are involved in 70 % of training enterprises. Finally, where works councils exist in enterprises in Italy, they typically take part in CVT management (82 % of enterprises with works councils).

Overall, 12 % of training enterprises in the EU-27 report that they are covered by written national or sectoral agreements between the social partners on CVT issues; in countries for which microdata were available the figures varies between 3 % (in Belgium and the Czech Republic) and 23 % (in France). Works councils or other formal structures involving employee representatives exist in 10 % of the training enterprises in the Czech Republic and up to 37 % in Spain. In principle, this should open up possibilities for exerting influence on issues such as objective/priority setting, selecting the target population, etc. However, the data also show that, in some countries, works councils are hardly involved in these issues. Training enterprises with works councils involved in CVT management range between 3 % in the Czech Republic and 22 % in Italy. However, as there are substantial differences between countries, generalisations should be avoided.

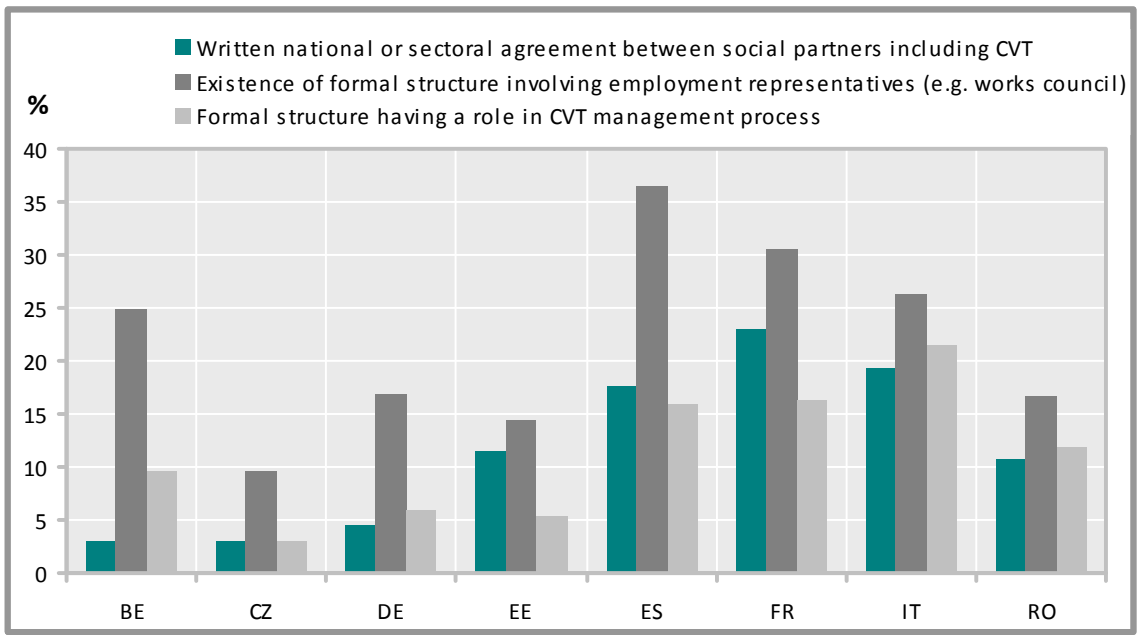
Figure 25 highlights, for training enterprises, the role played by works councils in CVT management. In all countries analysed, works councils involved in the CVT management process relatively frequently have a role in:

(a) objective and priority setting for CVT activities (between 19 % and 68 % of training enterprises);
(b) establishing the criteria for the selection of the target population who should participate in CVT (between 16 % and 53 % of training enterprises);
(c) the subject matter of the CVT activity (between 18 % and 51 % of training enterprises);
(d) evaluation of the training outcomes (between 10 % and 46 % of training enterprises).

Works councils, if at all involved in CVT issues in the enterprises, tend to be more generally involved (objectives and priorities, criteria for selection of participants) than in the practical execution of CVT (see discussion of formalisation and professionalisation in Chapter 2). Figure 25 shows that the budgeting process related to CVT and the procedure for the selection of external CVT providers is largely out of the scope of works council's involvement (less than 20 %).

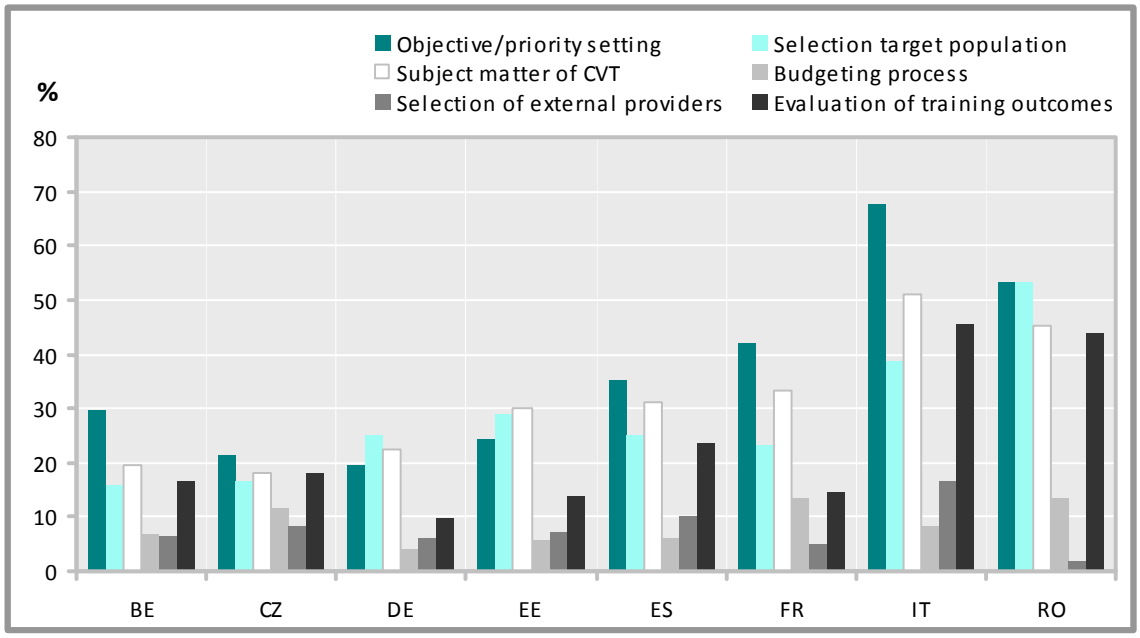
This multi-faceted picture is also linked to the institutional frameworks in the respective countries. Any further analysis should include these frameworks.

Figure 24 **Training enterprises with collective agreements including CVT, works councils and their role in the enterprises' CVT management in 2005 (% of all training enterprises)**



Source: Anonymised national microdata of CVTS3; BIBB calculations.

Figure 25 **Training enterprises with works councils or other formal structures involving employee representatives in the enterprises' CVT management in 2005 (% of training enterprises with works council involved in CVT management)**

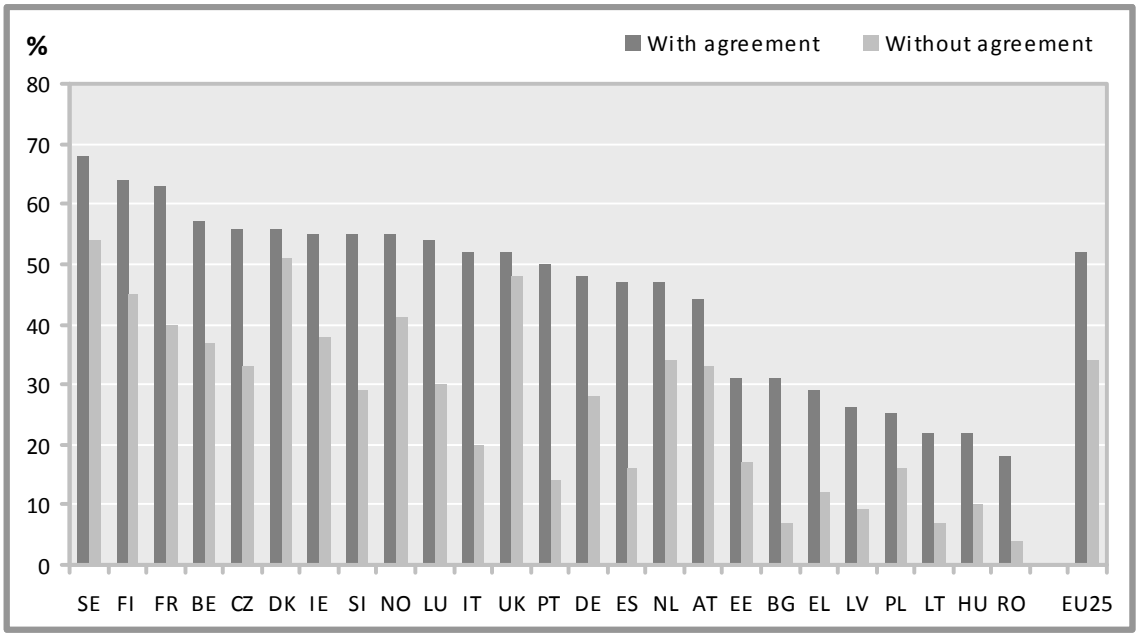


Source: Anonymised national microdata of CVTS3; BIBB calculations.

3.5. Joint agreement/works council and training volume

The OECD found, using CVTS2 data, that participation in training is significantly greater in firms with a joint CVT agreement (OECD, 2003, p. 274). Figure 26 also shows, for 1999, large differences in participation rates between those enterprises that have a joint agreement and those that do not. This is due partly to the fact that both training and non-training enterprises were included in this analysis. With information on collective agreements and works councils only available for training enterprises in CVTS3, differences will be smaller, compared to the OECD findings.

Figure 26 **Participants in CVT courses in enterprises with/ without a CVT agreement in 1999 (% of all employees in all enterprises)**

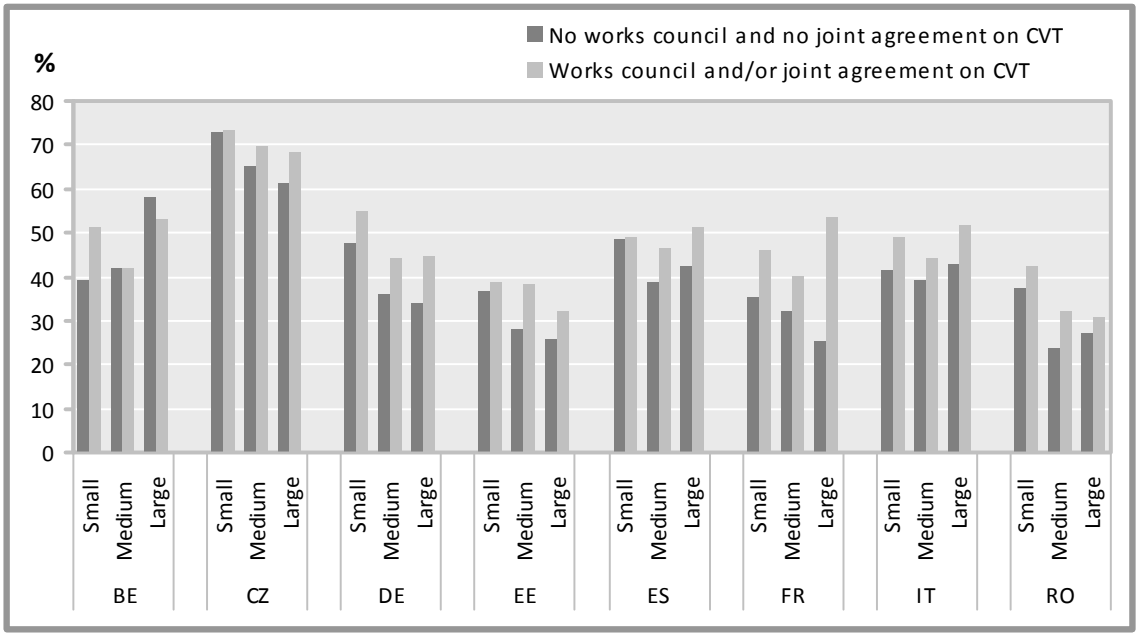


Notes: Countries are sorted according to training participation (percentage of participants) in all enterprises with/without a joint CVT agreement in descending order.

Source: Eurostat, CVTS2, date of extraction 21.7.2009.

To disentangle partially the various factors of this complex picture, Figure 27 shows the access rate of employees in training enterprises (participation rate of employees as a proportion of all employees in training enterprises). As the existence of works councils is related to enterprise size, a break-down by size classes is introduced. In all countries examined and for all size classes, employees in training enterprises that have a works council or a joint agreement on CVT generally have a higher rate of access to CVT than their counterparts in training enterprises that do not. There are three exceptions to this overall pattern: large enterprises in Belgium (a rather small group in the sample), small enterprises in the Czech Republic and small enterprises in Spain.

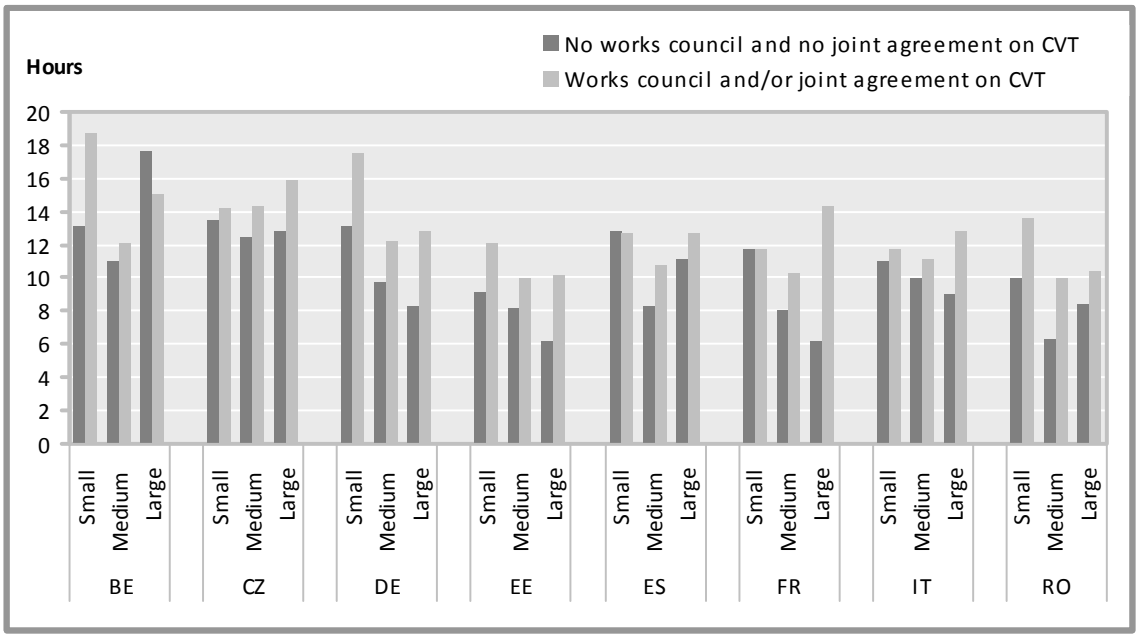
Figure 27 **Participants in CVT courses per employees in all training enterprises with/without works councils or joint agreement on CVT by size class in 2005 (%)**



NB: Small enterprises = 10-49; medium-enterprises = 50-249; large enterprises = 250 or more employees

Source: Anonymised national microdata of CVTS3; BIBB calculations.

Figure 28 **Hours in CVT courses per employee in training enterprises with/without works councils or joint agreement on CVT by size class in 2005**



NB: Small enterprises = 10-49; medium-enterprises = 50-249; large enterprises = 250 or more employees.

Source: Anonymised national microdata of CVTS3; BIBB calculations.

A similar picture emerges when analysing hours in training per employee instead of the access rate. As Figure 28 shows, employees generally undertake more training hours in training enterprises covered by an agreement between the social partners including CVT, or in those with a works council, compared to enterprises not covered or with no works council

(in the same country and belonging to the same size class). Again, there are exceptions from the general pattern: as with the access rate, large enterprises in Belgium and small enterprises in Spain do not fit into the overall picture. In addition, in France, there is not much difference in training hours per employee between small training enterprises with existing works councils or a collective agreement on CVT and those without.

This does not prove that collective agreements on CVT and works councils are increasing enterprise investment in CVT; there could be other influencing factors. Nevertheless, it is an indication that works councils might have such an impact. It can also be seen as an indication that national/sectoral and other agreements between the social partners contribute to fostering lifelong learning.

3.6. Public measure impact on training

Question D14 on policy measures is addressed to training enterprises only; 'did any of the following public measures have an effect upon the enterprise's planning, policy and practices with respect to CVT?:

(a) publicly-funded advisory service aimed at identifying training needs and/or developing training plans;
(b) financial subsidies towards the costs of training persons employed;
(c) tax relief on expenditure on training persons employed;
(d) procedures to ensure the standards of trainers (e.g. by national registers, assessment, etc.);
(e) provision of recognised standards and frameworks for qualification and certification'.

Respondents had the option of answering 'yes' or 'no' to each of the items. Some countries, e.g. Italy, added 'do not know' to the answer options.

The answer 'no' to any of these items is difficult to interpret, as it might indicate that this measure exists in the country, but the enterprise did not know about it or did not use it, or was actually used by the enterprise, but from the point of view of the enterprise, it had no effect.

In consequence, it is difficult to substantiate that a public measure had no effect. The 'yes' answer is less ambiguous. It indicates that, from the enterprise's point of view, the specified public measure had an effect. There is no information on the kind of effect exerted by the measure, which could be effects on incidence and volume of training, the access rate, the content or forms of training, or on the provider chosen. Nor does this inform about the direction of the effect (positive or negative).

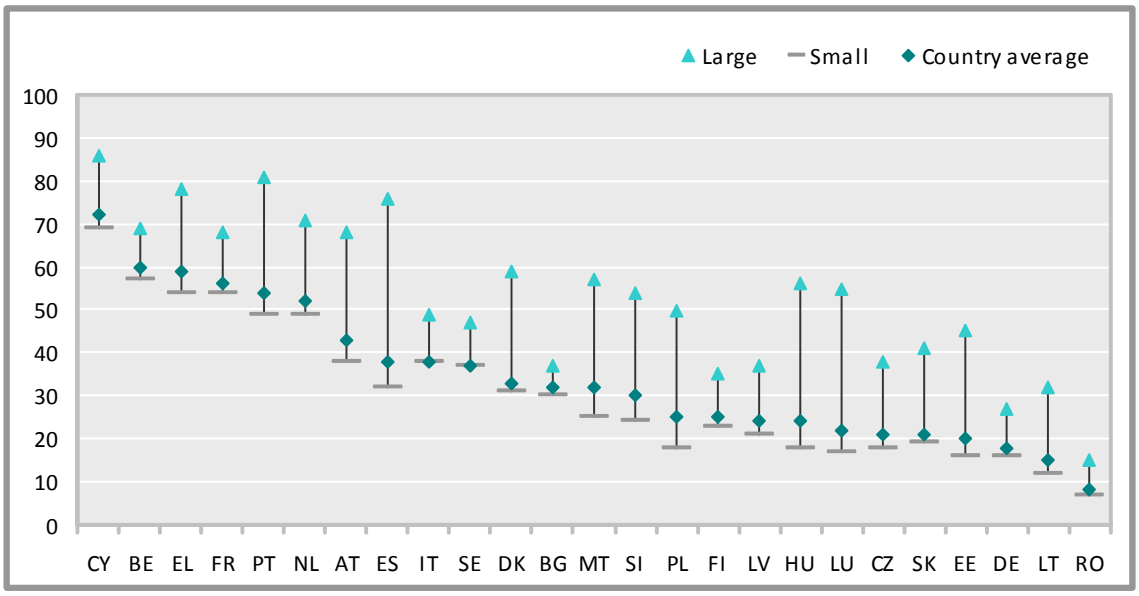
On average, 36 % of training enterprises in the EU Member States indicate that, in 2005, public measures had an effect on their planning, policy and practices regarding CVT. There are further pronounced differences between countries (Figure 29):

(a) in six countries – Belgium, Greece, France, Cyprus, the Netherlands and Portugal – most training enterprises (between 52 % and 72 %) state that at least one of the types of public measures had an impact on their CVT. Financial subsidies towards the costs of

training rank top in four of these countries, and are mentioned more frequently than the average in all;

(b) in three countries – Germany, Lithuania and Romania – fewer than 20 % of the training enterprises agree on the effects of public measures on their CVT.

Figure 29 **Perceived effects of at least one public measure by country and size class in 2005 (in % of training enterprises)**



NB: Norway and the UK are excluded because of limited comparability. Data are not available for Ireland.

Countries are sorted according to the proportion of enterprises perceiving effects of at least one public measure in descending order.

Source: Eurostat, CVTS3, date of extraction 24.4.2009; national average and minimum/maximum per size class and country are displayed.

Larger training enterprises indicate an effect from public measures more frequently than small ones. Figure 29 shows the high differences in Spain, Luxembourg, Hungary and Portugal. Very small differences between training enterprises of different size classes can be observed in Bulgaria, Germany, Italy, Romania and Sweden.

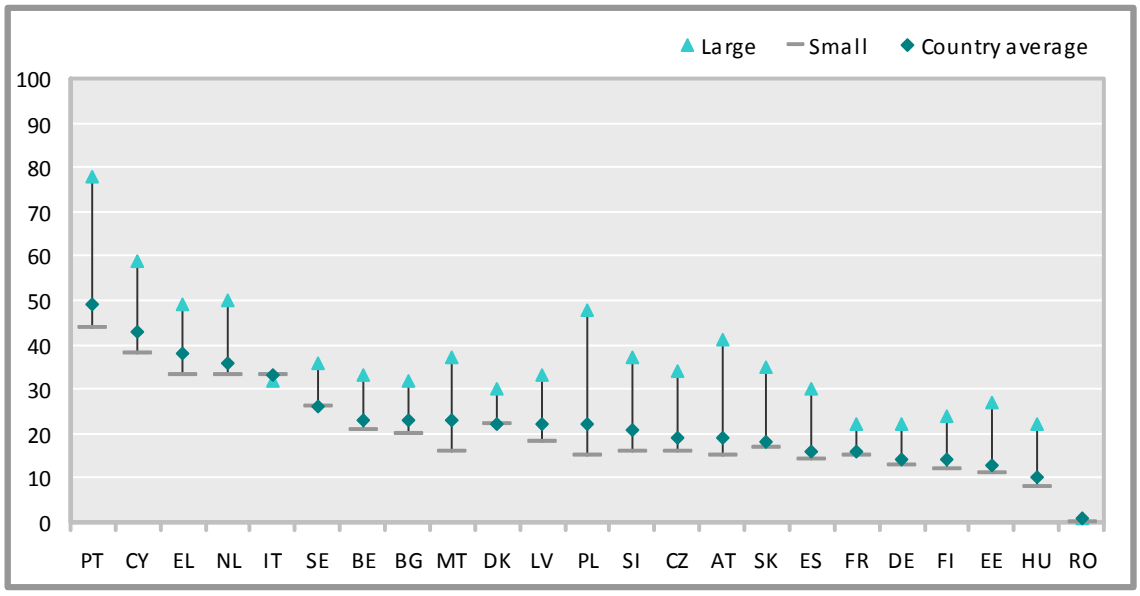
Looking at the specific type of public measure shows that larger enterprises still generally indicate more often an effect on their CVT. Given the methodological restrictions of the question, this finding should be interpreted with caution.

3.7. Specific public measure perceptions in training enterprises

In most EU-27 Member States, the public measure assessed most frequently as having an effect is the provision of recognised standards and frameworks for qualification and certification. It is not very clear from the wording in the outline questionnaire what precisely is at the heart of this question and this vagueness may have elicited positive answers). Figure 30 shows some countries have a high proportion of enterprises where CVT was influenced by this measure: between 30 % and 50 % of all training enterprises in Greece, Italy, Cyprus,

the Netherlands and Portugal. There are differences according size, most pronounced in Austria, Poland and Portugal. In Italy, this measure seems to have an effect regardless of size.

Figure 30 **Perceived effects of standards and frameworks for qualification and certification by country and size class in 2005 (in % of training enterprises)**



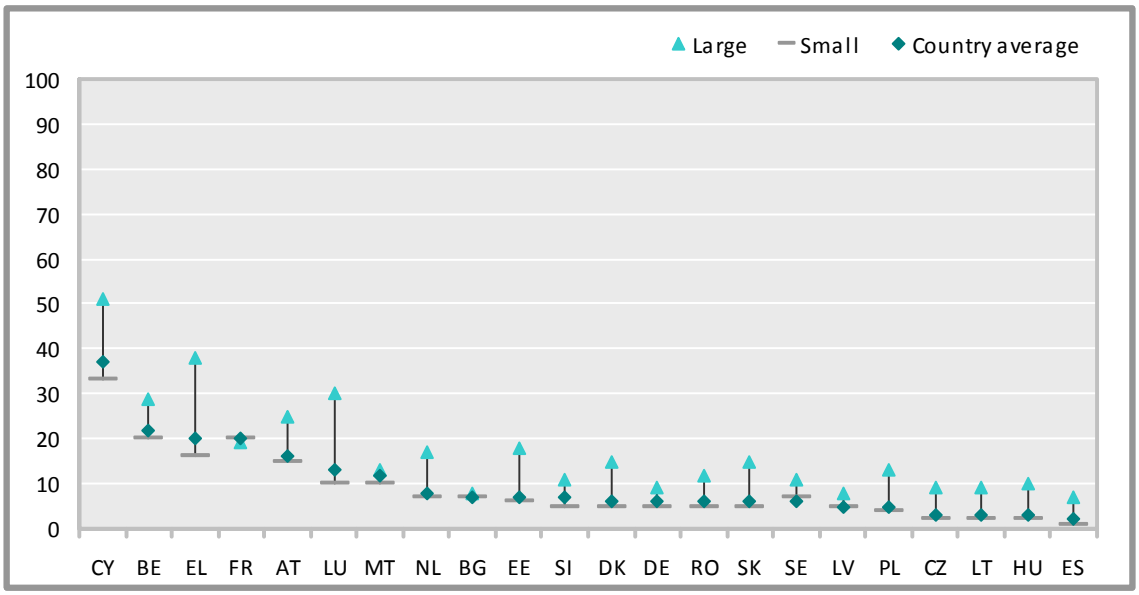
NB: Norway and the UK are excluded because of limited comparability. Data are not available for Ireland.

Countries are sorted according to the proportion of enterprises perceiving effects of standards and frameworks for qualification and certification in descending order.

Source: Eurostat, CVTS3, date of extraction 24.4.2009; national average and minimum/maximum per size class and country are displayed.

Procedures to guarantee trainer standards of are similar in public measures but are less frequently seen as having an effect by the enterprises (Figure 31). In Belgium, Greece, France and Cyprus, 20 % or more of the enterprises state this had an effect on their CVT activities. For Luxembourg and Romania, this is the public measure assessed most frequently as having an effect, though in both countries the proportion of enterprises perceiving such an effect from this measure is moderate. In general, the size sensitivity of this measure is low, with the exception of Greece, Cyprus and Luxembourg.

Figure 31 **Perceived effects of standards for trainers by country and size class in 2005 (in % of training enterprises)**



NB: Norway and the UK are excluded because of limited comparability. Data are not available for Ireland.

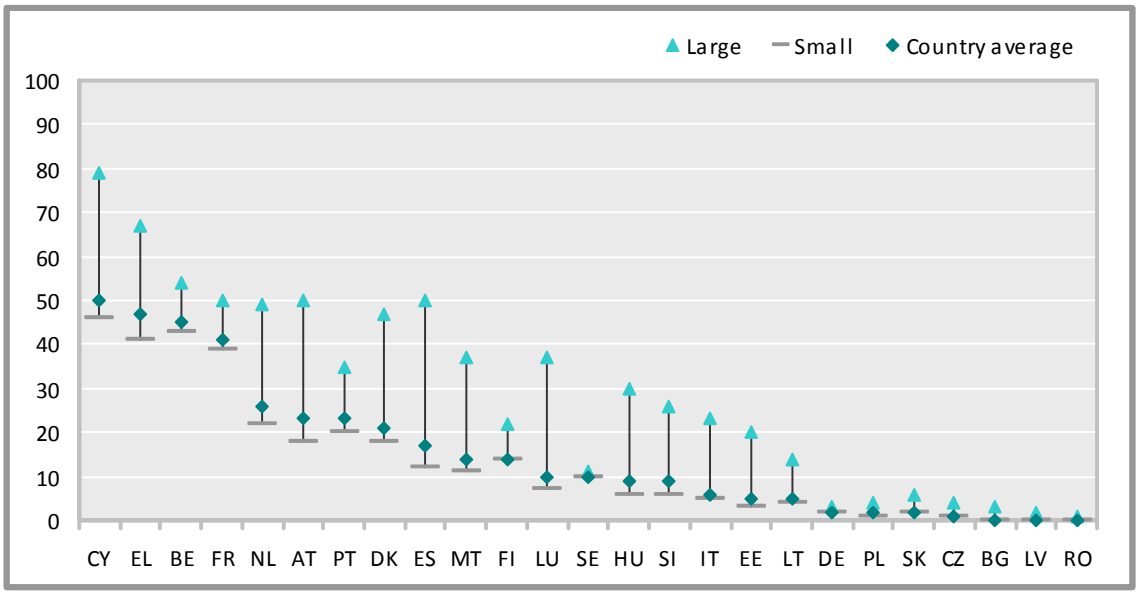
Countries are sorted according to the proportion of enterprises perceiving effects of standards for trainers and certification in descending order.

Source: Eurostat, CVTS3, date of extraction 24.4.2009; national average and minimum/maximum per size class and country are displayed.

In six of the countries, financial subsidies are most frequently mentioned as having an effect on enterprise CVT planning, policy and practice. Figure 32 shows this measure is prominent in Belgium, Greece, France and Cyprus (40 % to 50 % of training enterprises). In countries with a high proportion of enterprises indicating that financial subsidies had an effect, large enterprises subscribe more frequently to this view in Greece and Cyprus, while in Belgium and France differences by size are slight. Where a smaller proportion indicate that subsidies have an effect, a strong size influence can be found in some (Spain and Austria), and (almost) no relation to size in others (Finland and Sweden).

Some countries have introduced tax relief on enterprise training investment. From the enterprises' point of view, this incentive had an effect in particular in Belgium, Greece, Spain, the Netherlands and Austria, with 20 % or more of the training enterprises answering positively; (Figure 33). The measure seems to vary in size sensitivity: in Spain and Hungary, large training enterprises agree much more frequently on effects of tax relief than small training enterprises do, while in Belgium, Bulgaria, Greece, France and Slovenia no substantial size sensitivity is found. In Sweden, the proportion small enterprises see the effects of tax reductions exceeds large enterprises.

Figure 32 **Perceived effects of financial subsidies by country and size class in 2005 (in % of training enterprises)**

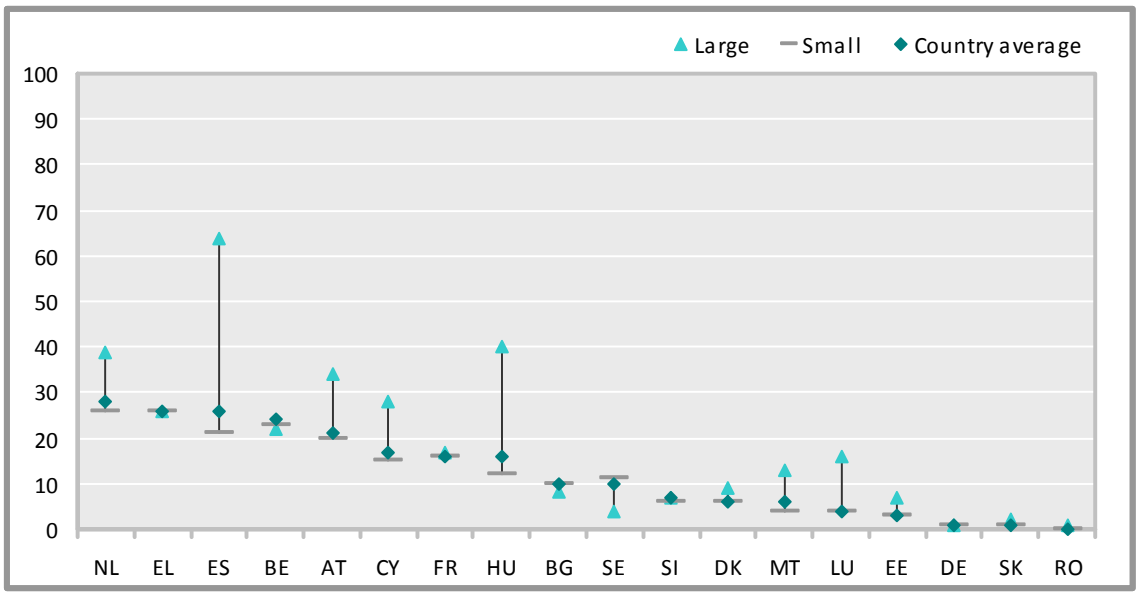


NB: Norway and the UK are excluded because of limited comparability. Data are not available for Ireland.

Countries are sorted according to the proportion of enterprises perceiving effects of financial subsidies in descending order.

Source: Eurostat, CVTS3, date of extraction 24.4.2009; national average and minimum/maximum per size class and country are displayed.

Figure 33 **Perceived effects of tax relief by country and size class in 2005 (in % of training enterprises)**



NB: Norway and the UK are excluded because of limited comparability. Data are not available for Ireland.

Countries are sorted according to the proportion of enterprises perceiving effects of tax relief in descending order.

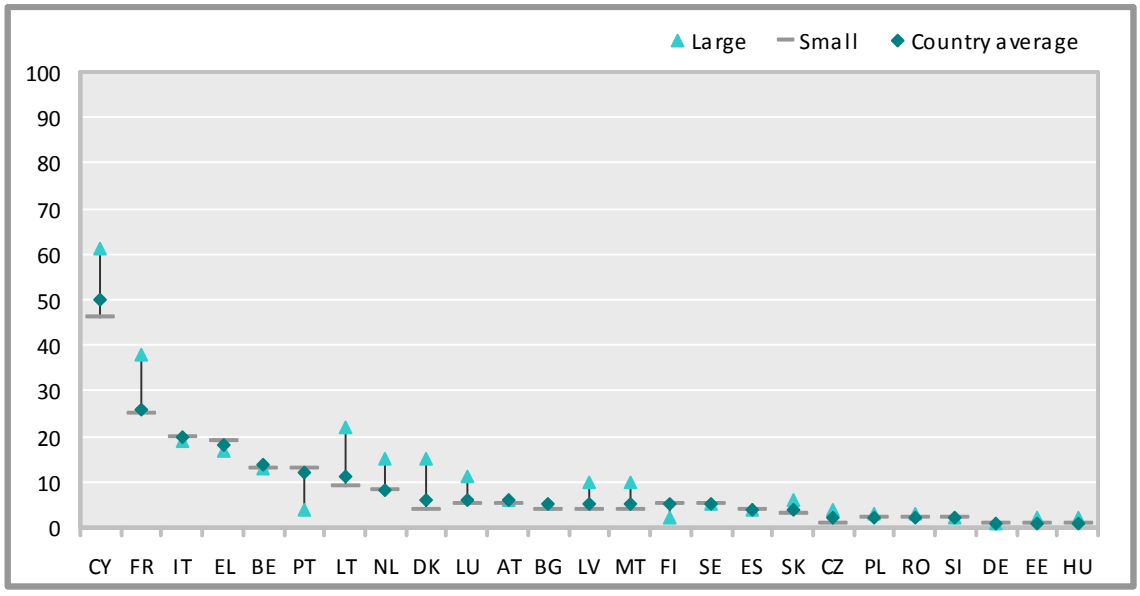
Source: Eurostat, CVTS3, date of extraction 24.4.2009; national average and minimum/maximum per size class and country are displayed.

A recent publication by Cedefop (2009) provides an overview on the use of tax incentives to promote education and training. For most of the countries where CVTS results indicate there are tax incentives that have an effect from the enterprises' point of view, this Cedefop publication also reports the existence of tax incentives for expenditures on education and training for enterprises. In some other countries, for example the Czech Republic and Latvia, where tax incentives exist, they had no relevant effect from the enterprises' point of view.

If effective, the previous two measures act by lowering the net cost of employer-provided training and thus stimulate enterprise investment in CVT. Publicly funded advisory services act to clarify enterprise training needs and develop the adequate training plans.

Figure 34 shows that in three countries this measure was frequently assessed as exerting influence on enterprise CVT planning, policy and practice: France, Italy and Cyprus (20 % or more of the training enterprises). As expected, there are no pronounced differences according to enterprises size; in Portugal and Finland, small enterprises indicate more frequently than large ones that the advisory service had an effect on their CVT provision.

Figure 34 **Perceived effects of publicly-funded advisory service by country and size class in 2005 (in % of training enterprises)**



NB: Norway and the UK are excluded because of limited comparability. Data are not available for Ireland.

Countries are sorted according to the proportion of enterprises perceiving effects of publicly-funded advisory services in descending order.

Source: Eurostat, CVTS3, date of extraction 24.4.2009; national average and minimum/maximum per size class and country are displayed.

4. Other forms of CVT: a role beyond rhetoric

4.1. Introduction

A high number of political administrators and researchers consider forms of informal or non-formal learning to be important or of an increasing importance in the future (European Commission, 2000). A popular argument in this discussion (Bailey et al., 2004; Rohs, 2002) suggests that traditional forms of CVT (courses) may be replaced by other forms of CVT (e.g. self-directed learning or planned on-the-job-training). Analysis of CVT is not complete if limited to the provision of training courses only. Information about other forms of CVT (on-the-job-training, job-rotation/exchanges, learning/quality circles, self-directed learning, attendance at conferences/workshops/trade fairs) needs to be collected as well. Often, these forms take place at work, but this makes it difficult to distinguish work and learning, both analytically and empirically (Grünewald et al., 1998; Moraal and Grünewald, 2004).

When analysing the outcomes of CVTS1 and CVTS2, it is clear that the information content of the data on other forms of CVT is limited. For example, CVTS2 did not provide information on participants in 'other forms', data from CVTS1 was not published. Enterprises were only asked if they provided the different 'other forms'. There were no questions on the number of participants or on the investment of time and money in CVTS2. CVTS3 delivered information on the number of persons employed who participate in other forms of CVT. Although the data on these activities is probably less reliable than data on courses (e.g. number of training hours were not collected, it being difficult to separate learning and working), they should allow deeper insights into the role of other forms for enterprises in Europe.

4.2. Methodological remarks

This chapter focuses on question B2 of CVTS3 (did persons employed by the enterprise participate in any of the following other forms of CVT). It is first asked if enterprises provide any of five subtypes ([10]):

(a) planned training through on-the-job training;
(b) planned training through job-rotation, exchanges, secondments or study visits;
(c) planned training through participation in learning circles or quality circles;
(d) planned training by self-directed learning;
(e) attendance at conferences, workshops, trade fairs and lectures.

Second, it is asked how many employees participate in each of these five forms. This was also asked in CVTS1 (though data are not available), but not in CVTS2.

([10]) More detailed definitions of these subtypes are available in the European outline questionnaire, which can be found in Eurostat's CVTS3 manual (Eurostat, 2006).

Comparability between 1999 and 2005 data should not be significantly hampered since question B8 of CVTS2 was almost identical to question B2 of CVTS3: only slight changes on the wording were introduced in CVTS3 to further clarify the element of 'planned training'.

CVTS2 data for Denmark and Austria are excluded. Austria used a screening method in CVTS2, in which enterprises were first generally asked if they have 'other forms' and only if they answered yes, were they asked the more detailed questions. This led to a serious and significant underestimation of such activities in Austria in CVTS2 (Statistik Austria, 2003, p. 23).

Overall, the distinction between courses and other forms of CVT does not appear to raise problems. The distinction between the sub-types of other forms seems to be more blurred, also in part due to their informal nature. Being a compulsory 'core variable', it is not possible to analyse item response rates since core variables are 100 %, by definition, but no major reservations were reported. Even if there is some confusion between the sub-items, the aggregated information (any other form of CVT) should not be affected. The incidence of other forms should also be measured adequately.

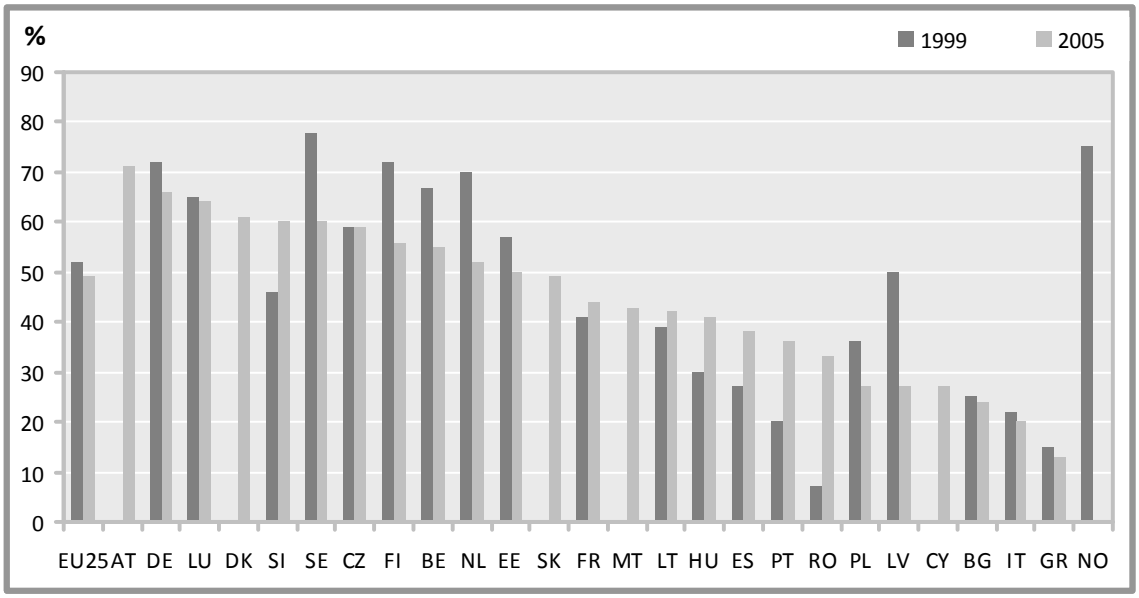
The number of participants in other forms is more problematic. It is assumed that these figures are rarely recorded by enterprises and this impacts on the item response rate. Consequently, this number of participants is probably less reliable than the number in courses. For example, Austria reported for CVTS3 that enterprises who answered to one of the five sub-items of the other forms could not quantify the number of participants (Statistik Austria, 2007, p. 22). The non-response rates for the five sub-items ranged from 34 % to 46 % in Austria. Similar problems were reported by Statistics Lithuania (Statistics Lithuania, 2007, p. 21, 28 and 43).

Overall, the general data quality seems to be good for the total of other forms, relatively good for the differentiation into sub-items and partly problematic for the quantification of participants according to sub-item.

4.3. Incidence of training via other forms

The use of other forms in European enterprises was stable between 1999 and 2005. The EU-25 average was 52 % in 1999 and 49 % in 2005. An increase can be observed in seven – mostly south or east European – countries: Spain, France, Lithuania, Hungary, Portugal, Romania and Slovenia. The most remarkable increase happened in Romania (26 percentage points) and mirrors the general increase in importance of CVT in Romania. Thirteen countries report stagnating or decreasing diffusion of other training forms between 1999 and 2005. Scandinavian and north European countries in particular report large reductions: the Netherlands and Sweden both register minus 18 percentage points.

Figure 35 **Enterprises providing any type of 'other forms' of CVT in 1999 and 2005 (% of all enterprises)**



NB: Austria (1999), the UK (1999 and 2005), Norway (2005) are excluded because of limited comparability. No 1999 data for Cyprus, Malta, Slovakia. For Ireland (2005) data were not available.

Source: Eurostat, CVTS3, date of extraction 22.1.2009.

4.4. Traditional and modern other training forms

Other training forms are differentiated in CVTS3 into the five sub-types detailed in Section 4.2. and should not be confused with those of other surveys which use broader understanding of workplace-based learning. In CVTS2 and CVTS3 this type of learning is at least partly financed by the enterprise, planned in advance and organised with the specific goal of learning. Random learning – which happens perpetually even in normal daily practices – is explicitly excluded (Eurostat, 2006). This definition explains why the CVTS figures for the 'other forms' are lower than figures in other surveys in this field of research (e.g. Anger and Werner, 2009).

Attendance at conferences and on-the-job training have been categorised as 'conventional other forms', while 'job rotation, exchange programmes, learning circles, quality circles and self-directed learning count as more modern other forms of continuing vocational training' and promote competences differently than the conventional other forms (Moraal et al., 2009; Wacker, 2008, p. 20-22).

Which of these types are most frequently used by enterprises? Table 10, which gives an overview of the European and national situation in 2005, shows that attendance at conferences and on-the-job training are clearly the most prevalent features of other forms in almost all countries. The EU-27 averages indicate 33 % for each of these two types of learning. This is about three times higher than values for self-directed learning (13 %), job rotation (11 %) or learning circles (10 %). When distinguishing between 'conventional other forms' and 'modern other forms' the CVTS3 results show a dominance of the conventional forms (33 % each) over the modern forms (13 %, 11 %, 10 %).

Table 10 **Percentage of enterprises providing different sub-types of 'other forms' in 2005**

	Attendance at conferences	On-the-job training	Self-directed learning	Job rotation	Learning circles
EU-27	33	33	13	11	10
AT	64	32	13	19	28
DE	58	48	15	9	16
SI	54	28	11	5	14
DK	53	30	19	14	25
LU	49	44	21	14	19
FI	49	35	22	11	11
CZ	46	42	17	4	9
SE	44	34	16	29	8
EE	38	31	16	15	6
LT	37	18	9	1	11
BE	36	41	17	13	13
NL	36	31	18	9	10
SK	35	32	9	3	8
HU	32	18	7	3	7
MT	30	31	12	10	11
PT	24	22	3	4	4
FR	23	29	9	10	8
LV	23	9	3	3	3
PL	19	17	4	4	2
ES	18	26	11	10	11
CY	18	19	4	8	14
BG	15	17	5	3	4
RO	13	19	8	12	6
IT	12	11	2	5	2
EL	8	6	3	3	5

NB: Norway and the UK are excluded because of limited comparability. Data were not available for Ireland.

Source: Eurostat, CVTS3, date of extraction 22.1.2009, sorted by values of the first column.

There is significant country divergence from the EU-27 average but the ranking of use of the five sub-types is similar to the EU-27 ranking. Self-directed learning is often used in Denmark, Luxembourg and Finland. Job rotation is very popular in Sweden (29 %) and Austria (19 %). This result seems to be in accordance with research on the institutional and financial framework of job rotation in Europe (e.g. Schömann et al., 1998, p. 30 and 44) ([11]). In many other countries (e.g. Bulgaria, Greece, Latvia or Lithuania), job rotation is a negligible element in CVT with only 1 to 3 % participating enterprises. Learning circles are often organised in Austria (28 %), Denmark (25 %) and Luxembourg (19 %). It is, however, surprising that Finland (11 %) and Sweden (8 %) show little involvement despite being well known for their use of learning circles in general education.

Comparing over time, there is often a downward trend for the different types of 'other forms' in the EU as a whole and for many different countries (Table 11). The EU-25 average

([11]) It is possible that some misunderstanding surrounds this answer. While CVTS3 defines job-rotation as an 'other form' within an enterprise, job-rotation is often understood as exchanges between enterprises or as a measure where the person away for training is substituted by a person previously unemployed.

shows that only conferences increased between 1999 and 2005 (+18 percentage points), while the remaining four other forms have lost ground slightly. Moreover, conferences – from a pedagogical perspective – are a relatively passive and less rich form of learning. Significant increases for most other forms only occurred in some east and south European countries such as Spain, Lithuania, Hungary, Portugal, Romania and Slovenia. In contrast, there are significant reductions in Belgium, Italy, Latvia, the Netherlands, Poland, Finland and Sweden.

Table 11 **Percentage of enterprises providing different sub-types of 'other forms' in 1999 and 2005 (difference in percentage points)**

	On-the-job training	Attendance at conferences	Self-directed learning	Learning circles	Job rotation
EU-25	-2	18	-2	-1	-4
BE	-15	4	2	-6	-16
BG	1	0	-3	-3	-2
CZ	14	-3	0	3	-1
DE	-6	-3	1	5	5
EE	6	-11	1	-4	4
ES	11	4	3	2	1
FI	-4	-9	-18	-5	-10
FR	4	4	-1	-3	-7
EL	-1	-3	1	1	1
HU	2	10	1	3	-2
IT	-4	-4	1	-3	-8
LT	3	4	2	7	-1
LU	-2	5	-2	8	-15
LV	-21	-15	-11	-4	-1
NL	-19	-14	-13	-5	-4
PL	-3	-7	-3	1	-8
PT	8	11	1	-1	0
RO	15	10	6	4	10
SE	-16	-12	-13	-6	-6
SI	4	12	1	0	-4

NB: Austria (1999), Norway (2005) and the UK (1999 and 2005), are excluded because of limited comparability. No 1999 data for Cyprus, Malta, Slovakia. Data were not available for Ireland (2005).

Source: Eurostat, CVTS3, date of extraction 22.1.2009; BIBB calculations.

4.5. Incidence of other forms compared to courses

In Figures 36 and 37 countries are sorted according to the difference between the incidence of other training forms and courses. Incidence of courses and other forms at EU level is almost identical in 1999 and 2005, with slight reductions between reference years.

The national results indicate some changes, but generally stable results. A preference for courses over other forms or vice-versa only changed in six countries. Estonia, Greece, Latvia and Slovenia had a preference for other forms in 1999 and preferred courses in 2005. With the exception of Greece, all these countries exhibit a strong increase in CVT (see radar charts in Chapter 1), possibly indicating that the training market flourished between 1999 and 2005 in these countries. Another possible explanation could be that more courses were

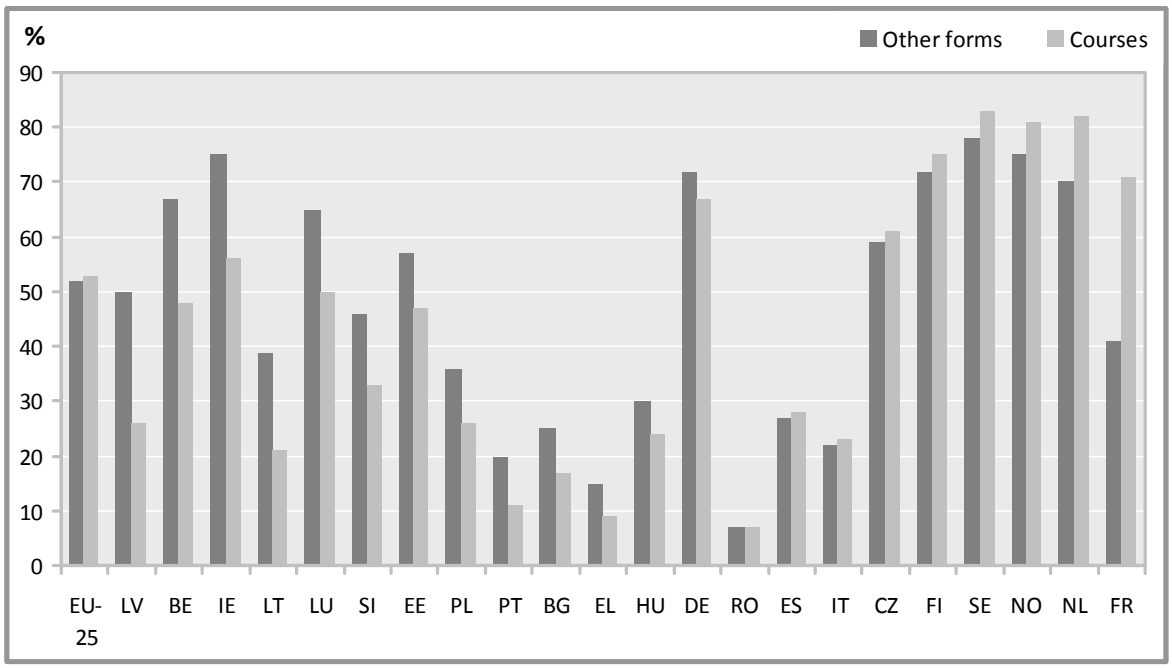
available from training providers in 2005 and so other training forms were less needed as a substitute for missing courses. Other hypotheses are possible.

Romania had balanced figures in 1999, while in 2005 ‘other forms’ were more frequently used. Spain had balanced figures in 2005, though in 1999 courses were preferred. Twelve countries had a preference for other forms and the same number a preference for courses in 2005, while in 1999 more countries (14) were in favour of ‘other forms’. These results demonstrate that there is no recognisable European trend towards other forms. Another interpretation is that courses and other forms are not competing features of CVT but complementary. If there is no simple move from one form of training to another, and the relationship is relatively stable, courses and other forms might be promoted simultaneously to raise the general level of CVT provision (Behringer and Descamps, 2009; Turcotte et al., 2003).

It is worth noting that in countries with important public and/or tariff-funding systems for CVT (e.g. Denmark, France, Italy, Cyprus, the Netherlands) enterprises provide courses more frequently than other training forms. These financing instruments may result in emphasis on courses in individual enterprises. However Hungary, which also has an important funding system for CVT, still seems to prefer other forms. Because other forms combine working and learning, it is difficult to make costs visible with accounting systems and for these costs to be reimbursed by a funding system (Behringer and Descamps, 2009; Moraal and Schönfeld, 2005). This might be a problem for funding systems, and be something that could be improved.

One assumption might be that small enterprises or some sectors use other training forms more often than large enterprises or other sectors. At European level this does not appear to be the case. Only marginal differences are evident between the use of courses and other forms, both by enterprise size and sector of activity (Tables 12 and 13).

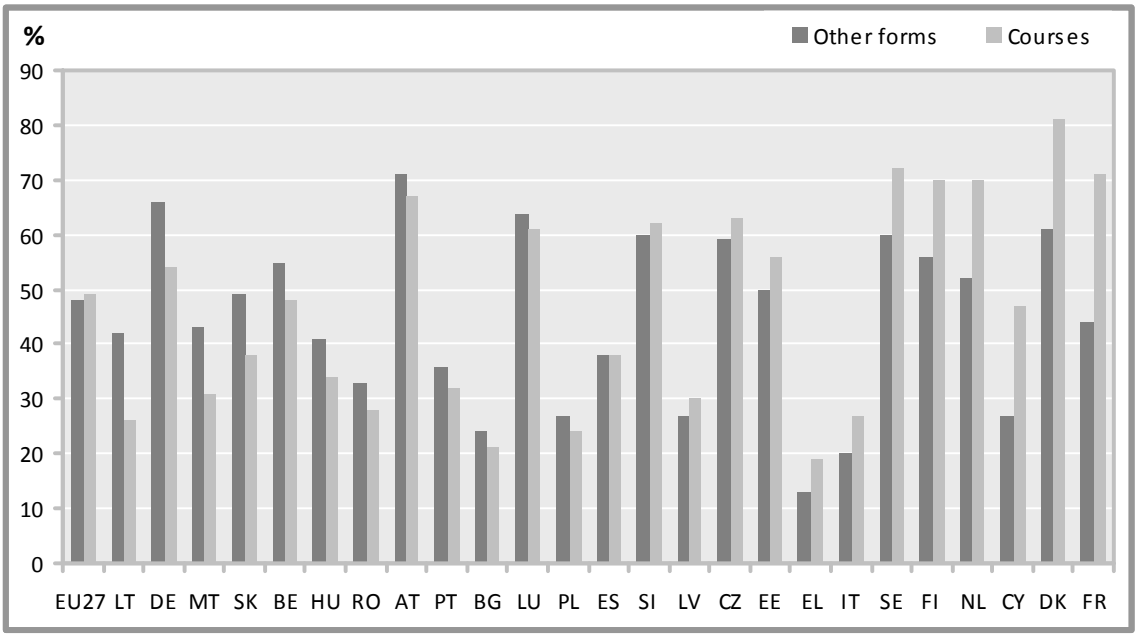
Figure 36 **Percentage of enterprises providing CVT by type of training in 1999 (% of all enterprises)**



NB: Austria (1999), Norway (2005) and the UK (1999 and 2005), are excluded because of limited comparability. No 1999 data for Cyprus, Malta and Slovakia. Data are not available for Ireland (2005).

Source: Eurostat, CVTS3, date of extraction 21 and 22.1.2009; BIBB calculations.

Figure 37 **Percentage of enterprises providing CVT by type of training in 2005 (% of all enterprises)**



NB: Norway and the UK are excluded because of limited comparability. Data are not available for Ireland (2005).

Source: Eurostat, CVTS3, date of extraction 21 and 22.1.2009; BIBB calculations.

Table 12 **Training enterprises as a % of all enterprises by type of training and size class for EU-27 in 2005**

	Employees			Total
	10-49	50-249	250+	
Enterprises providing courses as % of all enterprises	44	68	84	49
Enterprises providing 'other forms' as % of all enterprises	43	65	80	48

Source: Eurostat, CVTS3, date of extraction 21 and 22.1.2009.

Table 13 **Training enterprises as a % of all enterprises by type of training and NACE for EU-27 in 2005**

	NACE					
	C, E, F, H, I	D	G	O	K	J
Enterprises providing courses as % of all enterprises	44	43	48	59	63	79
Enterprises providing 'other forms' as % of all enterprises	41	43	48	59	62	76

Source: Eurostat, CVTS3, date of extraction 21 and 22.1.2009; BIBB calculations.

Use of other training forms is closely related to the general tendency of the sectors and the size groups in offering CVT or not. Large enterprises are, on average, more active than small ones in providing CVT and a sector such as financial intermediation is much more active in providing CVT than a sector such as manufacturing. These patterns are not strengthened or weakened by the provision of other forms. Again, this indicates generally that courses and other forms appear to have a complementary rather than competing relationship even, seemingly, by size and NACE.

However, there are different national characteristics. Danish enterprises generally use courses much more than other forms (Table 14) but while the differences between small and large enterprises are large for other forms (span of 40 percentage points across enterprise size), they are much smaller for courses (span of only 20 percentage points). Similar patterns can be observed in France, Finland and Sweden: small enterprises make more use of courses than of other forms. In almost all other countries, small enterprises use other forms more than courses. For example, 62 % of German small enterprises use other forms compared with 50 % which provide courses.

Several different interpretations are possible and would need to be established by further research. One is that the preference for courses in Scandinavian countries and France could be the result of public-private provision of courses (e.g. Denmark) or of the funding system in France. In a well-organised training system outside the individual enterprise, small enterprises might find it easier to find an appropriate course than in countries with more or less unregulated training markets. In these (e.g. Germany) small enterprises might prefer to use other forms, because they find the market for training lacks adequate information or that it is not suited to their needs. Another interpretation might be that countries with a funding system for CVT encourage the provision of courses over other forms since the latter are either not covered by such funding systems or it is more difficult to meet the criteria of eligibility of costs. Third, countries with predominantly school-based initial vocational training (IVT) systems (e.g. France, Sweden) might also suggest a cultural preference for courses in

CVT, while dual systems (e.g. Germany, Austria) might suggest a cultural preference for other forms such as on-the-job training. Each of these hypotheses could be interesting starting points for further research.

Table 14 **Training enterprises as % of all enterprises by type of training and size class in Denmark in 2005**

	Employees			Total
	10-49	50-249	250+	
Enterprises providing courses as % of all enterprises	78	91	98	81
Enterprises providing 'other forms' as % of all enterprises	57	76	97	61

Source: Eurostat, CVTS3, date of extraction 21 and 22.1.2009; BIBB calculations.

4.6. Participation in courses and other training forms

Since enterprises in many countries found it difficult to estimate the number of participants in other training forms data should be used with some degree of caution. Further, the number of participants was only researched for each sub-type; total participants was not surveyed and cannot be safely calculated since it is not known how many participants participated in more than one. The last column of Table 15 can be used only as an orientation of the range between the theoretically possible minimum or maximum number of participants in all other forms (see also Table 15, footnote c).

Nevertheless, some interesting differences become visible when comparing the participants and the existence of such training in enterprises. On-the-job training is still top in the EU-27 with 18 % of employees in enterprises that provide 'other forms' of training. Conferences, meanwhile, have lost significant ground. While equally ranked with on-the-job training in Table 10, in Table 15 they have a much lower importance with only 8 %. They are only two percentage points ahead of self-directed learning, which is still the third most important 'other form'. Job-rotation has also lost importance and is ranked last, behind learning circles.

Overall, the number of participants indicates that other training forms are less important than courses in a way that was not apparent in Table 10. Even the maximum estimate of participation in other forms for the EU-27 is five percentage points lower than the percentage of participants in courses in enterprises with training courses ([12]). Even at its maximum, participation in other forms lags considerably behind participation in courses, with a significant spread of the estimated participation in other forms. Bearing in mind related methodological concerns, this result indicates that organised other training forms are important, but their importance is still lower than the importance of courses when looking at participation rates.

([12]) The percentage of enterprises with courses (EU-27: 53%) and/or with 'other forms' (EU-27: 52%) is almost identical. Thus, the different share is not caused by a distorting base effect of much higher or lower numbers for the enterprises in the denominator (enterprises with courses, enterprises with 'other forms').

Table 15 **Participants in other forms of CVT and in CVT courses in 2005**

	On-the-job training ([a])	Conferences ([a])	Self-directed learning ([a])	Learning circles ([a])	Job rotation ([a])	Course ([b])	Minimum and maximum participation rate for all other forms ([c])		
EU-27	18	8	6	4	2	43	18	to	38
AT	7	6	1	5	2	38	7	to	17
BE	24	8	7	6	4	51	24	to	49
BG	29	5	3	5	2	33	29	to	44
CY	13	11	1	8	3	43	13	to	36
CZ	41	12	6	5	1	67	41	to	65
DE	31	12	15	6	2	39	31	to	66
DK	30	45	16	8	4	37	45	to	100
EE	24	9	6	3	5	32	24	to	47
ES	33	9	13	7	5	51	33	to	67
FI	21	12	4	3	4	46	21	to	44
FR	7	2	2	1	2	50	7	to	14 %
EL	11	5	1	5	3	28	11	to	25 %
HU	18	8	4	4	1	23	18	to	35 %
IT	15	8	10	3	5	49	15	to	41 %
LT	17	13	5	10	0	28	17	to	45 %
LU	27	15	7	5	3	60	27	to	57 %
LV	15	8	3	4	2	27	15	to	32 %
MT	19	9	3	8	2	52	19	to	41 %
NL	17	8	7	6	2	39	17	to	40 %
PL	26	10	2	2	2	36	26	to	42 %
PT	16	6	3	3	1	46	16	to	29 %
RO	26	3	3	4	6	31	26	to	42 %
SE	26	21	4	4	15	51	26	to	70 %
SI	26	20	2	10	2	58	26	to	60 %
SK	30	13	2	3	1	56	30	to	49 %

([a]) In % of all employees of enterprises providing other forms.
([b]) In % of employees in all enterprises providing courses.
([c]) Due to 'multiple participation' of employees in the different types of other forms, it is not possible to calculate the general participation rate for the other forms. Only minimum and maximum participation rates can be estimated, which range logically between the highest values for a single other form to the summation of all participation rates for the other forms, up to the logically possible maximum value of 100 %.

NB: Norway and the UK are excluded because of limited comparability. Data were not available for Ireland.

Source: Eurostat, CVTS3, date of extraction 21.1.2009; BIBB calculations.

Analysis of national results points to differences. When looking at the volume of participants in courses and the range of participants in other forms (two right-hand columns), three groups can be distinguished. The first contains 12 countries, but is also valid for the EU average. In this group, even the maximum value in the estimated participation rate for other forms is below that for courses: Belgium, the Czech Republic, Greece, France, Italy, Cyprus, Luxembourg, Malta, Austria, Portugal, Slovakia and Finland. The second group is just one country: Denmark. Here, even the minimum value in the participation rate for other forms is above that for courses. The third group contains 12 countries: Bulgaria, Germany, Estonia, Spain, Latvia, Lithuania, Hungary, the Netherlands, Poland, Romania, Slovenia and Sweden. In this group, the participation rate for courses is located between the minimum and maximum values for other forms.

The main conclusion to be drawn is that participation in courses is higher than for other forms in at least in 12 countries. Only in Denmark participation in other forms is higher than for in courses. For 12 countries, it is unknown for sure whether participation in courses or in other forms is higher. However, it is unlikely that the ‘true’ (unobserved) participation in other forms is higher than that for courses in all 12 countries in group 3 because some employees might have participated in more than one single other form. At least for two countries of this group it is likely that the participation rate in other forms is actually below the participation in courses due to the fact that participation in courses is almost as high as the estimated maximum of participation in other forms (the Netherlands: courses 39 %, maximum value for other forms 40 %; Slovenia: courses 58 %, maximum value for other forms 60 %).

5. Enterprises not providing CVT

5.1. Introduction

For adults, CVT provided by enterprises is one of the main pillars of lifelong learning, allowing further development of skills and competences, contributing to employability, partly safeguarding against unemployment and possibly also leading to benefits such as increased job satisfaction, improved career prospects and wage gains. On this last point, results for Germany show that employee-investment in training yields only moderate wage returns, compared to the effects of enterprise-financed training (Pfeifer, 2008), yet studies for the UK and the US have found considerable wage gains for training participants of employer-provided training (Booth et al., 2002; Frazis and Loewenstein, 2003).

For enterprises, CVT is a means of raising productivity, modernising work practices and facilitating innovation. Many studies show that adult training has a positive impact on firm productivity, on profitability, market share and stock market value, and competitiveness (Cedefop; Hansson et al., 2004; Bassanini, 2004; De la Fuente and Ciccone, 2003; Böheim and Schneeweis, 2007), although 'some studies are arguing that profitability […] is unaffected' (De la Fuente and Ciccone, 2003, p. 13). Evidence of a positive impact of CVT for enterprises is found for different countries, including Ireland, France, the Netherlands, Austria, Sweden, the UK and the US. Some studies make use of data for different countries, partly controlling for country or institutions specificity (Ballot et al., 2002; Cedefop; Hansson et al., 2004). Most studies confirm substantial gains for employers from vocational training – even if it is general training that, as a result of worker mobility, is useful to other firms. Simultaneous analyses of wage gains for training participants and productivity gains for the enterprise ([13]) find that productivity increases through training far exceeded wage gains for participating employees.

Enterprises that do not provide training to their staff are waiving possible returns of such an investment, which can yield higher returns than employee-financed training. Further, education and training have positive effects on the economy and society as a whole. Thus, the concern about non-training enterprises seems justified both from a social and also from an economic point of view.

The issue of non-training enterprises is discussed in this context. First the incidence of enterprise training abstinence in Europe is described, as well as its development over time. Second, the stability of enterprise training behaviour, looking at permanent or temporary non-provision of training, is discussed. Finally, the reasons for not providing training from the enterprise point of view are analysed.

([13]) For Germany, Kuckulenz (2006); for the UK, Dearden et al. (2005); for Italy, Conti (2005).

5.2. Methodological remarks

One of the main indicators in CVTS is the incidence of training, i.e. the provision of any type of CVT (courses or other forms) as discussed in Chapter 1. However, some information on non-training enterprises is included in the survey. Questions B3 and B4 provide information on the provision of courses and other forms of training in the year prior to the reference year of the survey (2004) for all enterprises, i.e. both training and non-training enterprises. This allows enterprises to be classified according to the continuity of their training as regular trainers, incidental trainers and permanent non-trainers. In addition, information on the probable provision of CVT in the year of the survey (2006) is collected. Question E1 is the only question specifically addressed to non-training enterprises, requesting information on the most important reasons why the enterprise did not provide CVT to its employees.

CVTS2 also provides information on the continuity of training. However, the possibility of comparing the results of CVTS2 and CVTS3 is limited, mainly because of the change of reporting period: in CVTS2 it is two years prior to the reference period of the survey but was shortened to one year in CVTS3. Further, the question on plans or expectations to provide CVT in the following year included a scale in CVTS2 (certainly, probably, no), but this was a binary (yes/no) question in CVTS3. Comparisons over time are difficult.

The questions on non-provision of CVT are similar in CVTS2 and CVTS3. There were some slight changes in wording in the outline questionnaire; there is no information available on the extent to which the national questionnaires were changed. The sequencing of the answering options was changed, which might have an influence on the probability of being ticked. The answering options listed in first and second position in the European outline questionnaire are ticked frequently (ranking first and second). The reason ranking third in both CVTS2 and CVTS3, however, was listed at the bottom of the list in CVTS3 and on fourth position in CVTS2. Hence, there is no indication of a strong relationship between position in the sequence of items and frequency. Further, some countries implemented random sequencing of the items in CATI, CAPI and CAWI surveys ([14]). Based on the information available there is no reason to suspect a strong effect of change of sequencing in the outline questionnaires between CVTS2 and CVTS3. Finally, an additional answering option was introduced in CVTS3. Categories may be regarded as mutually exclusive so this should not have a substantial impact on the comparison of CVTS2 and CVTS3, except for the answering option ‘other reasons’. However, enterprises may not have been aware of this reason, so including it as a specific item might reduce the chances of other items being ticked, due to the restriction of ticking not more than three reasons. Empirically, the item introduced in CVTS3 was not ticked very frequently and does not rank high, so this should not be a major problem.

At the time of writing, information on the continuity of training or non-training provision (questions B3 and B4) was not available from the Eurostat online database. Analysis on this issue in this chapter makes use of microdata sets. Data on the reasons for non-provision

([14]) CATI – computer-assisted telephones interviewing
CAPI – computer-assisted personal interviewing
CAWI – computer-assisted web interviewing

(question E1), is available, broken down enterprise size (3 categories) or sector or activity (6 NACE categories), though excluding Ireland.

These questions are not key variables and item response rates were not required in national quality reports. Even so, some item response rates are available:

(a) Bulgaria: B3, B4: 99 %-100 %; E1: 98 % (National Statistics Institute, 2007, p. 14f);
(b) Finland: B3, B4: 88 %-89 %; E1: 100 % (Statistics Finland, 2008, p. 12);
(c) Sweden: B3, B4: 97 %-98 %; E1: 93 % (Statistics Sweden, 2007, p. 50-51);
(d) Norway: B3, B4: 88 %-91 %; E1: 58 % (Statistics Norway, 2008, p. 26-27).

Available figures indicate fairly good item response rates for questions B3, B4 and E1, with the exception of E1 in Norway: the Norwegian quality report indicates a very high item non-response of 41.6 % of all non-training enterprises. This must be interpreted in the context that the group of non-training firms is small in Norway though there might also be quality problems with question E1 in other countries.

5.3. Incidence of non-training over time

According to the tables presented in Eurostat's online database, training incidence (training enterprises as a proportion of all enterprises) remained stable between 1999 and 2005 in the EU-25. In both 1999 and 2005 the share of non-training enterprises was 39 % ([15]). In 2005, the share of non-training enterprises ranged between 15 % in Denmark and 79 % in Greece ([16]).

There are pronounced differences between countries. In all northern and western Member States, the share of non-training enterprises is below the European average. In all southern Member States, non-training enterprises are more frequent than on average. In eastern Europe, the picture is mixed. In most of these countries the share of non-training enterprises is high, but there are four countries where the frequency of non-training is below or around the EU average: the Czech Republic, Estonia, Slovenia and Slovakia.

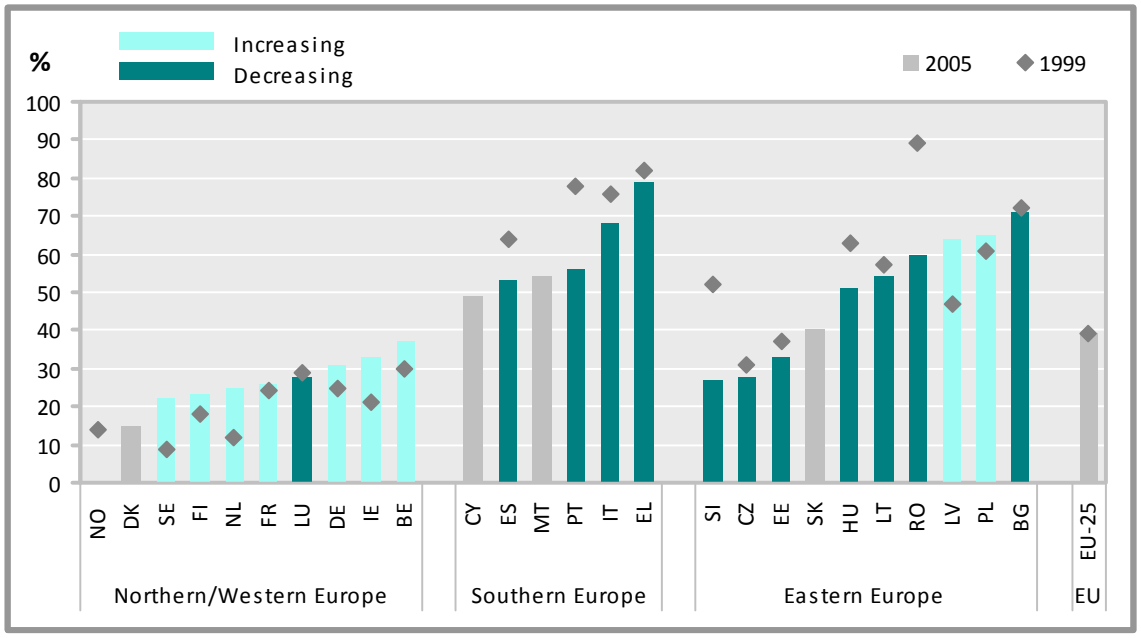
While the EU average given by Eurostat indicates a stagnation of CVT incidence at European level, there are diverging developments over time in individual countries (Figure 38). In most of the available north and west European countries the share of non-training enterprises in 2005 was higher than in 1999. The increase in non-training enterprises was very pronounced in the Netherlands, Sweden (both 13 percentage points) and in Belgium (7 percentage points). The opposite is true for south and east European countries, where in almost all countries a reduction in non-training enterprises occurred. This was most pronounced (more than 20 percentage points) in Portugal, Romania and Slovenia.

(15) Data for Cyprus, Malta and Slovakia are not available in CVTS2; the value given in the Eurostat online database for EU-25 is based on 22 Member States at that time.

([16]) For methodological reasons, the UK results are not fully comparable and are excluded from the analyses (see Chapter 7 for more details). In addition, data on training incidence for Denmark (1999), Austria (1999) and Norway (2005) are excluded for limited comparability. No 1999 data are available for Cyprus, Malta and Slovakia. EU-25 averages are calculated by Eurostat based on a different number of countries in 1999 and 2005 and include countries with data which – according to the analysis presented in Chapter 7 of this report – are of limited comparability. Hence, comparison of the European averages of CVTS2 and CVTS3 does not lead to a clear-cut result of development at EU level.

Overall, training abstinence of enterprises seems to be converging to a common level in Europe.

Figure 38 **Non-training enterprises in 1999 and 2005 (% of all enterprises)**



NB: Austria (1999), Denmark (1999), Norway (2005) and the UK (1999, 2005) are excluded because of limited comparability. Poland in 1999 covered only Pomorskie region. France in 1999 slightly underestimated, due to sampling. No 1999 data for Cyprus, Malta and Slovakia.

Source: Eurostat, CVTS2 and CVTS3, date of extraction 2.6.2009; BIBB calculations.

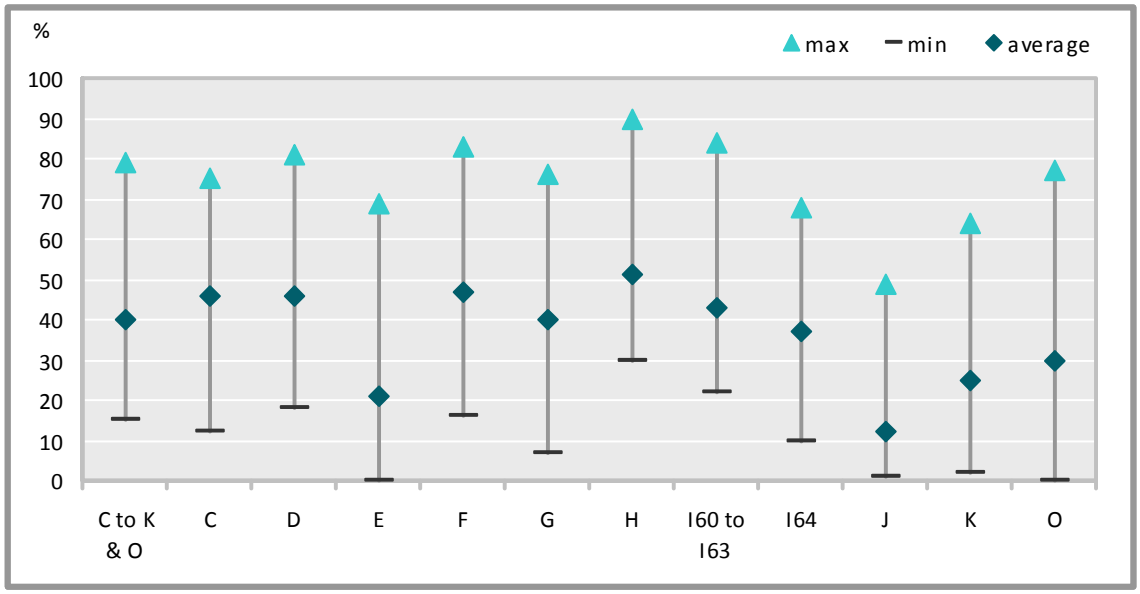
5.4. Relevance of sector and enterprise size

As discussed elsewhere (Behringer et al.; 2009), the existing body of theoretical considerations has not resulted in a consistent theory of enterprise training behaviour. However, most theoretical and empirical literature agrees on the importance of enterprise sector and size on incidence of training and non-training.

Looking first at the sector ([17]), pronounced differences become obvious (Figure 39). In Member States, on average, electricity, gas and water supply (E) and financial intermediation (J) have the lowest share of non-training enterprises. In all countries, enterprises in these sectors are less frequently non-trainers than the national average ([18]). Hotels and restaurants (H) have the highest share of non-training enterprises on average, and in all countries the share of non-trainers in this sector is higher than the national average ([19]).

([17]) Sector categories based on NACE Rev. 1.1; see Annex for a list of NACE categories.
([18]) For Ireland, Cyprus, Luxembourg and Malta data for sector E are not available in the Eurostat online database.
([19]) For Ireland, Cyprus, Luxembourg and Malta data for sector H are not available in the Eurostat online database.

Figure 39 **Non-training enterprises by sector of activity for EU-27 in 2005 (% of all enterprises)**



NB:
- C to K & O: all NACE branches covered by CVTS
- C: mining and quarrying
- D: manufacturing
- E: electricity, gas and water supply
- F: construction
- G: wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
- H: hotels and restaurants
- I60 to I63: land transport; transport via pipelines; water transport; air transport; supporting and auxiliary transport activities; activities of travel agencies
- I64: post and telecommunications
- J: financial intermediation
- K: real estate, renting and business activities
- O: other community, social, personal service activities

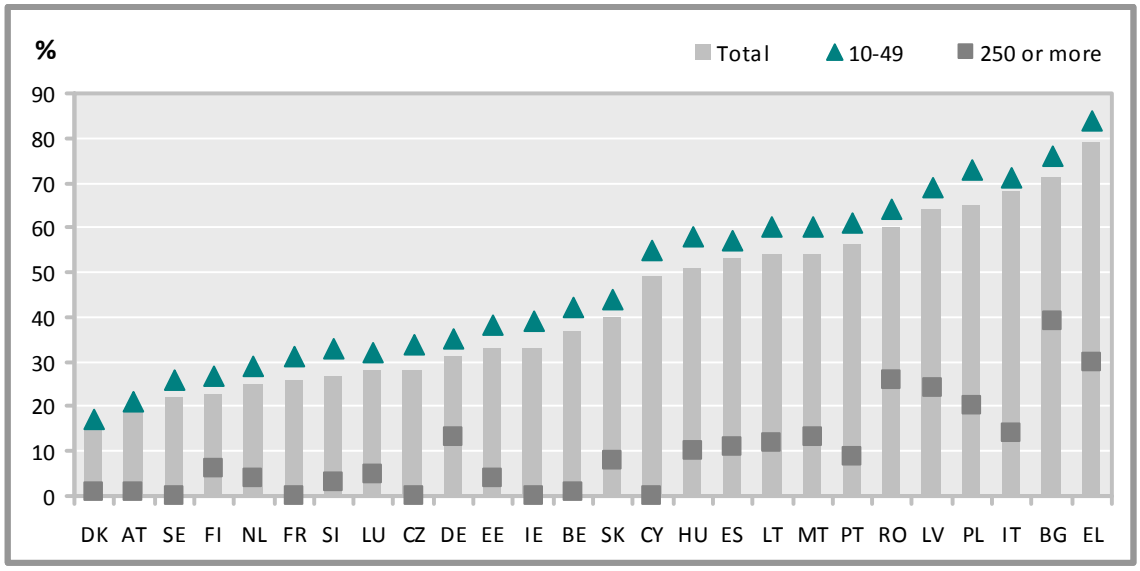
Source: Eurostat, CVTS3, date of extraction 18.5.2009; BIBB calculations. Minimum, maximum and average per Nace category is displayed.

Figure 39 also shows the spread of non-training enterprises. In sector J, on average 12 % of EU enterprises are non-trainers, but this covers 1 % in several countries and 49 % in one. The spread is lowest for sector J and highest for O (other community, social, personal service activities). The high differences within a sector are an indication of other factors impacting on training incidence.

Policy and research papers frequently discuss the higher incidence of non-training in small enterprises. Figure 40 depicts non-training enterprises for Member States by size. In all countries, small enterprises (10-49 employees) are more frequently non-trainers than their national average, while large enterprises (250 or more) less frequently. In every country, training abstinence among medium-sized enterprises is located between the results obtained for small and large enterprises. There are countries where the difference according to size class is small, for example Denmark and Austria (difference smaller than 20 percentage points). In other countries the difference is much bigger (e.g. Poland, Portugal, Greece, Italy and Cyprus with a difference of more than 50 percentage points). With a low rate of training abstinence there is not so much room for differences between the size classes. Countries with roughly the same average rate of training abstinence, for example Italy, Latvia and Poland, differ in the pattern of non-training by size. Figure 40 also shows that incidence of

non-training in small enterprises differs substantially between countries (between 17 % and 84 %). In large enterprises, the differences between countries are much smaller (incidence of non-training between 0 % and 39 %) indicating greater similarity than among small enterprises ([20]). The same result was found in 1999 with CVTS2.

Figure 40 **Non-training enterprises by size class in 2005 (% of enterprises)**



NB: Norway and the UK are excluded because of limited comparability.
Countries are sorted according to the national average of incidence of non-training in ascending order.

Source: Eurostat, CVTS3, date of extraction 6.6.2009; BIBB calculations.

5.5. Reasons why enterprises do not provide training

Why enterprises refrain from providing CVT (courses or other forms) is an important policy question. Non-training enterprises were asked to tick the three most important reasons. Eight items were included in this question. Overall, the three reasons most frequently given for 2005 were:

(a) the existing skills and competences of those employed corresponded to the current needs of the enterprise (EU-27: 74 %);

(b) the preferred strategy of the enterprise was to recruit individuals with the required skills and competences (EU-27: 53 %);

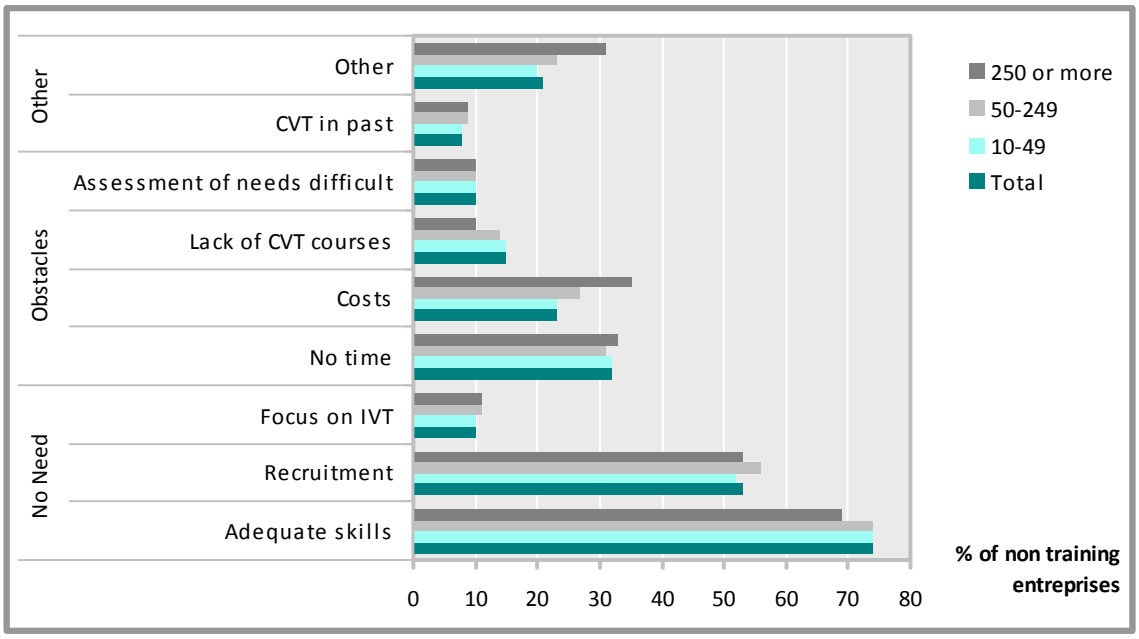
(c) the high workload and limited available time of persons employed (EU-27: 32 %).

Comparing answers given in 2005 with those given in 1999 is not possible at EU level, as the Eurostat online database only provides EU-25 and EU-27 for 2005, and EU-15 for 1999. In 1999, the same reasons had top rankings; however, the preference of the enterprise

([20]) The greater similarity of large enterprises regarding their decision to provide CVT to their staff does not translate into similarity regarding the participation of their employees in CVT courses. The national average of the share of employees in training enterprises participating in CVT courses differs greatly between countries, in the case of large enterprises almost to the same extent as when only small enterprises are concerned.

to recruit people already equipped with the required skills and competences was given less frequently than in 2005 ([21]).

Figure 41 **Reasons not to train by size class for EU-27 in 2005**



Source: Eurostat, CVTS3, date of extraction 13.2.2009; Data for EU-27.

Figure 41 shows the reasons given by the non-training enterprises in 2005. No need for training is given most frequently, more specifically that non-training enterprises declare the skills and competences of their staff to correspond to the needs of the enterprise. Another preferred strategy is recruitment. Obstacles hindering provision of CVT are mentioned less frequently. Among these obstacles, the workload of the staff seems to be slightly more important than the high costs of CVT. Other obstacles are the lack of suitable courses in the market, and difficulties in assessing the enterprise's needs.

Surprisingly, enterprises of different sizes differ little in the reasons given. For example, a higher share of small enterprises not providing training was expected to result from difficulties in work organisation. The size of an enterprise, as with sector, is linked to labour organisation and production processes. For small enterprises it is more difficult to substitute a person away on training, as there is usually no stand-by and fewer possibilities for division of labour. However, against expectations, no such differences appear at aggregate level. The exception from the rule is CVT costs, more frequently quoted as an obstacle to CVT in large enterprises than in small ones.

The high proportion of respondent who not perceive any need to enhance or widen the skills and competences of their staff is unexpected: is it possible to trust this figure? Do enterprises adequately assess their skill needs? Non-training enterprises may have ticked

([21]) Due to methodological changes in the question (Section 5.2) the frequencies of the answering options may only be compared with caution.

this item because it is an easy answer and perhaps a socially-accepted answer. However, in CVTS2 there was an additional direct question on training or recruitment needs in recent years, not connected with questions on training provision. The enterprises declaring that they did not have a need to obtain or develop new skills for the enterprise during the last three years prior to the survey suggests that enterprises frequently do not perceive a need to update and enlarge the skills and competences of their staff.

From a policy point of view, strategies to foster lifelong learning in enterprises would need to raise enterprise awareness of skill needs, if inadequate perception of skill needs is assumed. Firms might need more professional human resources development., The high costs of CVT courses and difficulties releasing employees from work are relevant to closing the gap between perception of skill needs and training. However, if the figures adequately reflect enterprise skill needs, subsidies for CVT will have only limited effects as long as awareness of training needs is underdeveloped.

What are enterprises doing to inform themselves about their future skill needs and those of their employees? Two questions in CVTS2 – one on assessment of future manpower and/or skill needs of the enterprise, one on assessment of skills and training needs of individual employees – were directed at both training and non-training enterprises. Almost half of the training enterprises (48 %) assessed their manpower and/or skill needs, compared to only 19 % of the non-trainers (all enterprises: 37 %). A higher share of enterprises assessed employee training needs: for 1999, around half of the enterprises reported such procedures were in place, the proportion being much higher in training enterprises (64 %) than in non-training enterprises at 26 % ([22]).

There are some differences between countries regarding the frequencies of the various answers and also in the overall number of responses (enterprises were asked to give the three most important reasons). With only one exception (Estonia), enterprises ticked most frequently ‘the existing skills and competences of the persons employed corresponded to the current needs of the enterprise’ (Table 16). There are more exceptions regarding the item ranked second: in most countries it was ‘the preferred strategy of the enterprise was to recruit individuals with the required skills and competences’. Estonia Germany, Austria and Sweden are exceptions, the last three countries ranking ‘no time’ higher. Most countries ranked third the issue of time constraints. Nine countries – three west/north European countries (Germany, Austria and Sweden) and six east European countries (Bulgaria, Latvia, Lithuania, Poland, Romania and Slovenia) – mention ‘the high costs of CVT courses’. It is difficult to identify distinct patterns of the reasons given by enterprises against provision of CVT in 2005 from aggregated tables alone.

([22]) For a more detailed analysis of CVTS2 results on skill needs in enterprises see Behringer (2009), and future expectations of skill needs at European level see Cedefop (2008).

Table 16 **Reasons not to train in 2005 (in % of non-training enterprises)**

	No need for training			Obstacles to training			Other reasons		
	Adequate skills	Recruitment	Focus on IVT	No time	Costs	Lack of courses	Assessment difficult	CVT in past	Other reasons
EU-27	74	53	10	32	23	15	10	8	21
BE	82	49	3	45	20	9	8	3	31
BG	83	78	10	30	35	13	5	3	26
CZ	80	42	0	26	13	3	2	9	28
DK	65	56	19	33	10	9	13	1	10
DE	77	20	18	49	40	14	9	6	38
EE	50	42	6	17	51	21	8	6	31
EL	79	65	11	56	30	19	11	2	11
ES	78	57	12	37	12	25	12	2	11
FR	53	49	21	48	16	13	12	12	20
IT	73	60	9	22	16	17	10	16	24
CY	84	68	12	51	12	12	5	7	39
LV	85	70	8	29	39	11	22	2	34
IT	85	75	2	30	53	8	18	3	26
LU	74	54	14	52	10	11	13	1	29
HU	84	40	2	33	29	9	4	3	11
MT	80	64	5	52	13	8	11	3	28
NL	77	42	3	22	11	3	13	11	17
AT	85	23	9	45	25	10	6	2	12
PL	79	60	9	10	29	6	3	7	34
PT	84	53	5	41	34	15	20	2	–
RO	86	79	–	32	52	20	24	3	3
SI	79	44	5	17	26	10	5	5	38
FI	60	37	11	40	15	15	9	0	6
SE	56	16	6	37	26	9	9	2	27

NB: For Slovakia the number of responses (in % of non-training enterprises) is only roughly one third of the European average.
Norway, Slovakia and the UK are excluded because of limited comparability.
Source: Eurostat, CVTS3, date of extraction 13.2.2009.

5.6. Stability of training behaviour over time

It is sometimes argued that the higher share of non-trainers among small enterprises is because training needs occur irregularly. In small enterprises this leads to irregular CVT, while in large enterprises training needs emerge at different times in the various departments. 'With a short observation period it depends (more strongly) on chance whether a firm that is generally willing to provide further training is classified as a firm that does not provide further training' (Neubäumer and Kohaut, 2007, p. 254). Further, it might be more efficient for small enterprises to concentrate their CVT, which would result in fluctuation between the status training/non-training enterprise, while for larger enterprises training is provided more steadily. For intensity of training, measured by participation of employees in training enterprises, it is assumed that small enterprises involve a higher share of their staff when they are providing training. In line with this argument, Neubäumer et al. (2006) find for German enterprises, that training micro enterprises have a higher proportion of their employees in employer-provided CVT than larger enterprises. Prolonging the observation period, Neubäumer and Kohaut find, that 'in particular small and very small firms provide their employees with further training on an irregular basis' (2007, p. 263).

In contrast, Gerlach and Jirjahn (1998) find, in their enterprise panel study, that most enterprises maintain continuity in their CVT, either financing no CVT at all, or continuously providing CVT to their staff.

In addition to CVT provision in 2005, enterprises were asked whether they provided courses and other forms of training in 2004. Based on this information, four groups of enterprise are defined:

(1) enterprises that did not provide CVT in 2004 and in 2005 (permanent non-trainers);
(2) enterprises that provided CVT in 2004, but not in 2005 (incidental trainers in 2004);
(3) enterprises that provided CVT in 2005, but not in 2004 (incidental trainers in 2005);
(4) enterprises that provided CVT in both 2004 and 2005 (regular trainers) ([23]).

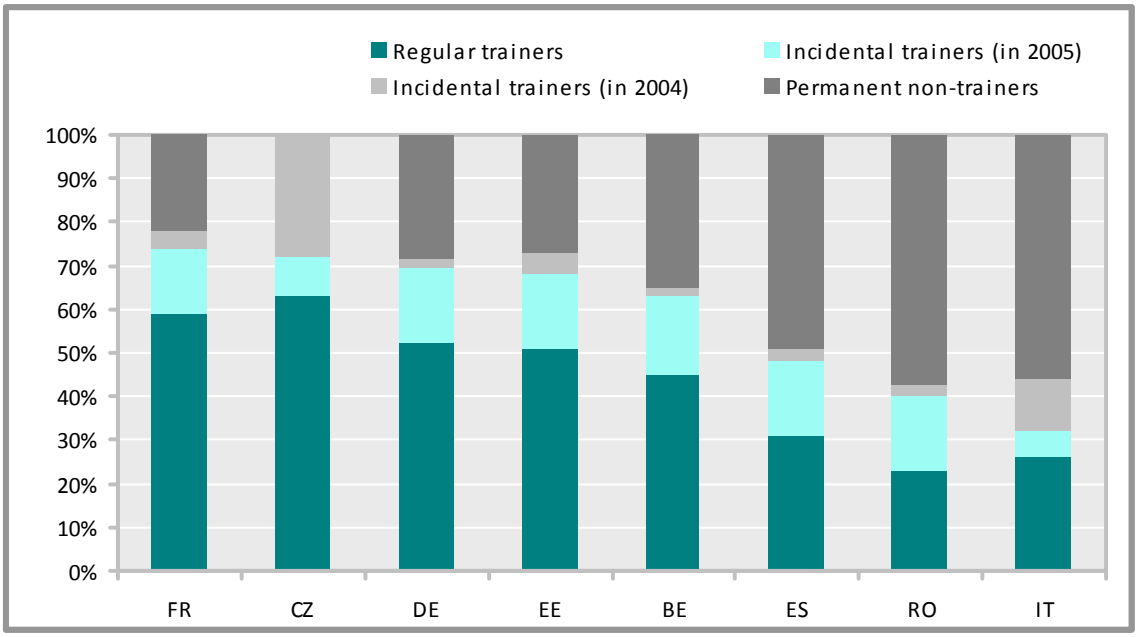
Merged microdata sets from Belgium, the Czech Republic, Germany, Spain, France, Italy and Romania were used for the analysis. In this sample, 58 % of enterprises provided CVT to their staff in 2005 on average. An extension of the observation period (including 2004 in addition to 2005) increases the figure to 66 %. The share of regular trainers ranges from 23 % in Romania to 63 % in the Czech Republic (bottom segment of the bars in Figure 42). In most of the countries included in this analysis, the share of incidental trainers (groups 2 and 3) is around 20 % of all enterprises, with the exception of the Czech Republic, where it peaks at 37 %. The share of permanent non-trainers varies between 0 % in the Czech Republic and more than 50 % in Italy and Romania.

Incidental trainers are an interesting group for research and for policy. Because they have already provided training, they have already incurred 'entry costs' (e.g. for acquiring knowledge of the training market). They also have experience of the returns on their

([23]) Based on questions B3b and B4b on CVT courses and other forms of training expected to be provided in 2006, one could define permanent (non-)trainers based on a period of three years, not two. However, since using three years would include expectations instead of only facts, it was decided to use only two years.

investment. Theoretically, the hurdle to providing CVT again or regularly is lower than for permanent non-trainers, as there are no, or lower, entry costs, compared with permanent non-trainers. A thorough analysis of incidental training (preferably in a longitudinal perspective) might shed light on the potential for increasing employer-provided CVT.

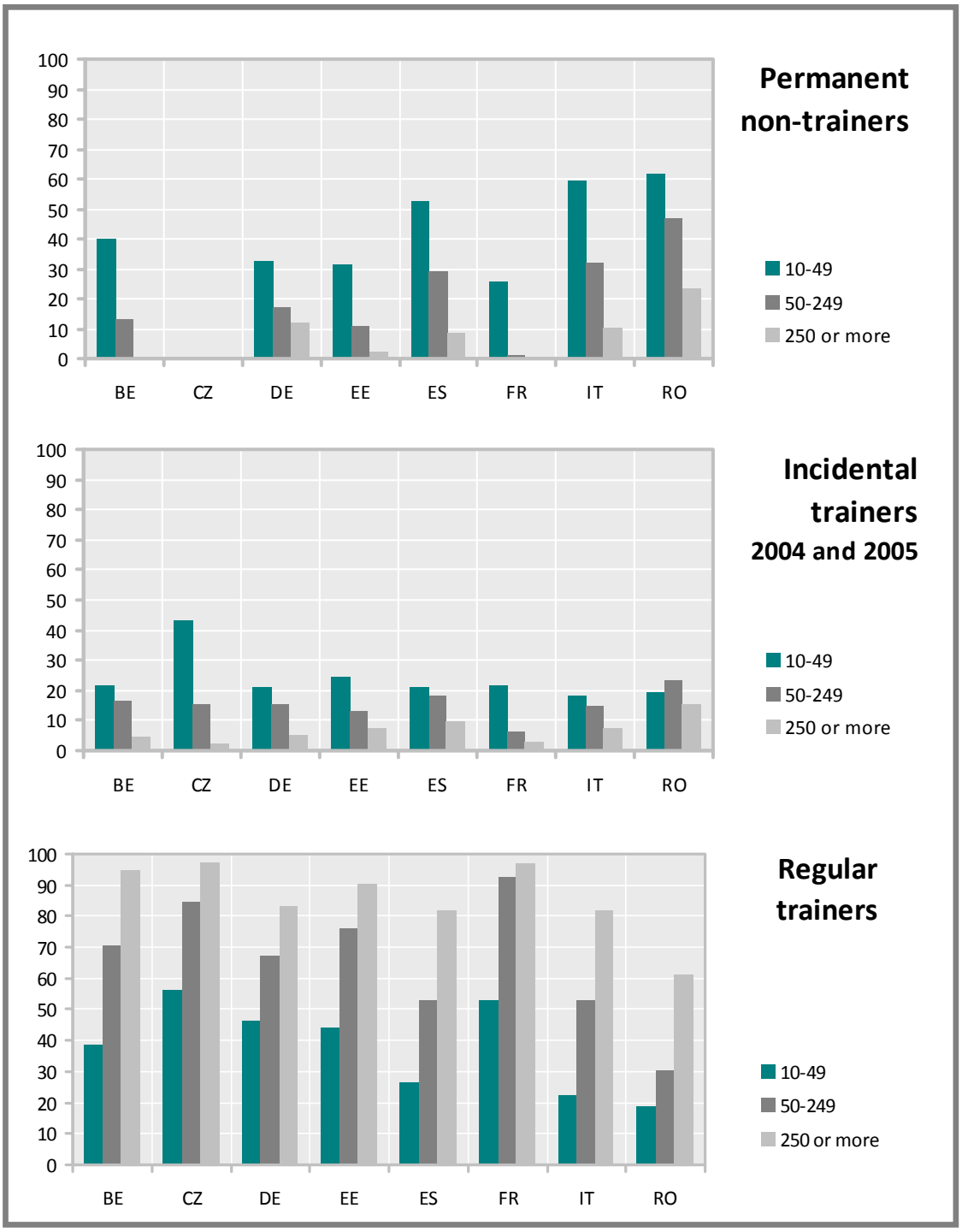
Figure 42 **Regular, incidental and non-provision of CVT (in % of enterprises)**



Source: Anonymised national microdata of CVTS3; BIBB calculations.

In all countries, the share of permanent non-trainers decreases with enterprise size, except in the Czech Republic, where there are no permanent non-trainers in the sample (Figures 42 and 43). In small enterprises (10 to 49 employees), the share of permanent non-trainers varies between 0 % in the Czech Republic and 62 % in Romania. Incidental provision of training decreases with size class, except for Romania. However, in all countries except the Czech Republic there is no great difference in incidental provision of training between small and medium-sized enterprises, while large enterprises differ a lot in this respect. Regular training increases with size class in all countries. Most large enterprises (61 % in Romania, 80 % or more in all other countries) are regular trainers. Among small enterprises, regular trainers are well below 50 %, except for the Czech Republic and France. Extending the observation period from one year (2005) to two years (2004-05) not only increases training incidence, but also reduces the differences between enterprises of different size classes. Nevertheless, there are still differences in training incidence according to size class of the enterprise.

Figure 43 **Regular, incidental and temporary non-provision of training by size class (in % of enterprises)**



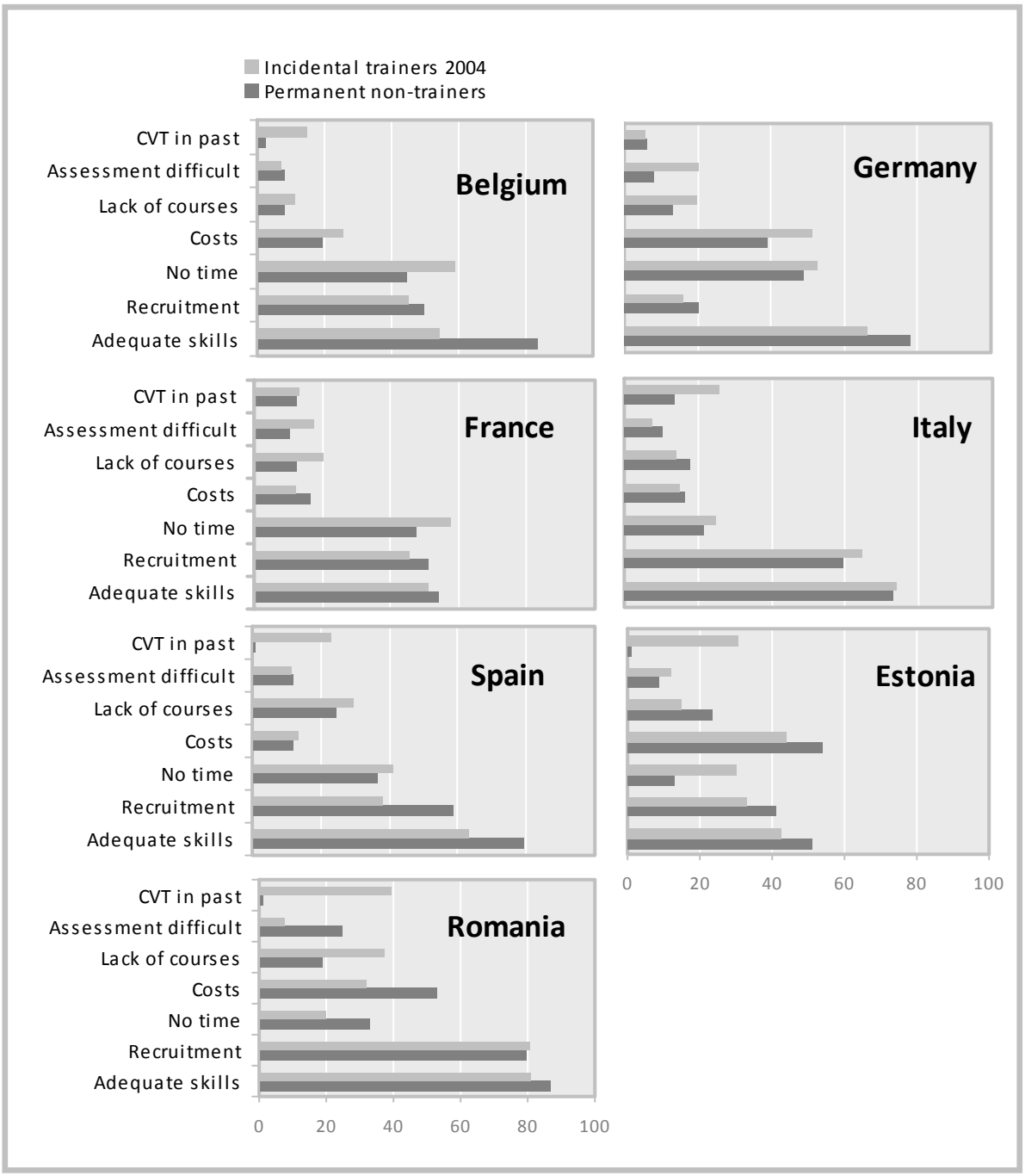
Source: Anonymised national microdata of CVTS3; BIBB calculations.

5.7. Reasons for permanent and incidental non-training

The reasons for non-training are analysed for both permanent non-trainers and incidental trainers (Figure 44). A first glance offers several patterns of non-training. In some countries (e.g. Estonia and Romania) the costs of CVT are an important obstacle and are mentioned particularly by permanent non-training enterprises. In contrast, these are not mentioned frequently in France, probably because the French funding system requests enterprises to train or to pay ([24]). In some countries, the lack of suitable CVT courses in the market seems to be a problem (e.g. Romania, particularly for incidental trainers). In some countries, incidental trainers indicate major training effort in a previous year (Estonia, Romania). Apart from Italy, incidental trainers seem to be less confident of the adequacy of the skills and competences of their staff than permanent non-trainers; the differences are notable in Belgium, Germany and Spain. The problem of time and workload is mentioned often, most notably in Belgium, Estonia and France though not in Romania. Some countries (Germany, Estonia, France) quote difficulties in assessing the firm's CVT needs. Taken together, permanent non-trainers argue a lack of need for CVT more often than incidental trainers. The latter emphasise obstacles such as time, difficult assessment of training needs and lack of courses.

([24]) The effects of the institutional framework, in particular the French funding system, are discussed in more detail in Behringer and Descamps (2009).

Figure 44 **Reasons for not providing CVT in 2005 (in % of enterprises)**



Source: Anonymised national microdata of CVTS3; BIBB calculations.

6. CVT course costs and funding

6.1. Introduction

This chapter concentrates on the costs and funding of CVT courses. Following on from methodological remarks, which include data quality and how CVT cost indicators might be best defined, the chapter first looks at the structure of costs within European enterprises. Then the share of labour costs spent on CVT is examined, with considerations of enterprise size and sector of activity. Finally, CVT expenditure per employee is analysed, again with breakdowns by enterprise size and sector.

6.2. Methodological remarks

6.2.1. Data quality

The following cost elements were requested in CVTS3:

(a) fees and payments (variable C7a);
(b) travel and subsistence (variable C7b);
(c) labour costs of internal trainers (variable C7c);
(d) costs for training centres, teaching materials (variable C7d).

In addition, CVTS3 asked for contributions (variable 8a) and receipts (variable 8b) for enterprise CVT. Personnel absence costs (PAC) are an *ex post* estimate based on total labour costs of persons employed (variable A5), the total number of hours worked by persons employed (variable A4) and the total paid working time spent on CVT courses (C3tot).

National quality reports provide some information on data quality. In general, many countries reported that the most difficult questions were those on costs. For example, Finland says that the 'cost section seems to be the most difficult part of the questionnaire. Item non-response of specific cost item variables was far too high' (Statistics Finland, 2008, p. 21). The information on CVT costs of CTVS3 should be used carefully and checked by all available means (e.g. other national surveys, logical proof).

Further, the variable C8a on contributions appears to be the most difficult question for enterprises within the cost section. Many countries report problems with this variable (Belgium, the Czech Republic, Denmark, Germany, Spain, Italy, Malta, Austria, Portugal, Finland and Sweden). Very different problems occur with the question on contributions. In the countries or sectors where such contributions do not exist, this could cause problems in understanding the question correctly (e.g. Malta). In some countries all enterprises are obliged to pay contributions, but the respondents in enterprises were not aware of this and responded falsely, leading to underreporting (FPS Economy, p. 19). Some countries imputed information on C8a from other sources (funding agencies) which they considered as being

more reliable (Ministerio de Trabajo y Asunto Sociales, 2007). Again, these examples highlight that the information on C8a should be handled with care. However, even for variable C8a, where countries mention item non-response most frequently, on average the variable is still fairly complete (Chapter 7).

PAC are a special issue, since they are not surveyed, but calculated *ex post* based on the number of hours in CVT courses multiplied by the average labour cost per hour. While the other elements of costs are related to real monetary expenditure which might be recorded in the accounting system of enterprises, PAC is potentially biased. It might be that PAC is lower than calculated or even zero; this is the case if participants still have to accomplish their workload, or if colleagues of training participants have to work more during their absence, or if training takes place in a slack period. However, PAC may underestimate training participant labour cost, if the costs of those undergoing CVT is higher than average labour costs.

Also, some countries (e.g. Bulgaria, Hungary and Portugal) report that CVT occurred out of paid working time, which poses problems with the calculation of PAC and of indicators based on training hours. If participants invest spare time in training and the respondents of the CVTS3 cite total training costs – but only training hours in paid working time – the total cash per training hour will be overestimated.

The different C7 variables on CVT courses were less problematic, although some countries reported that it was difficult for enterprises to distinguish the costs elements (as explicitly mentioned in quality reports from Belgium, Germany, Lithuania, Malta, Austria and Sweden) ([25]). It is, however, methodologically necessary to make enterprises aware of these different costs elements. If not informed at all, it could lead to a massive underreporting as some cost elements might be forgotten or high degrees of divergence between enterprises might occur.

Though the CVTS3 cost data is of problematic quality it is important; collecting information on costs is a methodologically difficult issue also experienced in other enterprise surveys. Considering the substantial provisos and caveats for IVT (Chapter 7), compromising the general comparability of the data in this section, IVT costs are not analysed at all.

6.2.2. Comparing CVTS2 and CVTS3

The different costs elements and the wording of questions were slightly changed between CVTS2 and CVTS3. For example, there was a distinction between labour costs of internal trainers, exclusively or partly involved in managing and delivering CVT in CVTS2. This distinction was dropped and merged into one question ‘labour costs of staff of own training centre and other staff exclusively or partly involved in designing and managing CVT courses’ in the CVTS3 manual (Eurostat, 2006, p. 22). No problems of comparability for total costs are expected, nor should there be as a result of the slight change in the wording of questions C7 and C8 and its sub-items.

([25]) Belgium: FPS Economy (2007); Germany: Destatis (2007); Lithuania: Statistics Lithuania (2007); Malta: National Statistics Office Malta (2007); Austria: Statistik Austria (2007); Sweden: Statistics Sweden (2007).

A more significant change is the introduction of flag-variables in CVTS3, indicating whether enterprises have had costs for a cost element at all (e.g. fees and payments). These variables were missing in CVTS2 and it was difficult to distinguish if no costs were incurred or if enterprises just did not respond to the question. The flag-variables helped to improve data quality between CVTS2 and CVTS3.

There was also a change in the questionnaire flow. While, in most countries, questions C8a on contributions and C8b on receipts were only asked of training enterprises in CVTS2, they were asked of all enterprises in CVTS3. Thus, contributions and receipts should be better covered in CVTS3. As contributions and receipts of non-trainers are not a major issue in most countries, this change between CVTS2 and CVTS3 should not impact significantly on national results but should be kept in mind when comparing CVTS2 and CVTS3.

The UK figures for total costs were exorbitant in 1999 (almost twice as much as the second highest figure), and might be related to the fact that the UK cost data in 1999 were taken from another survey. Eurostat indicated in the past that these data are not comparable to the other CVTS data. The UK cost data are excluded from the cost analysis in 1999. The UK data for CVTS3 is also of limited comparability and is excluded.

Overall, a high degree of comparability of the cost sections in both questionnaires can be assumed, when considering CVTS2 and CVTS3 manuals (Eurostat, 2000; 2006).

6.2.3. Defining CVT cost indicators

The cost elements of CVT courses shown in Table 17 are as follows.

The first element are direct costs as the sum of fees and payments to external organisations (training providers; C7a); travel and subsistence payments (C7b); labour costs of internal trainers for CVT courses (C7c); training centre, teaching materials (C7d).

These costs are based on an enterprise decision and are related to the amount of training (even if this relationship is not perfect for training centres and labour costs of internal trainers). However, these direct costs are underestimated for mutual systems that reduce the fees to be paid to a training provider. Direct costs are a real monetary expenditure for the enterprise.

The second element is the balance of contributions to collective or other funds and receipts from such funds or other sources of grants and subsidies (C8a-C8b). Contributions to collective funding arrangements through government and intermediary organisations are (in countries such as France and Italy) not a decision of the enterprise as they are mandatory. They are not related to the incidence and amount of training, but are fixed costs. They are a real expenditure for the enterprise, and both training and non-training enterprises are concerned. There is some uncertainty if all contributions are for CVT but, like direct costs, this is a real expenditure. Contributions and receipts are not relevant in all countries, but are substantial in others. The balance of contributions and receipts may be positive or negative at both enterprise and country level.

The third element is total monetary expenditure for CVT (TME=C7sub+C8a-C8b). To the extent that contributions paid by non-training enterprises are used to reduce the direct costs of training enterprises, the indicator ‘direct costs’ underestimates the direct costs of training (paid by training enterprises and – as contributions – by non-training enterprises). Collective

funding arrangements may reduce fees, etc. for training enterprises; as a consequence C7a as collected in CVTS is reduced. In addition, receipts may be available to training enterprises. The indicator 'TME for CVT' considers direct costs, contributions and receipts. Assuming that contributions and receipts are exclusively linked to CVT, it measures more adequately enterprise expenditure on CVT than 'direct costs';

The fourth element is PAC. Estimates are based on the total time spent in training, multiplied by average labour costs per hour. There are reasons to assume that PAC can be underestimated and overestimated, depending on the circumstances (Section 6.2.1).

The total cost of CVT courses is the sum of TME and PAC; alternatively, the difference between TME and total costs of CVT is PAC ([26]).

TME and total costs of CVT are probably the most adequate indicators. However, the analysis here is based mainly on TME, which represents real enterprises expenditure on CVT.

Table 17 **Cost elements (CVT courses) collected in CVTS3**

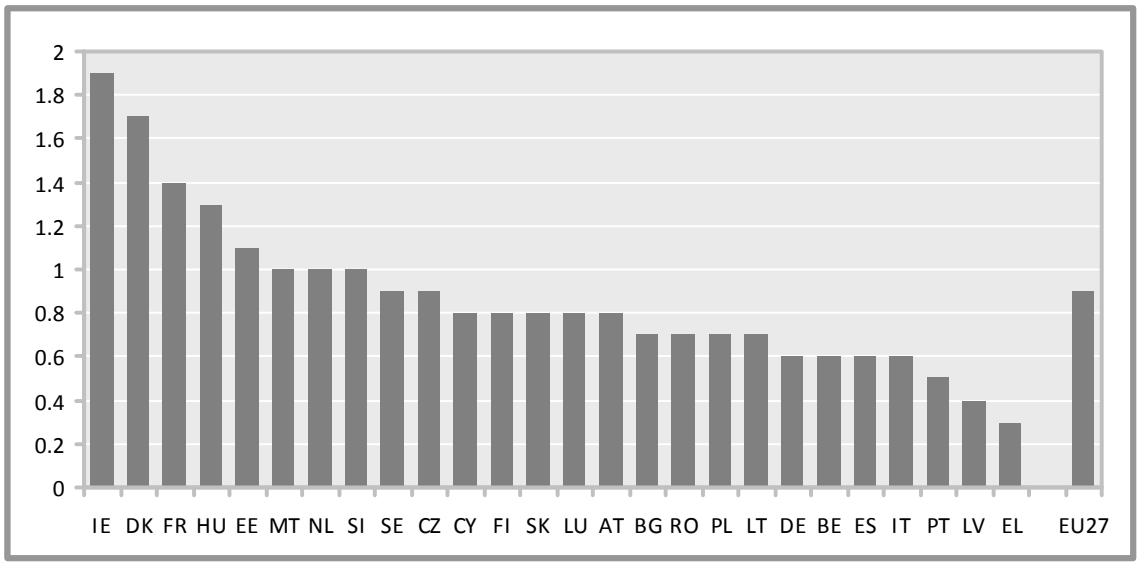
<table>
<tr><td>Fees and payments C7a</td><td>Travel and subsistence C7b</td><td>Labour costs of internal trainers C7c</td><td>Training centre, teaching materials C7d</td><td>Contributions C8a</td><td>Receipts C8b</td><td>Personnel absence cost (PAC)</td></tr>
<tr><td colspan="2">Variable costs</td><td colspan="2">Fixed costs in short term</td><td>Fixed and mandatory costs. Only contributions which finance CVT must be included. Concerns all enterprises (training and non-training)</td><td></td><td>Rough estimate of PAC, potentially biased, no real expenditure of the enterprise</td></tr>
<tr><td colspan="4">Direct costs of CVT
C7sub</td><td colspan="2">Mutualised costs of CVT
C8a-C8b</td><td></td></tr>
<tr><td colspan="6">Total monetary expenditures for CVT courses (TME)
C7tot=C7sub + C8a-C8b (all enterprises)</td><td>PAC =
C3tot* (A5/A4)</td></tr>
<tr><td colspan="7">Total costs of CVT courses
Sum of C7tot all enterprises + sum of PAC</td></tr>
</table>

([26]) This last definition is important not only in itself, but also when calculating TME based on data from the Eurostat online database. TME, can also be calculated starting with Total Cost and deducting PAC, the solution used for this analysis, but with the most detailed tables on costs as a percentage of all labour costs being to one decimal place, relevant cases may be subject to rounding errors.

6.3. Structure of CVT costs

6.3.1. CVT expenditure and funds

Figure 45 **TME as a % of total labour costs in 2005 (all enterprises)**



NB: Norway and the UK are excluded because of limited comparability. Ireland cost data in the Eurostat online database are not consistent with national reporting on CVTS. Latvia cost data in the Eurostat online database may be uncertain.

Source: Eurostat CVTS3, date of extraction 5.7.2009; BIBB calculations.

Enterprise investment in CVT is very different across the EU (Figure 45). The highest TME is reported for Ireland ([27]) (1.9 % of total labour costs), Denmark (1.7 %), France (1.4 %) and Hungary (1.3 %). In the Czech Republic, Estonia, the Netherlands, Malta, Slovenia and Sweden, enterprises spend between 1.1 % and 0.9 % of total labour costs on CVT. All other countries participating in CVTS spend less than 0.9 %, below the EU-27 average. Greece is at the bottom of the league with 0.3 %.

As a consequence of its calculation (Section 6.2.3), TME may be higher, lower or equal to direct costs, depending on the relative magnitude of contributions and receipts:

(a) balance of contributions minus receipts is positive: there are contributions, but no receipts, or the amount of receipts is lower than the contributions. In these cases (enterprises and/or countries) TME is higher than direct costs, as total enterprise expenditure on CVT consists of direct costs plus contributions, with the latter possibly reduced – but not balanced – by receipts.

Figure 46 shows that there is a positive balance of contributions minus receipts in eight countries (Belgium, Denmark, Ireland, Spain France, Italy, Cyprus, Hungary) and the EU-27 on average. Hence, in addition to the direct costs of CVT, enterprises pay net contributions, and TME is higher than direct costs. The effect of contributions is most pronounced in France: net contributions (reduced by receipts) amount to 0.6 % of total labour costs and account for more than 40 % of TME. The magnitude of net

([27]) Data for Ireland and Latvia may need to be treated with caution.

contributions is also high in Denmark, Italy and Hungary where net contributions account for roughly one third of TME. In the EU-27, net contributions account for more than 20 % of TME (0.2 % of labour costs);

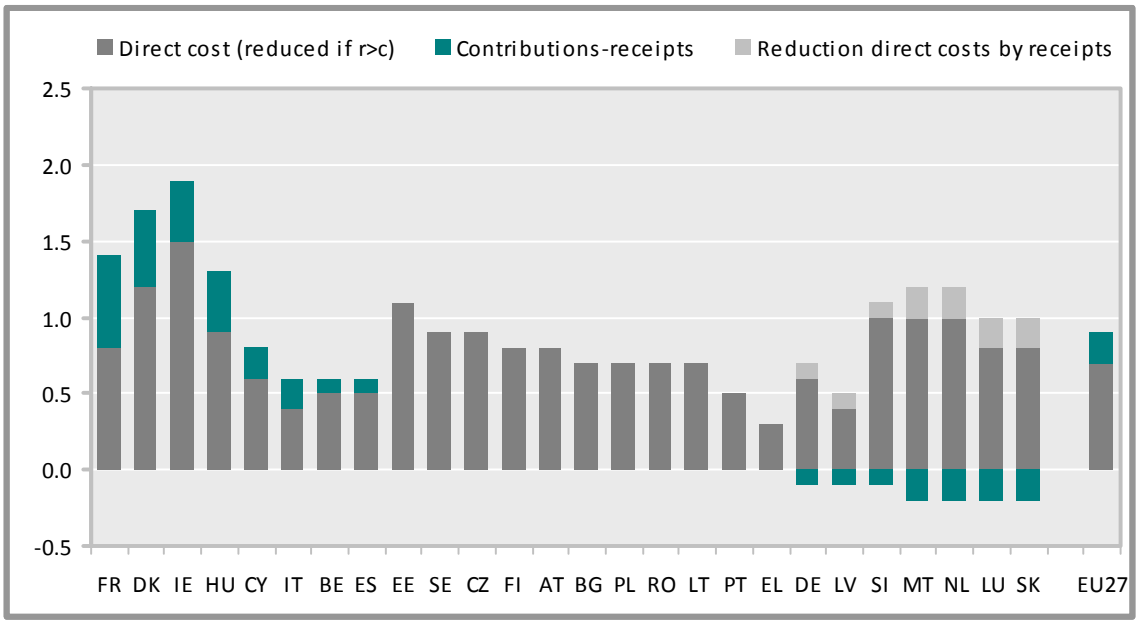
(b) balance of contributions and receipts equals zero: either there are no contributions and no receipts, or they are balanced. This is true for 11 countries, and in these countries direct costs and TME are identical;

(c) balance of contributions and receipts is negative: there are receipts, but no contributions, or the amount of receipts is higher than the sum of contributions. In these cases (enterprises and/or countries) TME is lower than direct costs, as the TME of enterprise on CVT consists of direct costs minus net receipts, with the latter possibly reduced – but not balanced – by contributions. This applies in Germany, Latvia, Luxembourg, Malta, the Netherlands, Slovenia and Slovakia. The amount of net receipts from funds or other sources is remarkable in some countries, reaching 20 % of TME for Luxembourg and Slovakia.

According to information on training funds published by Cedefop (2008a), where CVTS3 indicates net contributions for CVT, all countries operate training funds. The picture is mixed regarding the countries where CVTS3 indicates net receipts. There is information on operating training funds for the Netherlands and Slovenia but none for Luxembourg, Malta and Slovakia. CVTS3, based on the tables currently presented in the Eurostat online database, calculates an absolute value of net contributions of 0.1 % of wage costs for Germany and Latvia. This might be due to rounding error; an overestimation of the net receipts might occur in Germany and Latvia. Rounding error might also have an impact in countries where net contributions were calculated as zero. In particular, the Czech Republic, Greece and Poland where – according to Cedefop (2008a) – training funds operate, but – according to CVTS3 – there is no indication of net contributions or net receipts.

Even though the EU average of net contributions is not very high, they play an important role in some countries (Denmark, France, Italy and Hungary with contributions roughly one third or more of TME). This supports the argument that only analysing direct costs provides a distorted picture of enterprise investment in CVT. While this distortion works as an underestimation in countries with net contributions, for others – in particular Luxembourg, the Netherlands, Malta and Slovakia – direct costs overestimate enterprise investments in CVT, due to net receipts from collective funds or other sources of grants and subsidies. Some uncertainty remains with incomplete information on the spending of contributions by the funds: further analysis of funding systems and national arrangements is recommended.

Figure 46 **TME, direct costs, and contributions/receipts in % of total labour costs in 2005 (all enterprises)**



NB: Norway and the UK are excluded because of limited comparability. Ireland cost data in the Eurostat online database are not consistent with national reporting on CVTS. Latvia cost data in the Eurostat online database may be uncertain.

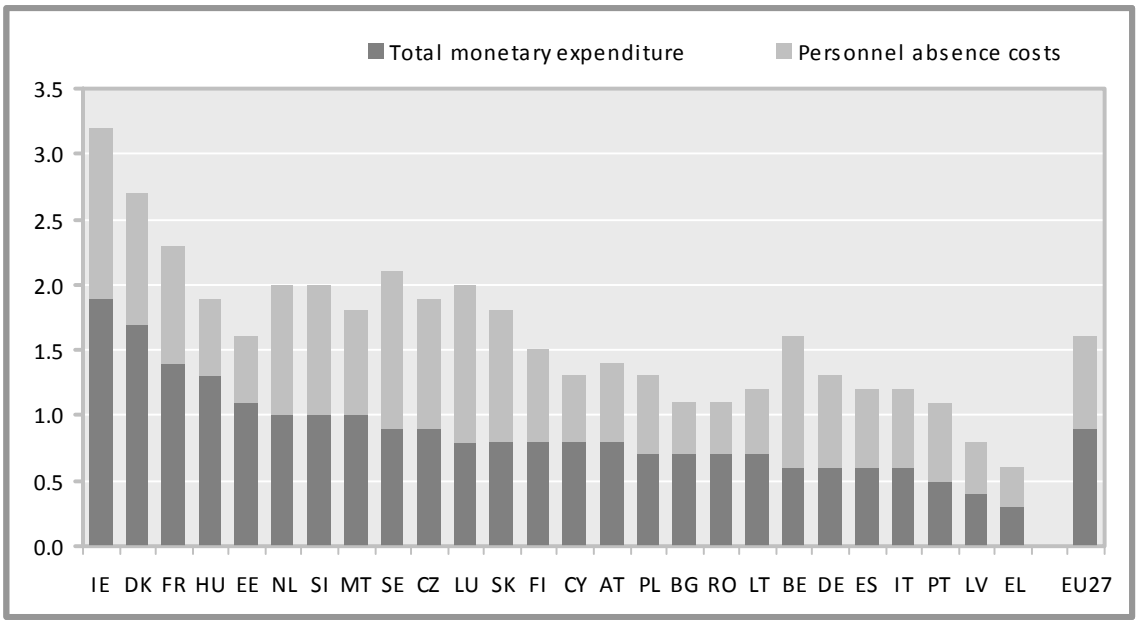
Source: Eurostat CVTS3, date of extraction 5.7.2009; BIBB calculations.

6.3.2. CVT expenditure and participants labour costs

Figure 47 shows the total costs of CVT in 2005, broken down into TME and PAC, which in the EU-27 amount to 1.6 % of total labour costs. In the EU-27, PAC is more than 40 % of total costs of CVT on average, reaching 50 % or more in 13 out of the 26 countries in this analysis. While this last group covers all regions of Europe, the countries with the lowest value of PAC (roughly one third of total costs) are Bulgaria, Estonia, Hungary and Romania, all situated in eastern Europe.

High PAC may result if employees participate in lengthy CVT activity during working time. A high PAC proportion of total CVT costs indicates that labour costs in training contribute significantly to total costs while the training itself – payments to external training providers, labour costs of internal trainers, teaching materials, participants travel and subsistence – have less impact. The figures show that the costs of the training process itself in 13 of 26 countries are lower than the estimated wages paid during the training.

Figure 47 **Total costs of CVT (TME + PAC) in % of total labour costs in 2005 (all enterprises)**



NB: Norway and the UK are excluded because of limited comparability. Ireland cost data in the Eurostat online database are not consistent with national reporting on CVTS. Latvia cost data in the Eurostat online database may be uncertain.

Source: Eurostat CVTS3, date of extraction 5.7.2009; BIBB calculations.

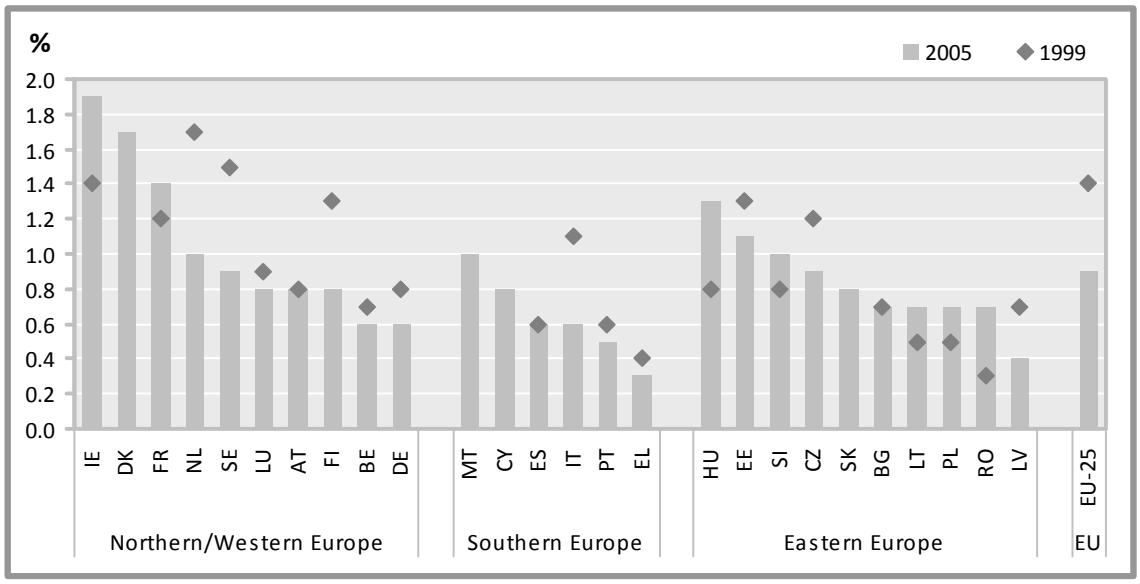
6.4. Share of total labour costs spent on CVT

6.4.1. Relevance of regions to CVT expenditure

Figure 48 displays TME, with countries sorted into three regional clusters. Enterprise investment in CVT (as measured by TME as % of total labour costs) differs widely across countries and between countries in the same cluster. For example, Denmark in 2005 spent 1.7 % of total labour costs on CVT, nearly three times that in Germany (0.6 %). The relative differences between countries in southern Europe (Malta 1.0 %, Greece 0.3 %) are of the same magnitude. If Latvian data are correct, the same picture emerges: the highest proportion of labour cost invested in CVT is roughly three times the lowest in the region (Hungary 1.3 %; Latvia 0.4 %). All countries in eastern Europe except Latvia spent a higher share of total labour costs than the countries with the lowest investment in northern/western Europe.

Figure 48 also shows investment in 1999 compared to the more recent results. Overall, enterprises in Europe invested less in CVT in 2005 than in 1999. In most northwest and south European countries, TME in 2005 was lower than in 1999, and the reduction is quite substantial in Italy, the Netherlands, Finland and Sweden. In eastern Europe, however, enterprises had higher expenditures on CVT in 2005 compared to 1999 in most countries.

Figure 48 **TME in % of total labour costs (all enterprises) in 1999 and 2005**



NB: Denmark (1999), the UK and Norway (1999 and 2005) are excluded because of limited comparability. Poland in 1999 covered only Pomorskie region. Ireland 2005 cost data in the Eurostat online database are not consistent with national reporting on CVTS3. Latvia 2005 cost data in the Eurostat online database may be uncertain. No 1999 data for Cyprus, Malta and Slovakia.

Source: Eurostat CVTS2 and CVTS3, date of extraction 5.7.2009; BIBB calculations.

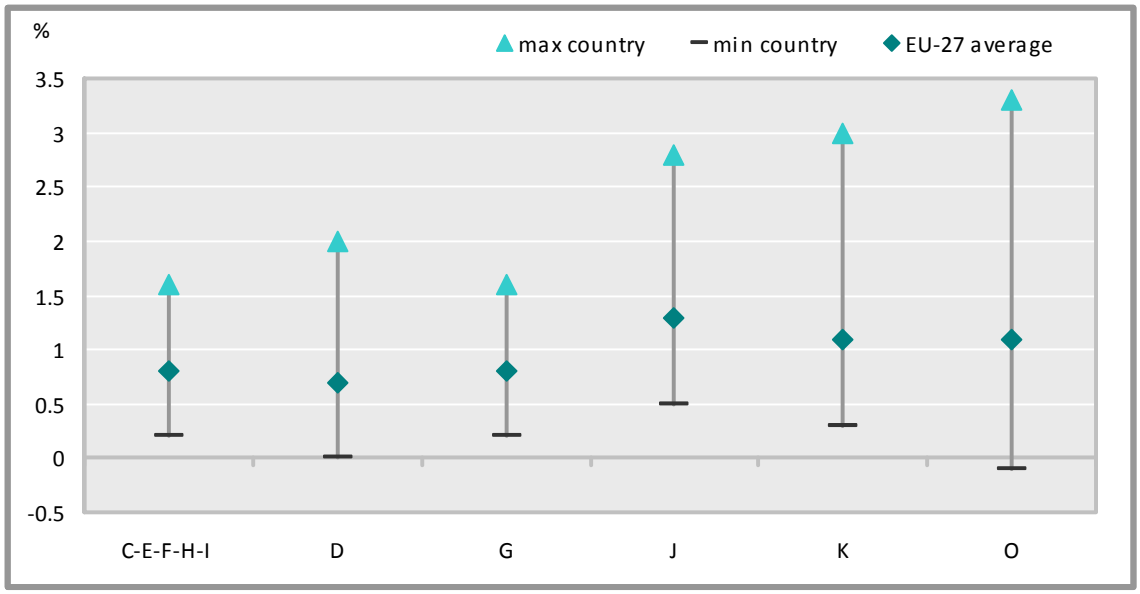
6.4.2. Relevance of sector and size to CVT expenditure

It is sometimes argued that the position of a country's CVT performance compared to other countries is influenced by the structure of the national economy. One of the reasons given is that small enterprises invest less in their employees than large ones; in countries with a comparatively high proportion of employees in small enterprises, lower investment is to be expected. A similar argument is brought forward concerning the sectoral structure of a country's economy. To shed light on the possible effect, TME is analysed by sector and size of enterprises.

Looking first at sector, Figure 49 shows that the average share of total labour costs spent on CVT differs markedly between sectors grouped in six categories ([28]), between 0.7 % in sector D (manufacturing) and 1.3 % on average in sector J (financial intermediation). The differences between enterprises of a given sector in different countries are also sizeable, with high spreads in particular in D (manufacturing), J (financial intermediation), K (real estate, renting and business activities) and – most pronounced – O (other community, social, personal service activities).

([28]) The first group, C-E-F-H-I combines sectors that are different regarding training incidence. For example, E (electricity, gas and water supply) has high training incidence, while H (hotels and restaurants) on average has the highest share of non-training enterprises (Section 5.4 in more detail). Hence, it is difficult to interpret results for this mixed category.

Figure 49 **TME in % of total labour costs (all enterprises) by sector of activity in 2005**



NB: Norway and the UK are excluded because of limited comparability. Ireland cost data in the Eurostat online database are not consistent with national reporting on CVTS. Latvia cost data in the Eurostat online database may be uncertain.

C-E-F-H-I	mining and quarrying; electricity, gas and water supply; construction; hotels and restaurants; transport, storage and communication
D	manufacturing
G	wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
J	financial intermediation
K	real estate, renting and business activities
O	other community, social, personal service activities

Source: Eurostat CVTS3, date of extraction 11.7.2009; BIBB calculations.

In the different sectors, either Greece or Latvia always has the lowest TME. Top positions are mostly – but not in all sectors – occupied by Ireland ([29]), France, Estonia and Denmark. This is influenced by the general level of CVT in a country, not least by the proportion of enterprises offering any training to their employees. The following can be noted:

(a) enterprises in sector J (financial intermediation) in all countries have a higher TME as % of total labour costs than the national average of all sectors; the only exception is Denmark;

(b) enterprises in sector K (real estate, renting and business activities) in most countries spend a higher proportion of total labour costs on CVT than the national average. This is most pronounced in Bulgaria, Denmark, Estonia, Cyprus, Romania, Slovenia and Slovakia;

(c) enterprises in sector D (manufacturing) in all countries have a TME close to the national average, influenced by the large share of this sector in quite a few economies. Malta and Slovenia have TME in manufacturing noticeably above average, but several are below the national average, most markedly in Denmark, Estonia, Latvia and the Netherlands (data may need to be treated with caution);

([29]) However, Irish cost data as published in Eurostat's online database are not consistent with the national quality report on CVTS3.

(d) sector O (other community, social, personal service activities) displays a mixed picture. In 18 of 26 countries analysed, the sector's average TME is below the national average, and the gap is large in Hungary, Malta and Poland. In five countries this sector performs slightly better than the national average. Denmark is an exception: TME is as high as 3.3 % of total labour costs, compared to a 1.7 % national average and 1.1 % EU average for this sector;

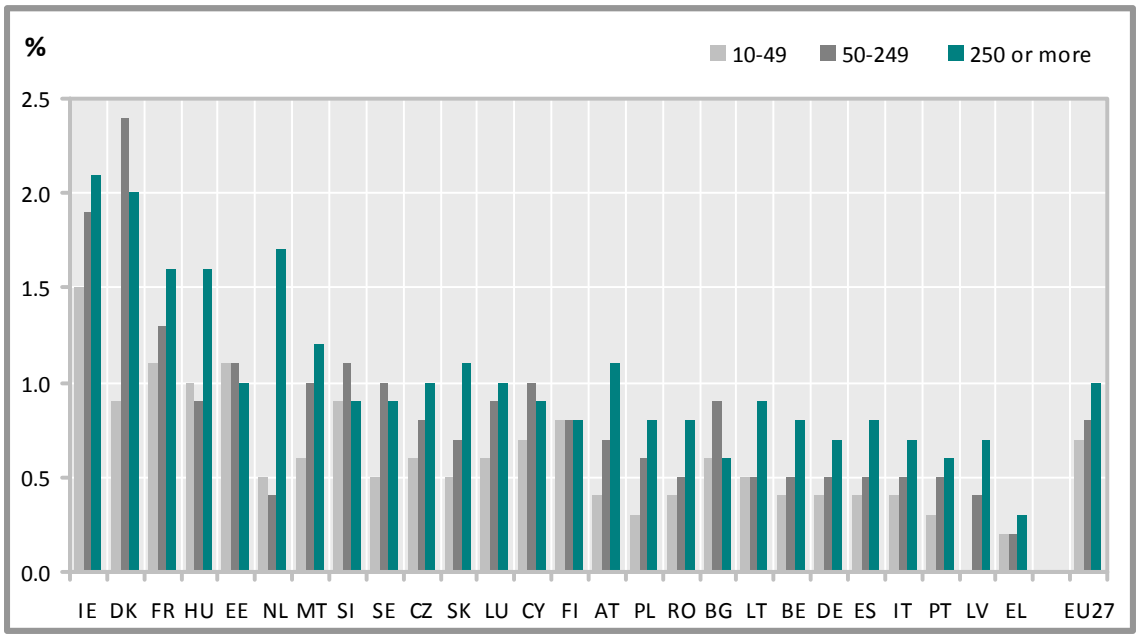
(e) sector G (wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods): spending is lower than the national average in most countries;

(f) in sectors C-E-F-H-I (mining and quarrying; electricity, gas and water supply; construction; hotels and restaurants; transport, storage and communication) most countries have a TME slightly below their national average. Denmark and Slovenia stand out, where enterprises of this group of sectors are well below the national average in TME.

Even if this is not proof of a sectoral impact on enterprise CVT expenditure, it demonstrates a relationship between the two. It also shows that there are differences across countries.

Looking at enterprise size, in the EU-27 small enterprises on average spend 0.7 % of total labour costs on CVT, compared with 0.8 % in medium-sized enterprises and 1.0 % in large enterprises. Overall, there is a relationship between enterprise size and expenditure on CVT. Figure 50 also shows a common pattern for 17 of 26 countries analysed: small enterprises tend to spend the lowest share of total labour costs on CVT and large enterprises the highest.

Figure 50 **TME in % of total labour costs (all enterprises) by size class and country in 2005**



NB: Norway and the UK are excluded because of limited comparability. Ireland cost data in the Eurostat online database are not consistent with national reporting on CVTS. Latvia cost data in the Eurostat online database may be uncertain.

Source: Eurostat CVTS3, date of extraction 13.7.2009; BIBB calculations.

In all but two countries, Estonia and Finland, small enterprises spend less than the national average on CVT. The differences between small enterprises are pronounced. In four countries – Estonia, Ireland ([30]), France and Hungary – small enterprises spend at least 1.0 % of total labour costs on CVT. The lowest spending of small enterprises is reported for Greece, Latvia ([31]), Poland and Portugal, all with TME less than, or equal to, 0.3 % of total labour costs.

Large enterprises spend above the national average in 20 countries. In Bulgaria and Slovenia, large enterprises spend less than the national average and medium-sized enterprises spend more than small and large enterprises. In Estonia, small and medium-sized enterprises spend more than large enterprises, with no difference reported between small and medium-sized enterprises. For Greece and Sweden, large enterprise expenditure on CVT corresponds to the national average. Finally, for Finland there is no difference according to size class in expenditure as a share of total labour costs. There are huge differences between countries; in Greece, for example, even large enterprises only spend on average 0.3 % of the total labour costs on CVT, while in Denmark and Ireland, the respective value is 2.0 % or more.

Medium-sized enterprises mostly sit between small and large enterprises in terms of the share of total labour costs on CVT. In a few countries, however, medium-sized enterprises spend more than both small and large ones (Bulgaria, Denmark, Cyprus, Slovenia, Sweden) or roughly the same proportion as small enterprises (Estonia, Greece, Lithuania, Hungary, the Netherlands). Denmark is noteworthy, where small enterprises spend 0.9 % of total labour costs on CVT, large enterprises 2.0 % and medium-sized enterprises 2.4 %.

6.5. Training expenditure per employee

6.5.1. CVT expenditure per employee by region

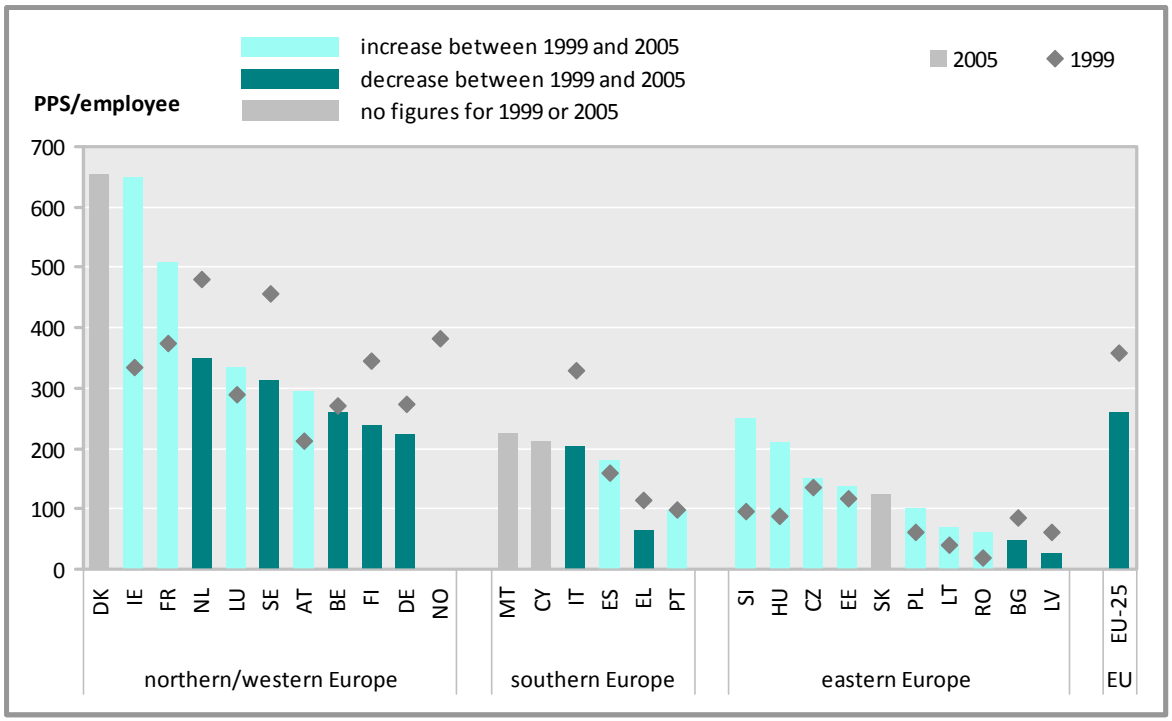
TME per employee for CVT courses in all enterprises was 260 purchasing power standard (PPS) in 2005 for the EU-25, compared to 358 PPS in 1999. This is a sharp fall, mainly caused by reductions in most north, west and south European countries (Figure 51): only Ireland, Spain, France, Luxembourg and Austria saw increases. In eastern Europe the opposite applies with Bulgaria and Latvia reporting reductions, while all other east European countries increased. In 2005, Denmark has the highest TME (654) and Latvia the lowest (27).

Despite the reductions in northern/western Europe and the increases in eastern Europe almost all north/west European countries demonstrate better values than east European countries. With 250 PPS, only Slovenia performed better than Finland (239 PPS) and Germany (223 PPS) in 2005. Nonetheless, the improvements in eastern Europe are encouraging, while the trend in southern Europe (with the exception of Spain) is much less

([30]) However, Irish cost data as published in Eurostat's online database are not consistent with national reporting on CVTS3.
([31]) For Latvia, cost data as presented in Eurostat's online database may need to be treated with caution.

bright. Greece, Italy and Portugal report sharp decreases. Greece was already in a bad position in 1999 and has lost further ground in 2005 compared to other Member States.

Figure 51 **TME per employee (all enterprises) in 1999 and 2005**



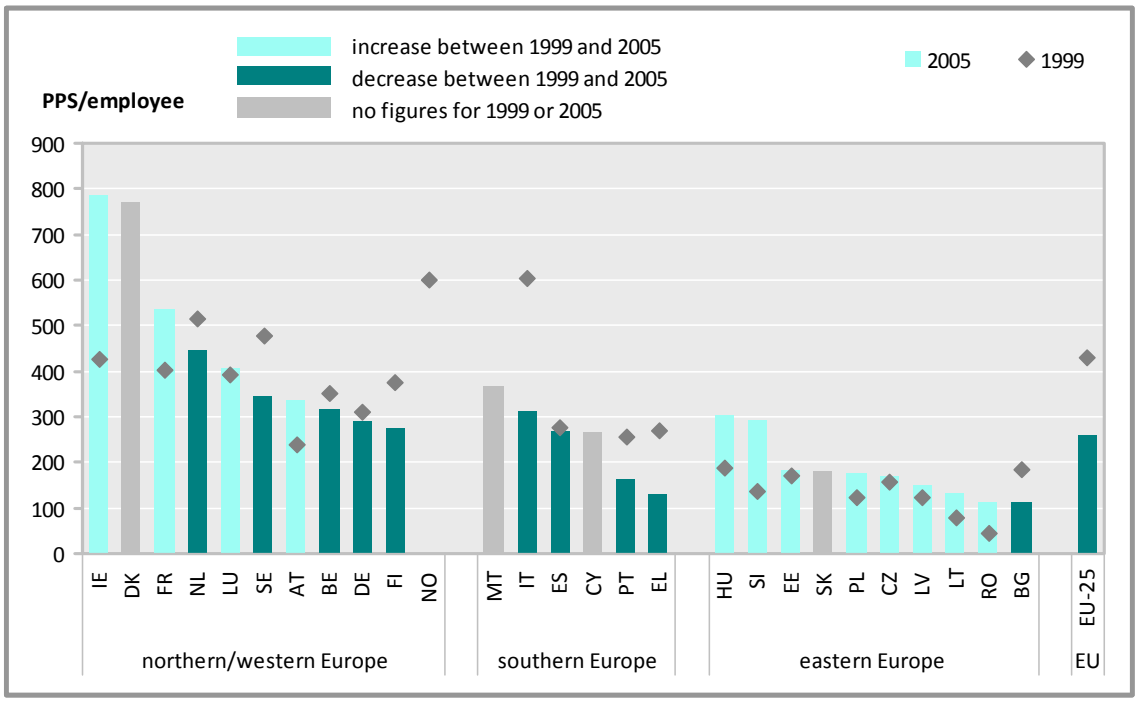
NB: Denmark (1999), Norway (2005) and the UK (1999 and 2005) are excluded because of limited comparability. Poland in 1999 covered only Pomorskie region. No 1999 data for Cyprus, Malta and Slovakia. Ireland 2005 cost data in the Eurostat online database are not consistent with national reporting on CVTS. Latvia 2005 cost data in the Eurostat online database may be uncertain.

Source: Eurostat, CVTS2 and CVTS3, date of extraction 6.7.2009.

Overall, the results for TME per employee in all enterprises cause concern. There is no evidence of additional investment in lifelong learning at European level, with expenditure decreasing in many countries. This indicator shows results for all enterprises, but what if TME is analysed only for training enterprises?

Figure 52 shows that there are some differences, but the general picture is similar. If anything, the EU-25 average decreases more between 1999 and 2005, and the general trends of increases or reductions in single countries are mostly the same. There are only two exceptions. Spain's enterprises providing courses decreased their TME slightly, while TME per employee for all enterprises increased: the opposite was true in Latvia. There are also changes in the ranking of countries. Denmark and Ireland switched overall first place for 2005 and Hungary and Slovenia switched first place within the group of east European countries.

Figure 52 **TME per employee (only enterprises with courses) in 1999 and 2005**



NB: Denmark (1999), Norway (2005) and the UK (1999 and 2005) are excluded because of limited comparability. Poland in 1999 covered only Pomorskie region. Ireland 2005 cost data in the Eurostat online database are not consistent with national reporting on CVTS. Latvia 2005 cost data in the Eurostat online database may be uncertain. No 1999 data for Cyprus, Malta and Slovakia.

Source: Eurostat, CVTS2 and CVTS3, date of extraction 6.7.2009.

6.5.2. CVT expenditure per employee by enterprise size

The volume of TME and firm size are directly related; TME grows with company size in most European countries. For 2005, the EU-27 average is:

(a) small enterprises (10-49 employees): 161 PPS;

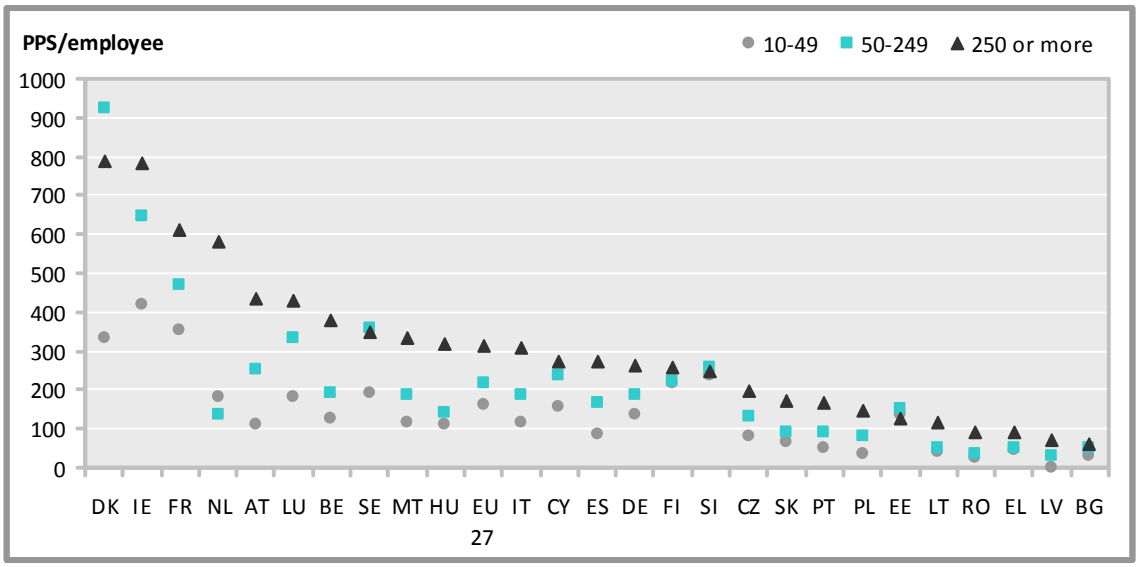
(b) medium-sized enterprises (50-249 employees): 219 PPS;

(c) large enterprises (250+ employees): 312 PPS.

Only Denmark, Estonia, the Netherlands Slovenia and Sweden are exceptions, where medium-sized enterprises tend to have higher TME per employee than large enterprises. In Estonia even small enterprises spent more TME per employee than large ones. For all other countries the following pattern exists: small enterprises spend less on CVT per employee than medium-sized enterprises which spend less than large enterprises (Figure 53).

However, when this is analysed only for training enterprises with courses, the picture becomes much more dispersed (Figure 54).

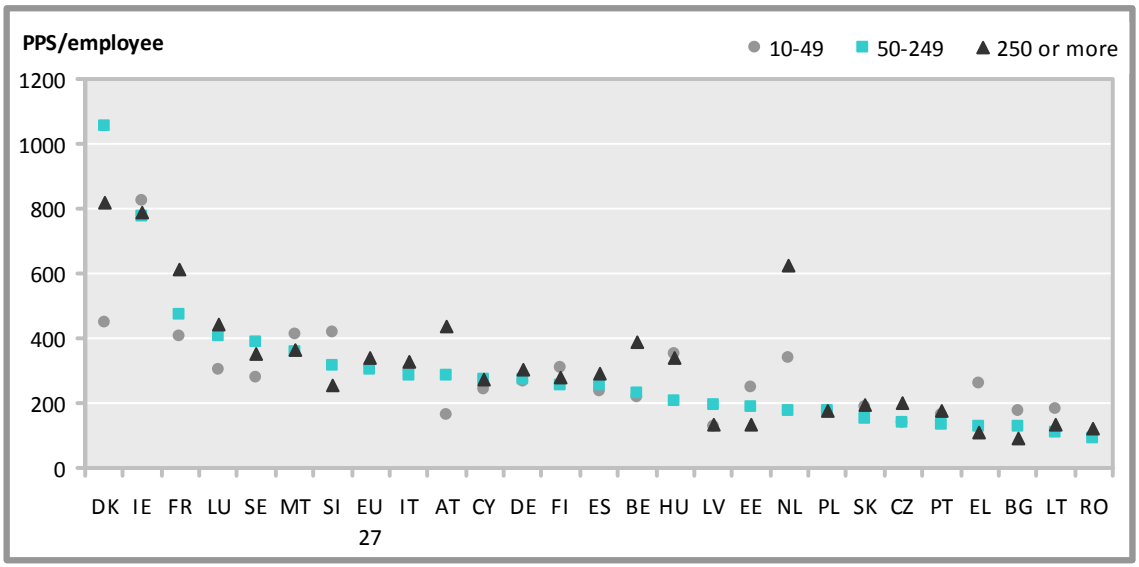
Figure 53 **TME per employee (all enterprises) by size class in 2005**



NB: Norway and the UK are excluded because of limited comparability. Ireland cost data in the Eurostat online database are not consistent with national reporting on CVTS. Latvia cost data in the Eurostat online database may be uncertain.

Source: Eurostat, CVTS2 and CVTS3, date of extraction 7.7.2009.

Figure 54 **TME per employee (only enterprises with courses) by size class in 2005**



NB: Norway and the UK are excluded because of limited comparability. Ireland cost data in the Eurostat online database are not consistent with national reporting on CVTS. Latvia cost data in the Eurostat online database may be uncertain.

Source: Eurostat, CVTS2 and CVTS3, date of extraction 7.7.2009.

TME is no longer clearly linked to the enterprise size. The EU-27 average is 315 PPS per employee in small enterprises, 306 in medium-sized enterprises and 341 in large enterprises. At EU level, small training enterprises spent more per employee than medium-sized enterprises. The patterns in the countries are very diverse. The general pattern of large

training enterprises spending more than medium-sized enterprises and medium-sized enterprises spending more than small ones is valid for Belgium, Czech Republic, Germany, Spain, France, Luxembourg, Austria and Poland. The opposite pattern is observed for Bulgaria, Estonia, Greece and Slovenia. For the other 14 countries, all other combinations of ranking between small, medium-sized and large training enterprise are observed. The maximum spending in PPS per employee in small enterprises can be found in Ireland, Lithuania, Hungary, Malta and Finland; in medium-sized enterprises in Denmark, Cyprus, Latvia and Sweden, and in large enterprises in Italy, the Netherlands, Portugal, Romania and Slovakia. In Cyprus, the medium-sized spent as much as large enterprises. The lower level of training incidence in small and medium-sized enterprises results in lower spending in terms of TME per employee (all enterprises).

This demonstrates that enterprise size does not say everything about their performance in terms of TME per employee. In many countries small or medium-sized enterprises spent as much as large ones. This indicates it is too simplistic to consider small enterprises as problematic for CVT. It seems that non-trainers, which are more often to be found within the group of small enterprises, are the problem in many countries. In terms of public policy, this might indicate that the key aspect is to motivate small enterprises to train, since once they provide training it seems to be less problematic than one might expect. To start, this requires differentiated public incentives.

6.5.3. CVT expenditure per employee by sector of activity

Enterprise size is not the only influence on TME per employee. The distribution of TME by NACE sector of activity also highlights differences in spending (Figure 55).

For NACE J (financial intermediation) the highest value of TME is 1 341 PPS per employee in Ireland while the lowest is 214 PPS per employee in Bulgaria. The range across sector groups is 1 341 PPS per employee in NACE J in Ireland and 10 PPS per employee in NACE O in Greece.

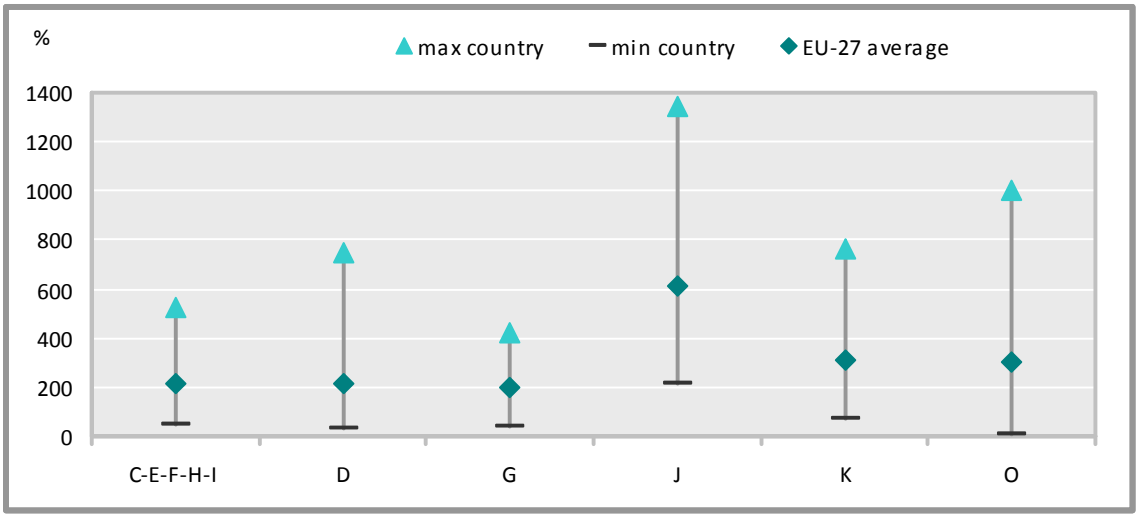
Overall, NACE J exhibits the highest values in almost all countries. Only Denmark is an exception with higher values in NACE K (real estate, renting and business activities) and O (other community, social, personal service activities). NACE G (wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods) displays the lowest values in most countries, although NACE D (manufacturing) and NACE C, E, F, H and I (mining and quarrying; electricity, gas and water supply; construction; hotels and restaurants) are worse in some countries.

TME per employee appears to relate to the sector of activity, with results differing in most NACE categories. Differentiating NACE even further would make this picture even more diverse.

It is debatable if lower TME is an indication of worsening CVT provision as a reduction in TME could be the result of increased efficiency and effectiveness of CVT provision. Similarly, a better functioning training market could result in a reduction in prices and thus reduced TME. However, the reductions in many countries in other key CVT indicators (incidence, participation, intensity in the radar charts in Chapter 1) suggests general worsening of CVT

provision at European level (EU-25 average) and in many European countries, especially in western and northern Europe. Overall, the general trend in enterprise TME is not encouraging for most countries and indicates a need to intensify efforts in promoting CVT for enterprises. A differentiation of enterprises according to size and NACE could be one first step in developing tailor-made instruments and measures for enterprises.

Figure 55 **TME per employee by NACE 6 (in all enterprises) for EU-27 in 2005**



NB: C-E-F-H-I mining and quarrying; electricity, gas and water supply; construction; hotels and restaurants; transport, storage and communication
D manufacturing
G wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods
J financial intermediation
K real estate, renting and business activities
O other community, social, personal service activities

Source: Eurostat, CVTS3, date of extraction 8.7.2009.

7. CVTS3 quality: a European perspective

7.1. Introduction

This chapter evaluates the quality of the whole of CVTS3. As far as possible, comments on the quality of a survey in a specific country are avoided, though specific problems can impact overall quality, particularly in a comparative perspective. Mentioning one country ought, therefore to be interpreted in a positive way.

In some cases, specific rules of the European CVT3S manual (Eurostat, 2006) were relaxed after negotiations between the National Statistical Institute (NSI) and Eurostat. The quality reports mention such issues but it is not clear if this was done in a comprehensive way. The NSI had to hand their national questionnaires to Eurostat before carrying out the survey. Although this might constitute at least an implicit agreement in practice, the number of languages significantly limits the scope of Eurostat's control.

Evaluation of the quality of CVTS3 is strongly linked to the quality and availability of the quality reports themselves: this chapter relies on an in-depth analysis of 25 quality reports. Therefore, if problems were not reported by the NSI or the NSI did not provide a quality report (three countries) it is not possible to examine survey quality. The quality of this assessment depends on the self-declaration of the data provider. The national quality reports are of different quality, volume and level of detail, so the quality assessment, too, has different levels of detail with respect to coverage. The reader should consider this and avoid any general judgement.

7.2. Concepts and definitions used in CVTS

7.2.1. Conformity with the European approach

The common European approach to concepts and definitions was generally respected by national statistical institutes. However, definitions were not always understood in the same way by respondents. Often, problems relate to putting concepts and national definitions into practice. A particularly difficult task for NSIs is adapting definitions and the questionnaire nationally and ensuring the comparability of results across countries.

The distinction between participants and training events is still problematic in some countries. To prevent confusion Lithuania surveyed both participants and training events by adding a question on participants in their national questionnaire. This seems to be one way of avoiding bias in this key variable.

Germany allowed respondents to detail either participants or training events. Where a respondent gave the number of training events, a ratio was applied based on the average number of training events per participant in the stratum. This might not be accepted as based on the rules for imputation in the CVTS3 manual (Eurostat, 2006, p. 54) but similar

imputation occurs with additional information (on training events and on the ratio of training events and training participants) and is close to the main concept. If an imputation is necessary, this is a good way of doing it. This might be recommended for the revised CVTS manual.

For more countries the definition of IVT appeared to be unclear, mainly because of the broad scope of institutional frameworks in vocational education and training. In some countries, enterprises are hardly involved in formal IVT so respondents are unaware of the issue and mostly do not keep records of training other than CVT.

Countries made different use of the framework for establishing the definitions of IVT as described in the CVTS3 manual. The non-qualifying criteria of IVT (Eurostat, 2006, p. 11), in particular working contract and time period, were implemented differently, according to the national context. Sometimes the time period was explicitly stated in the national questionnaires, sometimes not. For example, to define the concept of IVT, France decided to split the IVT participant population in two. The first corresponds to apprentices, for whom there is a clear and operational definition; the second to trainees, for which the duration of six months in the enterprise was explicitly stated.

7.2.2. Key conceptual issues

A general challenge in designing statistical surveys is precisely defining and delimiting the survey subject. To avoid conceptual mistakes, statistical noise and other artefacts, the definitions must include the relevant elements and exclude others. For CVTS, the key difficulty is the existence of several different national complex institutional frameworks for vocational education and training and specifically for CVT; examples are the existence of mutual funds and training outside paid working time. The problem was not so much related to the concepts and definitions but to the way they are put into practice, so that they could be easily understood by the respondents in enterprises.

This common methodological problem was reinforced by the fact that the main survey subject (CVT) and its various elements, require a respondent within the enterprise who has expertise in this field. But this person might not be the appropriate expert also to provide the other structural data or data on IVT as well. This difficulty is displayed in the item non-response rates. Further, the availability of data is not uniform across countries. In some countries, defined entities (e.g. contribution for CVT) simply do not exist.

7.2.2.1. *Number of employees*

In CVTS the number of ‘persons employed’, is a critical point because:

(a) it refers to a variable of stratification (N_EMPREG ([32]): number of persons employed according to the Statistical Business Register);
(b) it is used for defining size categories;
(c) it is used as a denominator to calculate some main indicators.

([32]) The list of CVTS3 variables is provided in Annex 2.

Definition 10 of the CVTS3 manual (Eurostat, 2006, p. 38) indicates clearly that the number of all persons employed includes all persons working full-time or part-time and that it refers to the number on 31 December (head count, part-time included as one employee). However, other definitions are customary in other statistical domains, for example annual average of employees or full time equivalents. Seasonality and the frequencies of part-time jobs result in divergences of the figures according to different concepts. Consistency in applying the relevant definitions across countries and/or surveys is important.

Stratification is constrained by the Statistical Business Register. Malta decided not to use the Register because it does not contain the data relevant to the correct definition. In contrast, Denmark used the second quarter of the year as a reference period for the sample definition and stratification. Italy stands out by using the average number of employees for sample definition and stratification (N_EMPREG) and for the variables on structural data of the enterprise.

7.2.2.2. *Internal and external courses*

The binary distinction between internal CVT courses '[…] principally designed and managed by the enterprise itself' and external ones '[…] principally designed and managed by organisations which are not part of the enterprise itself […]' (Eurostat, 2006, p. 39) is not clear for many respondents. For example, respondents used the training location or the status of the trainers as a classification criterion. Further, when the enterprise belongs to a group and the course is provided by a company of the same group, the status of the course is not sure (e.g. Austria). Finally, the term 'principally' left significant room for interpretation for management and design of courses shared between external consultants and representatives within the company (e.g. Sweden).

From the information available, it is difficult to distinguish between a problem of comparability, due to the national context or to an inaccurate translation of the questionnaire (e.g. use of the complete definition), and simple statistical noise.

7.2.2.3. *Courses and other forms of training*

As expected, the distinction between courses and other forms of CVT did not lead to serious problems. For courses, employees are not at their workplace, and there is an internal trainer or an external training provider. This facilitates distinction as well as recording. The distinction between internal and external courses was more difficult, particularly when courses were provided by an external unit belonging to the same enterprise. However, no major reservation was reported and the item response rate is generally high, so the quality of the data depends principally on the unit response rate and on the general quality of the survey.

The distinction between the several 'other forms' (variables B2a to B2e) seems to be less clear cut due to their less formal characteristics. The compulsory (core) status of the dummy variables does not allow analysis of item response-rates as, being core, they are equal to 100 %. Nevertheless, no major reservation was reported. Even if there is some confusion between the sub-items, the aggregated information (any other form of CVT) should not be affected. Finally, incidence of 'other forms' should be correct.

The number of participants in 'other forms' is more problematic. These figures are rarely recorded in enterprise information systems, which affects the item response rate. The number of participants in 'other forms' is less reliable than the number in courses. This is a general problem in statistics: quality decreases when trying to record less formalised facts. This problem probably occurs less often in small enterprises where respondents know all employees and can rely on memory.

Loewenstein and Spletzer discuss results on training incidence, informal training and more formal training, and conclude: 'in contrast to formal training, whose incidence does not differ all that greatly across data sets, the incidence of informal training varies drastically across the few surveys that have tried to measure it' (Loewenstein and Spletzer, 1994, p. 1). Lillard and Tan (1992), based on a comparison of the training information of different surveys, including an employer survey, conclude that 'only the more formal kinds of training tend to get reported' (cited in Loewenstein and Spletzer, 1994, p. 1).

7.2.2.4. *Participants and training events*

Many countries (Lithuania, Hungary, Malta, Portugal, Sweden, the UK) indicated that confusion still exists concerning the terms 'participant' ([33]) and 'participant event' ([34]). The confusion might be caused by the lack of clear explanations to respondents rather than by the concepts as such.

The problem might be solved by asking for both participants and participant events, as was done in Lithuania. This procedure increases response burden (and perhaps cost) when respondents have to make additional efforts to provide the number of participant events, given that the survey is genuinely interested in the number of participants.

Germany chose to request both the number of participants and training events (optional). This suggests an imputation if participants are calculated from the number of training events, even if it is based on a real answer from the enterprise.

Portugal applied an additional checking rule and asked for confirmation if the access rate was over 80 %. This procedure constitutes a good practice for problem concepts while avoiding a disproportionate increase in the answer burden. This checking rule could be refined by adapting to the threshold per stratum from the previous survey (e.g. the average in the stratum plus two standard deviations).

Data availability causes further problems. In some countries, enterprise information systems do not record all the necessary information.

7.2.2.5. *Cost of CVT courses*

Compared to other key quantitative variables, cost variables more frequently lead to non-response, but without critical issues in most countries. The minimum response rates for total

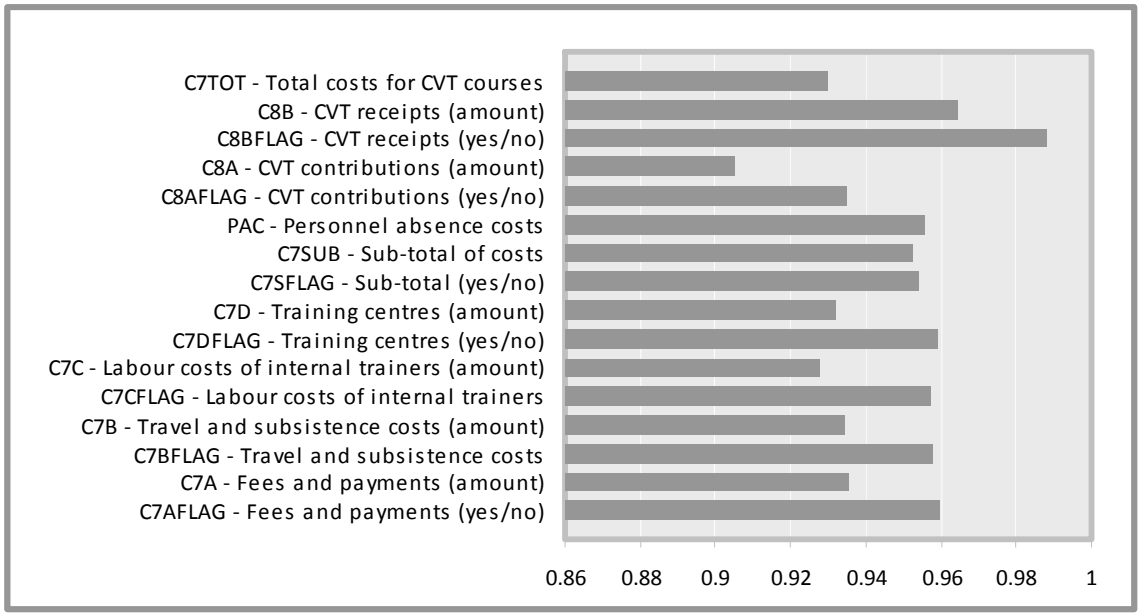
([33]) Definition of total number of participants: 'a participant is a person who has taken part in one or more CVT courses during the reference year. Each person should be counted only once, irrespective of the number of CVT courses he or she has participated in […]' (Eurostat, 2006, p. 40).

([34]) Definition of participant events: 'participant events are the number of times participants participated in CVT courses […]' (Eurostat, 2006, p. 40).

costs are from the UK (66 %), Austria (67 %) and Denmark (67 %); in these countries the unit response rate is not high, compromising the quality of cost data for these countries.

Figure 56 shows the item-response rates for the cost variables, calculated from the figures provided by Eurostat using the non-imputed data set. They are weighted by data set size to reflect the difficulty in answering for the enterprise.

Figure 56 **Item-response rates for the cost variables in CVTS3 (calculated from the figures provided by Eurostat; non-imputed data set)**



NB: Weighted by data set size.

Source: Eurostat, CVTS3, specific extraction; Céreq calculations.

Several cost elements appear to be well completed. Nevertheless, the question on contributions (variable C8a) appears to be the most difficult and clearly depends on institutional context. In countries where there are no such contributions, the respondent may have doubts. In case of compulsory contributions, it is possible that they are considered by the enterprise as a normal tax, the amount of which is not known by the respondent. However, countries where compulsory contributions exist (e.g. Belgium, France and Italy) have not reported particular problems relating to C8a.

Question C8a could be optional if there are no contributions in a country but voluntary contributions cannot be excluded, *a priori*. Italy introduced the distinction between compulsory and voluntary contributions, throwing light on this point. Also, C8 variables (contribution and receipts) were reported as problematic, or with a lot of missing data, by Belgium (only receipts), Denmark and Austria.

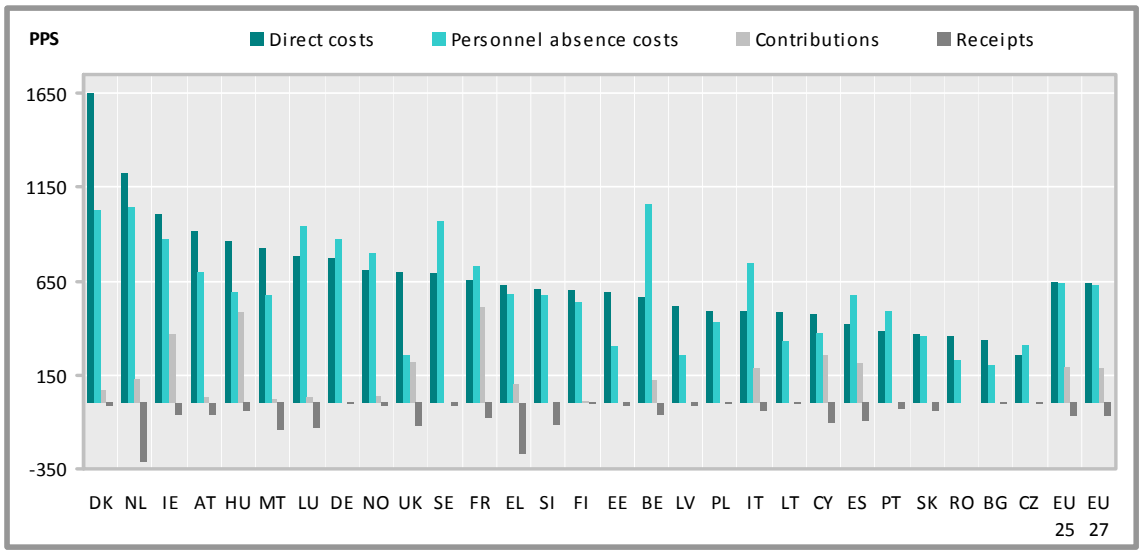
Personal absence costs (PAC) is a special case. These are not surveyed, but calculated *ex post*, based on the number of hours in CVT courses multiplied by the average hourly labour cost. While the other elements of costs relate to real monetary expenditures which are recorded in the accounting system, PAC is based on data which might be recorded differently as well as less frequently.

In Finland, the item response rate for A4 (number of hours worked) is 63 %, while the response rate for the sub-total of costs (C7sub) is 88 %. In this case the introduction of PAC in the total costs may negatively affect the quality of the final figures. Further, some countries reported that training occurs outside paid working time. Even if the relevant questions are explicit (Eurostat, 2006, p. 40 definition 23), some countries (Bulgaria, Hungary) have reported problems.

In addition, PAC brings conceptual problems. First, it is based on the strong assumption that participants labour costs correspond to average labour costs. This is challenged in all enterprises where better qualified employees with higher than average labour costs participate more frequently in CVT. Another strong assumption supposes that the time spent in CVT courses results in an equivalent loss of productive working time. This is questionable given that participants might make up for the time spent in training by working overtime.

It is important that data users are aware of these conceptual issues and are able to use the data accordingly However, this requires figures with and without PAC to be made available. PAC represent a not-insubstantial part of total costs in EU-25 (45 %) with further divergence across countries, from 24 % in the UK to 63 % in Belgium (Figure 57).

Figure 57 **Costs per participant by type of cost in CVTS3**



Source: Eurostat, CVTS3, date of extraction 20.7.2009.

7.2.2.6. *Initial vocational training (IVT)* ([35])

The definitions used by countries for initial vocational training (IVT) are not homogeneous, leading to problems of comparability. The CVTS3 manual (Eurostat, 2006, p. 31) states the following conditions to qualify for IVT:

(a) the main activity of the person should be to study or to train, leading to a formal qualification recognised nationally;

([35]) Due to quality problems described in this section, IVT data are not analysed in this study.

(b) the learning activity should be at least partly work based.

Table 18 shows the framework for countries to establish their national definitions, leaving them scope, mainly for IVT. The 'non-qualifying criteria' for CVT are, in principle, not relevant.

Table 18 **Framework for countries to establish their definitions of IVT and CVT**

	IVT in enterprises	**CVT in enterprises**
Main activity of the persons	Student, apprentice, trainee, etc.	Employed by the enterprise
Type of contract	Non-qualifying criteria as national laws differ	*Essential element* Work contract required
Type of learning activity	*Essential element* Formal learning	Non-qualifying criteria
Work-based element	*Essential element* Must have a work-based element	Non-qualifying criteria
School-based element	Non-qualifying criteria Even if it does exist in most situations	Non-qualifying criteria
Costs for the enterprise	Non-qualifying criteria	*Essential element* CVT is financed wholly or partly by the enterprise
Time period of the study	Non-qualifying criteria but consideration of a minimum period may be useful, to exclude 'casual work placements'. In this respect a period of approximately six months may be a useful guiding figure for countries.	Non-qualifying criteria

Source: Eurostat, 2006, p. 11

The following example highlights one of the problems. France explicitly requires a period of six months in the enterprise, but the UK does not. Both countries respect the CVTS3 manual, but there may be a wide difference in the figures provided, as the number of students who stay less than six months in the enterprise may be important.

The quality reports and the range of response rates indicate the difficulties enterprises experience answering questions on IVT. Comments from enterprises, as reported by the NSIs, indicate that the information is either not recorded by the enterprise or the respondent for CVT does not have access to this information.

Some countries consider that their data on IVT are 'not publishable' or 'not good' (France, Norway, Sweden, the UK). Others preferred softer wording by qualifying the data as 'problematic' (Austria, Latvia).

In general, there are substantial provisos and caveats regarding the IVT section, mainly on comparability of data.

Despite the total number of IVT participants (F1tot) being a core variable, with neither missing values nor imputation allowed, there is non-response in some countries, for example Norway and the UK, and imputation in Belgium and the Czech Republic. The experience with F1tot as a core variable emphasises that core variables should be only those which are fundamental to the survey and for which it can be assumed that data are principally available in enterprises. Consequently, the absence of a more qualitative variable (did the enterprise

manage IVT or not) might be questioned since such a variable would have allowed the calculation of IVT incidence in a comparable way across countries. Such information would be more likely to be sufficiently available within firms for the question to be used as a core variable.

7.3. The questionnaire

7.3.1. National conformity with the European outline

7.3.1.1. *Order of questions*

The European CVTS3 outline questionnaire consists of six sections:

A: structural data;
B: CVT activities;
C: CVT courses;
D: training policy;
E: non-trainers (reasons for not providing training);
F: initial vocational training.

Although the CVTS3 manual is very specific about the order of the questions ([36]), deviations can be observed in some countries. For example, Portugal changed the order of the sections to 'ABEFCD' to create a questionnaire in line with the structure commonly used in the country.

France changed the order of the questions to adapt the flow to the mixed mode of data collection (Internet and phone interview). This deviation affected those enterprises which had chosen to fill in an Internet questionnaire (only 10 % of the respondents).

In Norway, the order of the questions was also rearranged, 'to catch the natural information flow' (Statistics Norway, p. 25).

The Italian questionnaire differs in the flow of sections B and C. In section B questions relate to CVT courses, and in section C questions relate to other forms of CVT.

No country relates any problems to these changes and the deviations do not seem to affect overall data quality.

7.3.1.2. *Supplementary and omitted questions*

In some countries, additional sources were used to complete the data needed in the final data set. In such cases, the relevant question was dropped or the questionnaire showed the pre-filled data. In other cases external sources were used to complete missing values before imputation.

([36]) '[…] it is important that the sequence of questions as set out in the outline questionnaire should be followed in all cases. This is necessary to ensure that the data are as comparable as possible because the ordering of questions may influence the answers provided' (Eurostat, 2006, p. 46).

The most relevant approach is allowed by the CVTS3 manual: ‘it is accepted that, where a country will provide the data needed from other sources, the relevant questions will not be asked’ (Eurostat, 2006, p. 46).

The use of an external source can have an impact on the quality of a survey, one issue being reduced response burden. Another is the reliability and relevance of the external data. Unfortunately, the quality reports do not provide detailed information on the use of external sources.

Question A1: (principle economic activity of the enterprise) was most often omitted (eight countries) (Eurostat, 2006, p. 12). In all eight countries the external variable was derived from the statistical business register. This is potentially problematic as one of the implications is that stratum switching might be underestimated. However, a change in the precise NACE code (four-digit level) may not be frequent, implying it is rarer still at the aggregated level. Finland provides a good example. Where A1 has been asked, the answer is equivalent to NACE_SP for 99.7 % of enterprises. Generally, the quality of the statistical business register is decisive.

Most of the omitted questions relate to structural data (A section) for which external data are more easily accessible. Ireland is an exception with a particularly high number of omitted questions (18 questions corresponding to 58 variables) and the scope is wide (Section A, C and D). There is no indication in the Irish quality report of whether this is caused by the Irish CVTS being linked with the national employment survey.

Additional questions increase response burden and disturb the flow of the original European questionnaire; they could affect the quality and comparability of national surveys. France has a high number of added questions, but the French Statistical Institute indicates that the questions are principally qualitative and easily answerable.

7.3.2. Response burden

Response burden is influenced by the number of questions and variables, but even more so by the time needed to answer. Availability of data, the effort needed to collect this information, aggregation and treatment are important components of response burden. The CVTS3 questionnaire was judged to be generally too burdensome, particularly in the number of detailed sub-items. Response burden affects the unit response rate and the item response rate.

Item non-response suggests difficulty for the respondent in answering the question. It is not significant for ‘core’ variables as ‘no missing value shall be accepted nor imputation permitted’ (Eurostat, 2006, p. 54).

Table 19 shows the item response rate for key variables (no missing data allowed, but imputation possible) and two cost variables. The variables C8a and C8b (contributions and receipts) may have caused difficulties as such cost elements do not exist in some countries; in these it might be worth, in future surveys, dropping the question.

Table 19 **Item response rate for key variables in CVTS3**

Key variables		Number of countries for which the figures were provided	Minimum (%)	Maximum (%)	Average weighted by data set size (%)
A2tot04	Total number of persons employed	7	89	100	96.7
A4	Total number of hours worked in the reference year 2005	16	61	100	95.5
A5	Total labour costs (direct + indirect) of all persons employed	19	34	100	94.5
C1tot	Number of persons employed participating in 1 or more CVT course	17	83	100	99.0
C3tot	Paid working time (in hours) spent on all CVT courses	15	82	100	96.4
C7sub	Sub total costs	7	85	100	94.1
C7tot	Total costs	17	66	100	91.4
F2tot	Total costs of IVT	15	35	100	86.1
C8a	CVT contributions	6	45	100	86.3
C8b	CVT receipts	6	34	100	68.3

Source: National quality reports; Céreq calculations.

7.4. Sampling

7.4.1. Statistical unit

According to the common approach, all countries but Norway used the 'enterprise' ([37]) as the statistical unit. The possible bias implied by this deviation seems to have been considered by Norway, as indicated in the treatment of the question on 'job rotation' (other form of training) which distinguished between internal work tasks and external work tasks if these work tasks took place at a different local unit.

Assessing local units instead of enterprises can lead to different estimates in specific indicators referring to enterprises, such as share of training enterprises, percentage of enterprises which provide other forms of training. In contrast, indicators based on individuals (participation rate, cost per participant) or based on hours (cost per hours) should not be affected by the choice of the statistical unit.

In CVTS3, Denmark used the enterprise as a statistical unit (local unit in CVTS2). This change does not allow comparison of the Danish data over time (1999 and 2005).

The statistical unit is a critical point for data collection. One country noted that CVT is decentralised to local units and so the respondents are not able to provide the data in line with the defined statistical unit. In contrast, such data may only be available at group level where enterprise training policy is defined (see below for the treatment of these cases).

([37]) Defined by the Council Regulation (EEC) No 696/93 of 15 March 1993 on the statistical units the observation and analysis of the production system in the community, last amended by regulation (EC) No 1882/2003.

Three enterprises levels can be addressed concerning CVT: local unit, enterprise and group. Each of them can be relevant to the scope of the survey (definition of training policy, decision on training, where the training takes place, recording, costs, etc.). Further, enterprise information systems differ between countries as well as between enterprises within the same country.

Where enterprises belonged to a group, several strategies were followed. Austria used the information from the most representative enterprise. France disaggregated the group data to the enterprise in the relevant stratum, considering the number of persons employed according to the statistical business register. In Sweden, large enterprises were split into several strata when there were several legal units.

7.4.2. Sample size calculation

Countries generally used the method recommended by Eurostat to calculate sample sizes. Most countries used the Eurostat Excel tool.

The CVTS3 manual states: 'the following formula may be used in determining the sample size:

$$n_h = 1/\left[c^2 \cdot te_h + 1/N_h\right]/r_h$$

Where:

n_h = the number of sampling units in the stratum cell, *h*

r_h = the anticipated response rate in the stratum cell, *h*

c = maximum length of half the confidence interval

te_h = the anticipated proportion of training enterprises in the stratum cell, *h*

N_h = the total number of enterprises (training and non-training) in the stratum cell, *h*

(Eurostat, 2006, p. 51).

The Eurostat Excel tool implies a uniform anticipated response rate, which may lead to a higher than expected confidence interval when the response rates within the strata are heterogeneous. But principally, the tool could have been adapted in countries accordingly. Some countries considered the specific response rate of each stratum from CVTS2. In some countries, the sampling rate was chosen *a priori*, irrespective of the expected c-value. This was the case in Ireland (sampling rate from 10 % to 100 % with a minimum of 5 enterprises by stratum instead of 10). Latvia fixed a maximum size of 4 000 enterprises for the sample before applying a Neyman allocation. Hungary determined the total sample size on the basis of a cost constraint and used a modified Neyman allocation.

Luxembourg did not use the minimum number of 10 enterprises per stratum (quality report: Statec et al., 2007, p. 8, 10). If the CVTS3 response rate in a stratum equalled the CVTS2 response rate, the remaining sampled enterprises in this stratum were not contacted. It is not clear from the Luxembourg quality report which denominator was used for the response rate. If the total number of sampled enterprises in the stratum was used, exploitation of the sample is bound to an absolute figure and the method becomes close to a quota sample. Where contacted enterprises were used, the variable response rates imply a continuation of exploiting the sample. In the end, the lower total response rate for CVTS3

(without any indication stratum by stratum) shows that this method was not really effective but did not compromise the random selection of the sample.

A more critical deviation occurred in the UK. The size of a target sample was fixed at 4 020 observations within a total random sample of 29 212 enterprises. The entire sample was not used; once the absolute number of responding enterprises in the stratum had reached the target, the process stopped. To this end, the UK method can be considered more of a quota method than a random sampling. 'Where there are non-probability elements of the sampling design, the potential for non-comparability is much greater. Especially the setting of cut-off thresholds at different levels and different estimation of the portion of the population below the threshold could result in biased and non-comparable results' (Dalén, 2005, p. 19). The UK quality report (BMG Research, 2007) indicates that the contacted enterprises represent only 27 % of the total sample. As the response rate is only around 17 % (related to the exploited and eligible part of the sample) and a non-response bias can be suspected, the UK data should be used with caution, specifically when comparing results with other countries. For the comparative analyses in this report, the UK data were not considered.

7.4.3. Sampling frame

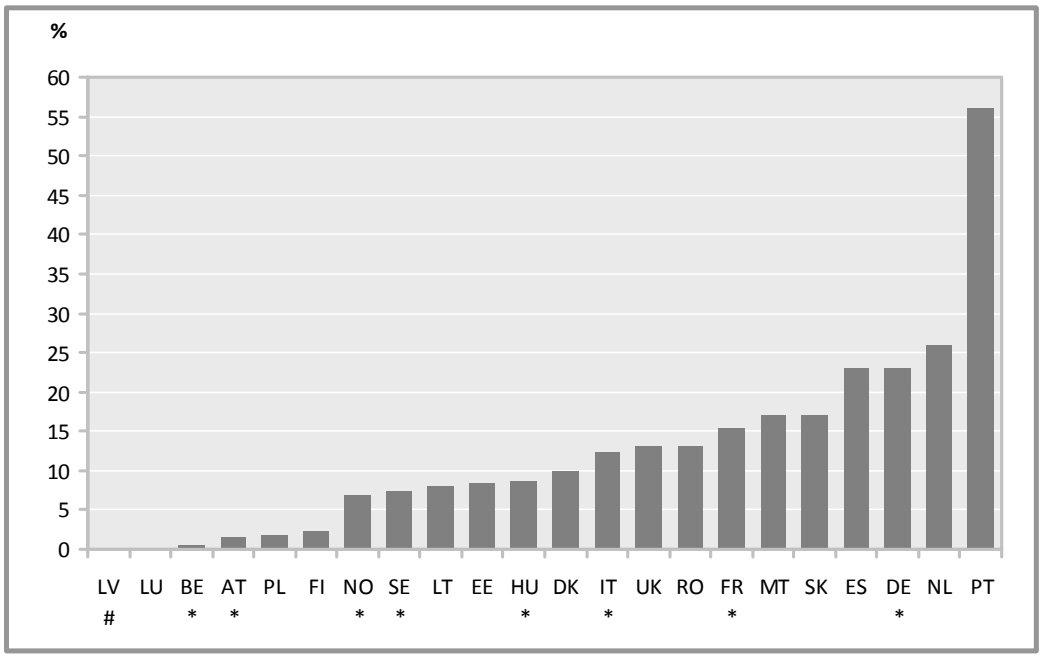
The statistical business register was used in almost all countries; Malta is an exception because the register contains only the annual average number of employees. These registers were generally up-to-date, so existing enterprises had a quite good probability of being included in the survey. However, in some cases the variables used for stratification (NACE_SP, N_EMPREG) might not have been up-to-date. This caused conflicts in the allocation of enterprises where NACE_SP did not match the NACE code in variable A1, or N_EMPREG did not match the total number of persons employed in variable A2TOT05 (Figure 58).

Such conflicting results are difficult to interpret. Stratum switching indicates that the information contained in the statistical business register is different from the information collected in CVTS, without indicating what the 'true' information is. It is difficult to define a 'threshold' of acceptability for stratum switching; one possibility could be to conduct a simulation study, using microdata, to provide an indication of the impact of stratum switching on the key indicators of CVTS. Figure 58 highlights Portugal as a specific case.

In Denmark the second quarter of 2005 was chosen as a reference time period for the number of employees to account for seasonal patterns (instead of 31.12.2005). While it is understandable to be concerned with seasonal fluctuations, all countries are affected by this phenomenon to some degree, yet such national deviations risk compromising European comparability.

Italy used the annual average of employees. This may cause some stratum misclassification for small enterprises and thus affect comparability, especially for the sectors affected by seasonality.

Figure 58 **Share of enterprises in CVTS3 for which the sampling strata is not equal to the observed strata (%)**



NB: # A1 pre-filled; * A1 not asked

Sources: National quality reports; Céreq compilation.

An assessment of under-coverage leads back to an assessment of the quality of the statistical business register. Not only do all enterprises need to be captured in the register, but the variables used to define the sampling frame also need to be regularly updated (N_EMPREG, NACE_SP). The common opinion expressed in the quality reports seems to be that the 'main economic activity' is stable enough not to be a source of under-/over-coverage. For enterprise size, however, many countries noticed a great fluctuation in the number of employees, especially in those enterprises with around 10 employees. This is probably the principal cause of under-coverage.

7.4.4. Sample stratification

The CVTS3 manual (Eurostat, 2006, p. 51) states that the sample shall be stratified by NACE and size category according to a minimum specification of 20 NACE and three size classes (10-49; 50-249; 250 and more). This 20*3 stratification (without additional stratification variables) has been followed by most countries (15/26). Hungary did not follow the Eurostat classification, but applied 5 size classes (10-19; 20-49; 50-99; 100-149; 150 and more). Even without Eurostat size class 50-249, a negative impact on quality is not expected considering that the Hungarian size class '150 and over' is exhaustively selected. Thus, this deviation can be considered to be more of an extension than of a serious irregularity (this issue is connected to the Hungarian sample size).

In the Czech Republic, only two size classes were used. However, this can lead to heterogeneity inside the stratum and so impact the imputation process. In other cases the stratification was more detailed than prescribed by the manual, for example by using an additional criterion (e.g. region for Belgium) or by using more detailed categories/classes

(30*6 for France). These atypical practices are not deviations, but can affect comparability across countries.

7.4.5. Stratification and correction for unit non-response

The manual advocates a minimum stratification by three size classes and 20 NACE categories. However, it does not prescribe any specific response rate.

Table 20 **CVTS3 sample stratifications applied by the countries**

Number of Nace classes	Number of size classes					Number of countries
	2	3	4	5	6	
20		17*	1		2	20
30	1		1		2	4
other (>20) or unknown		1		1		2
Total	1	18	2	1	4	26

NB: * of these 15 use a 20*3 stratification and 2 a 20*3*3 stratification.
Additional stratification variables (e.g. region) are not considered.
Source: National quality reports; Céreq compilation.

Some countries (Germany, France, the Netherlands and Slovakia) chose to use six size classes and Italy used four size classes by splitting the 10-49 class. Table 20 shows the actual stratifications applied by countries. The correction of non-response was frequently conducted by considering the number of employees according to the statistical business register (N_EMPREG). This procedure goes beyond the minimum requirements and is considered to be positive, though non-response rates are controlled in countries to different degrees.

Response rates appear to be frequently correlated (positively or negatively) to enterprise size (Table 21). In some countries the incidence does not appear to be homogenous within a size class used for stratification (10-49 employees principally).

A simple reweighting process leads to equal final weights in a stratum by multiplying the sampling weight by the inverse of the response rate in the stratum. If within a stratum (e.g. 10-49 employees) the response rate is lower for small enterprises (e.g. 10-19 employees) than for large ones (e.g. 20-49 employees), the smaller get a final weight that is lower than actually relevant. At the same time, the larger get a final weight higher than relevant. The opposite phenomenon may occur if the response rate is negatively correlated to size.

A non-response bias can be suspected when the probability of responding is correlated to the subject being measured (here, providing CVT). Such correlations may exist because of a causality link with a hidden variable. For CVTS, the unknown ‘interest in CVT’ affects the propensity to provide training and to respond to the survey. In enterprise surveys, the variable size is an essential characteristic which affects all attitudes and behaviours. So if a hidden variable, such as interest in CVT, is relevant, it is probably linked to the size of the enterprise.

This is already known and it justifies the size stratification. The question is whether or not the stratification is detailed enough. A non-response bias is suspected in a country when the correlation between size and response rate is combined with a correlation between size and training provision. This point was already noticed in the project ‘assessment of the

second vocational training survey: comparative analysis of continuing vocational training on the basis of CVTS2 results' (BIBB et al., 2004).

This is assessed now in a two-step process for CVTS3 data. First, by choosing a country as standard, it is possible to have an indication of how important the bias might be. Second, by considering the proximity to the standard country, an indication can be provided of the number of countries potentially concerned.

7.4.5.1. *Step one*

To measure the impact of non-response bias on the key indicator training incidence, French data are used as a standard as the sample was stratified by six size classes, and the conditions for a possible bias are fulfilled (correlation between training incidence and size; correlation between response rates and size). In addition, microdata were available.

Two stratifications with three and six size classes were simulated, and the simple reweighting process was applied (sampling weight in the stratum is corrected by the inverse of the response rate). A constant sample size was assumed by neglecting the fact that the sample would be smaller in case of three size class stratification. The results are presented in Table 22.

The conclusions are (three size classes as reference):

(a) enterprises with 10-19 employees are more numerous in the sample with three size classes (+3 %). There are many enterprises with this size, and if each enterprise within the stratum 10-49 has the same probability of being selected, their frequency within the stratum 10-49 is high;

(b) as a result, the share of non-training enterprises (unweighted) is higher, because small enterprises have a higher propensity for non-training;

(c) with a three size class stratification, the 10-19 enterprises and the 20-49 ones have the same final weight (75) as they belong to same stratum. In a six size class stratification, the 20-49 enterprises have a smaller final weight (55) than the 10-19 ones (93) because the response rate is higher.

Finally, the three size class stratification, with a basic reweighting procedure and without correction of the non-response, leads to a training incidence that is two percentage points higher for the 10-49 class than with a six size class stratification (73 % against 71 %). The same is true for the total of enterprises (77 % against 75 %).

More than the sample composition, it is the homogenous treatment of non-response inside a heterogeneous class which seems to create problems.

Table 21 **Unit response rates and incidence by size of enterprise in CVTS3 (%)**

Country	AT	BE	BG	CY	CZ	DK	EE	FI	FR	DE	EL	HU	IE	IT	LV	LT	LU	MT	NL	NO	PL	PT	RO	SK	SI	ES	SE	UK
Sample size	3435	7576	3200		9993	2841	3022	2983	8557	10615		5951	8100	38141	3935	4300	1683	1425	5838	2798	17997	9834	9813	2120	2262	11784	3109	21604
Data set size (number of valid observations)	1456	2959	2788		8011	884	2112	1240	4755	2857		4510	4500	15470	3681	4100	799	1077	4495	916	15945	4425	8143	1748	1831	0	1208	3365
Stratification NACE*size*region	20*3	20*3*3	20*3		30*2	20*3	20*3	20*3	20*6	30*6		20*3	?*5	30*4*21	23*3	20*3	20*3	20*3	20*6	20*3	20*3	20*3*3	20*4	30*6	20*3	20*3	20*3	20*3
Correction of unit non-response (Y/N)	Y	N	N			Y			N	N		N	N	Y	N	N	N			N	N	N	N	N		N	Y	
Unit response rate (RR)																												
Total	**44**	**41**	**87**		**80**	**31**	**71**	**43**	**56**	**27**		**76**	**56**	**41**	**93**	**95**	**48**	**76**	**77**	**37**	**89**	**45**	**83**	**77**	**81**	**85**	**42**	**17**
size 1	45	40	81			36	67	47	50	28		71		41	92	93	44	74	76	40	86	41	76	64	77	91	42	
size 2	43	38	96			28	75	45	66	29		81		38	97	97	52	77	77	34	99	55	89	87	86	94	44	
size 3	41	57	96			22	74	39	60	24		85		43	94	98	64	96	77	25	100	59	92	93	86	83	38	
range RR	4	**19**	**15**			**14**	7	8	**15**	5		**14**		5	5	5	**20**	**21**	1	**15**	**14**	**18**	**16**	**29**	9	11	6	
Incidence (Eurostat data)																												
10_19	77	51	20	:	62	82	56	68	60	61	13	35		26	26	34	:	:	66	78	21	32	34	54	66	39	69	85
20_49	83	66	28	:	73	83	71	78	84	71	20	53		36	40	46	:	:	78	94	34	51	39	60	70	49	79	93
50_249	91	86	44	80	93	96	85	89	98	81	39	77		58	56	64	85	65	88	88	55	70	50	74	85	68	95	92
250_499	98	99	58	:	100	99	98	92	100	82	62	85		82	70	84	:	:	94	99	76	88	66	90	96	87	99	95
500_999	100	100	67	:	100	97	94	98	100	89	79	95		87	84	93	:	:	98	89	84	92	77	91	100	89	100	99
ge_1 000	100	100	64	:	100	100	100	93	100	97	90	99		97	88	96	:	:	98	77	89	98	91	99	98	95	100	99
Range incidence 10-19 versus 20-49	6	15	8		11	1	15	10	24	10	7	18		10	14	12			12	16	13	19	5	6	4	10	10	8
Range incidence 250-499 to ge-1 000	2	1	9	0	0	3	6	6	0	15	28	14	0	15	18	12	0	0	4	22	13	10	25	9	4	8	1	4

: = 'not available'.

NB: Results for Ireland were not available at Eurostat at the time of writing.

Source: National quality reports; Eurostat CVTS3; Céreq compilation.

Table 22 **Impact of a non-response bias on training incidence – results of a simulation using French microdata**

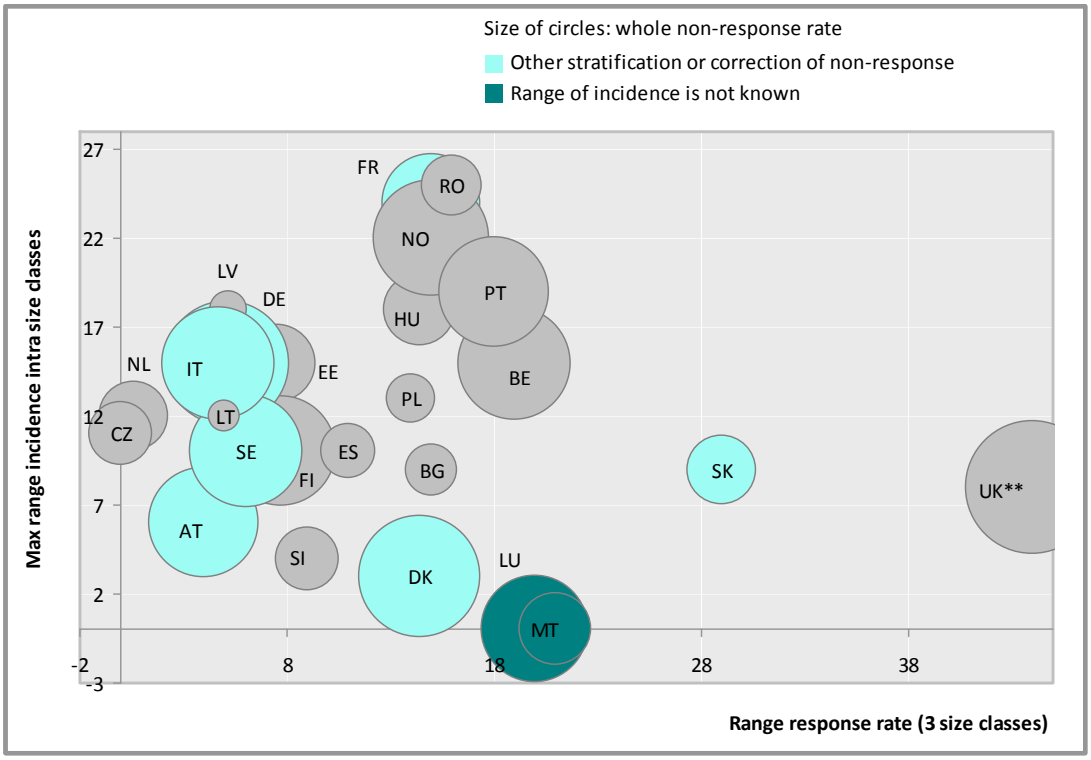
	10-19	20-49	50-249	250-499	500-999	1 000-	All
	104 388	**62 511**	**26 695**	**3 054**	**1 394**	**1 158**	**199 200**
Structure of the sample							
6 size classes	2 597	1 900	1 515	1 025	776	691	8 504
3 size classes	2 685	1 812	1 515	1 346	617	529	8 504
Difference (%)	3	-5	0	31	-20	-24	0
Number of respondents							
6 size classes	1 122	1 138	994	612	442	447	4 755
3 size classes	1 149	1 084	994	809	355	343	4 733
Difference (%)	2	-5	0	32	-20	-23	0
Number of training enterprises unweighted							
6 size classes	711	959	975	608	440	446	4 139
3 size classes	732	912	975	804	353	342	4 117
Difference (%)	3	-5	0	32	-20	-23	-1
Average weight of each size class							
6 size classes	**93**	**55**	**27**	**5**	**3**	**3**	**42**
3 size classes	**75**		**27**	**4**			
Number of training enterprises weighted							
6 size classes	64 987	53 117	26 192	3 037	1 390	1 155	149 878
3 size classes	12 1611		26 192	5 581			153 384
Percentage of training enterprises (%)							
6 size classes	62	85	98	99	100	100	75
6 size classes aggregated for publication	**71**		**98**	**100**			**75**
3 size classes	**73**		**98**	**100**			**77**

NB: Oversampling neglected.
Source: French microdata of CVTS3; Céreq calculations.

7.4.5.2. *Step two*

The French situation that implies underestimation of incidence of two percentage points was used as a standard. The 'proximity' of the other countries to France is then observed using the critical elements: range of incidence intra size class and range of response rate. Because only the response rates for three size classes are known, the maximum difference between the corresponding response rates was considered.

Figure 59 **Evaluation of potential significant bias in CVTS3 due to stratification**



* The range of incidence is not known for Luxembourg and Malta.

** For the UK, the response rate is calculated as respondent/used sample.

NB: The maximum intra-class range corresponds to the maximum value of the difference of CVT incidence (in percentage points) inside the three size classes: 10-19 versus 20-49 or 250-499 versus 500-999 versus 1 000 and over.

Source: National quality reports; Eurostat CVTS3; Céreq compilation.

Figure 59 gives a first impression which should be refined by considering small and large enterprises separately. Bias due to stratification is suspected when the following conditions exist:

A high range of response rates (10-49 versus 50-249) AND
a high range of incidence (10-19 versus 20-49)

OR

a high range of response rates (50-249 versus 250 and over) AND
a high range of incidence (250-499 versus 500-999 versus 1 000 and over)

AND

a stratification with three size classes or less

AND

no correction of non-response

AND

high non-response rate

Figure 59 shows that seven countries have potential bias from too broad stratification.

France used the six size class stratification; therefore the problem did not occur.

In Romania, the high range of response rates concerns small enterprises; the maximum range of incidence, however, concerns large enterprises. In addition, the stratification was in

four size classes, splitting the 10-49 size class. In consequence no stratification problem is expected.

Norway is a specific case because the response rate is negatively correlated to the size and the relation between incidence and size is not linear (not considered by the measure of range). Hence, if bias exists, it is possible that the final figures are underestimated.

In Belgium, the high range of response rates concerns large enterprises where the range of incidence is very small. The maximum range of incidence concerns large enterprises where the range of response rate is small. In consequence, no bias due to stratification and size behaviour is expected.

In Poland the high range of response rates (13 percentage points) concerns small enterprises (10-49 versus 50-249) as the high range of incidence from 21 % (10-19) to 34 % (20-49). Stratification was by three size classes and no correction of non-response was carried out. In consequence a non-response bias may be suspected. But considering the high response rate, the distribution of final weights probably has a low standard deviation and the potential bias should not have an important impact on the final figures. The same can be said for Hungary.

Portugal has the same profile as France. Response rates range widely from 41 % (10-49) to 55 % (50-249), and incidence grows from 32 % (10-19) to 51 % (20-49). Stratification was by three size classes and no correction of non-response was carried out. As a result, a non-response bias may be suspected; the final figures are probably overestimated because of too broad stratification.

For CVTS4, in case of correlation between size and response rate, a logical solution would be to correct the bias by considering the size and, thereby, to correct the weights, including the probability that an enterprise responds.

Another solution would be to refine the stratification. This procedure, though not correcting the weights individually, creates strata that are small enough to ensure homogeneity of behaviour within the stratum. As some large strata are split, the weights become different and, thus, the representative nature of each kind of enterprise is more adequate. In CVTS3, a detailed stratification was used in only a few countries.

The effect of a detailed stratification can generally lead to a reduction in the final key indicator for countries where larger enterprises provide more training and more frequently answer the survey.

Non-response bias is not homogeneously distributed across countries, posing a problem of comparability. Some countries corrected for this bias and some others did not, reinforcing the problem. Indeed, around half of the countries for which information is available applied a simple reweighting to correct for non-response. Others managed calibration using N_EMPREG or an equivalent as an auxiliary variable. This non-uniform treatment must be connected to the stratification. This issue is problematic when size and response rate of training behaviour variables are highly correlated. Finland underlines this problem by saying: ‘the response rate was overall lower than we expected and, further, non-response was biased to larger enterprises. In terms of covering CVT activities larger enterprises have essential significance to the results. Partly through filled and excluded questionnaires and partly through contacts and comments from representatives of the enterprises we have a

strong impression that especially large enterprises with a lot of training activities have found it too burdensome to respond to the survey. If this is the fact then it would be evident that some key indicators are underestimating the issues CVTS3 is measuring' (Statistics Finland, 2008, p. 13).

This point leads Finland to express reservations concerning the comparability of the Finish CVTS2 and CVTS3 data.

7.5. Data collection

7.5.1. Data collection methods

Data collection may differ according to the size of the enterprise. In very small enterprises, information can be requested directly from an individual respondent, and individual memory errors might then occur. In larger enterprises, the data source is usually not an individual but an information system. This frequently leads to access and recording problems, which occurs when the respondent has no access to data managed by another department of the enterprise (for example questions on number of hours worked or total labour costs). In other cases, the data are recorded but remain disaggregated at local unit level or are aggregated to the group level; information is not available for the respondent at enterprise level. This is frequently the case with breakdown figures (age, field of training, gender, etc.) and IVT.

Further, there might be a trade-off between the reliability of the data and their level of detail. The common opinion of NSIs seems to be that the level of detail may have been too high.

Table 23 shows that countries used several methods to reduce non-response, to adapt the media to the size of enterprise and to reduce statistical burden. Only six out of 25 countries used a single, pure method for collecting data (postal non-electronic and face-to-face non electronic).

Table 23 **Frequency of CVTS3 data collection method**

Procedure	Frequency
Postal non-electronic version	15
Face-to-face non-electronic version	10
Postal electronic version	10
Telephone electronic version	5
Use of Internet	4
Mixed mode data collection	2
Face-to-face electronic version	1
Telephone non-electronic version	1

Source: National quality reports; Céreq compilation.

7.5.2. Status of the survey

The survey was made compulsory in 19 out of 24 countries for which information is available but the impact on the unit response rate is not systematic. Some countries believe that making the survey compulsory can make the respondent even more reluctant while others stress the risk of getting fictitious answers. It seems that a compulsory survey cannot

compensate for the burden of the questionnaire or for non-availability of data. Nevertheless, making the survey compulsory sends a strong message concerning public interest in the survey; even if the obligation is softly applied (preferring missing to invented data), a compulsory status is still an incentive. From experience, the greater legitimacy provided by a compulsory status clearly distinguishes the survey from marketing studies for which reluctance is particularly high.

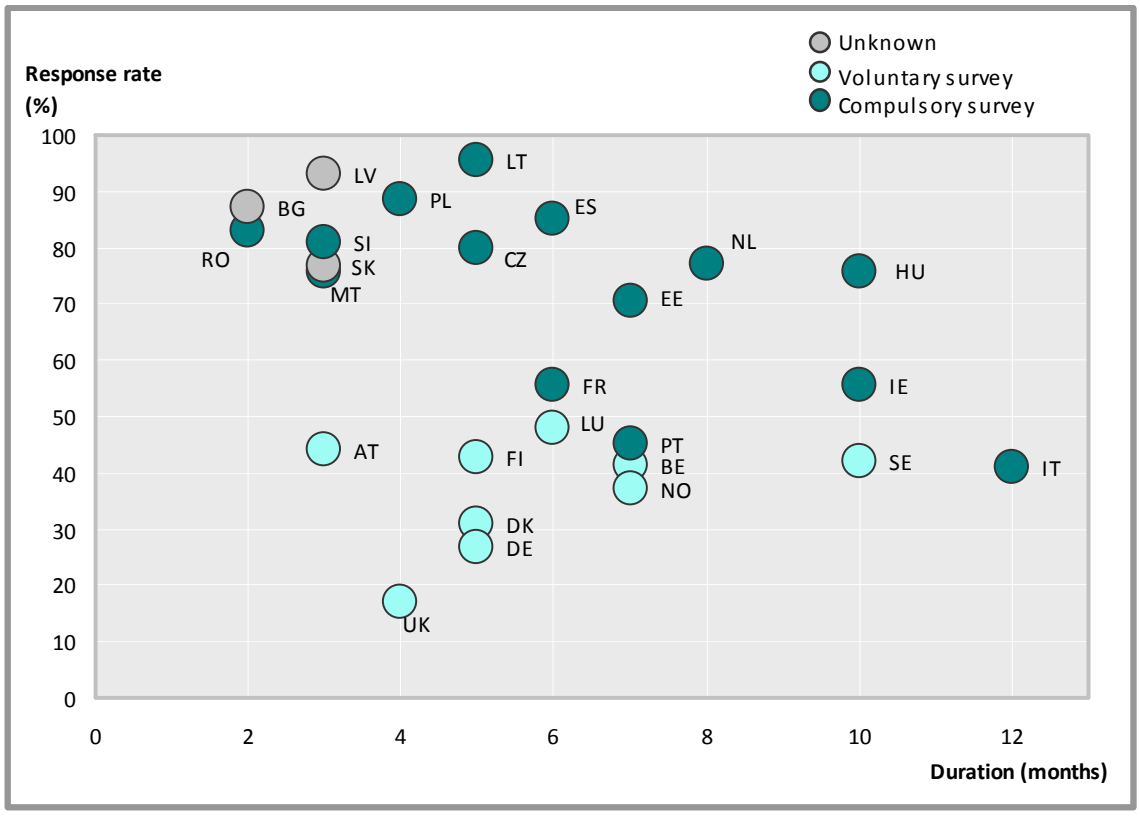
Figure 60 shows the possible positive effect of making the survey compulsory but this does not guarantee a high response rate: two countries with a mandatory survey status still have a response rate below 50 % (Italy and Portugal). However, all countries with a response rate below 40 % have a non-compulsory survey, indicating that a compulsory status helps to avoid a very low response rate.

To distinguish the country effects, the specificity of the survey and its status (compulsory/not compulsory to the enterprise), the CVTS3 response rates are compared with those from the survey on information and communication technologies (ICT) ([38]).

Figure 61 shows that the ICT survey has higher response rates in several countries, both when surveys are compulsory or voluntary. This comparison does not consider the burden of each survey but even with these (e.g. statistical burden in the country or general characteristics of the data collection), the positive effect of compulsory status can be noted.

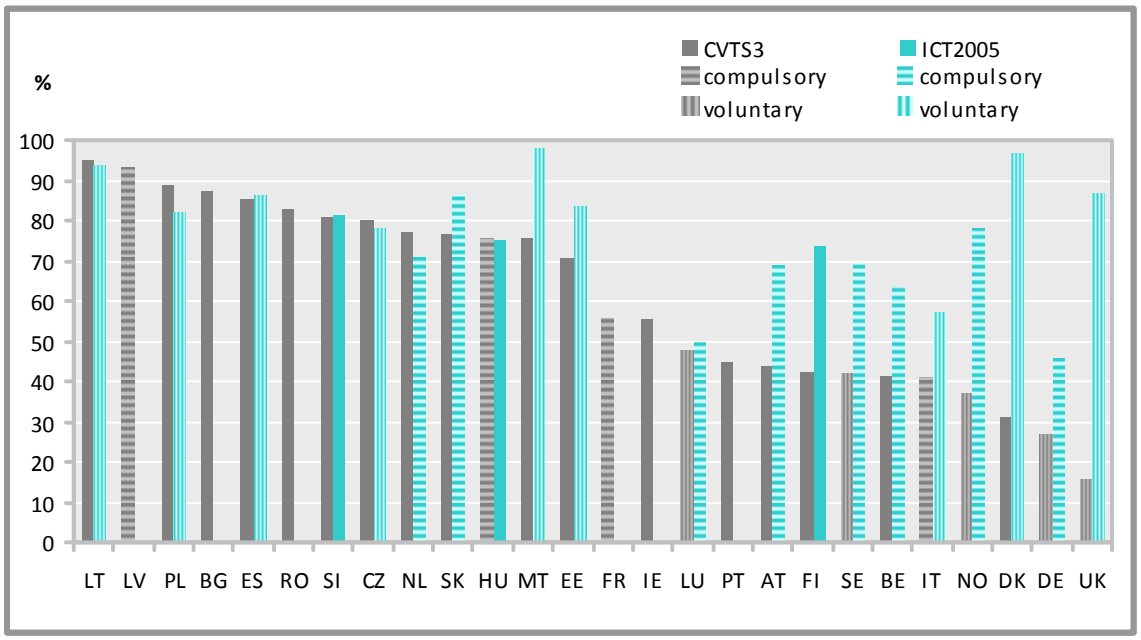
([38]) ICT survey documents are available from Internet: http://ec.europa.eu/enterprise/ict/index_en.htm [cited 13.10.2009].

Figure 60 **Duration, response rates and survey status in CVTS3**



Source: National quality reports of CVTS3; Céreq compilation.

Figure 61 **Response rates in CVTS3 and ICT 2005**



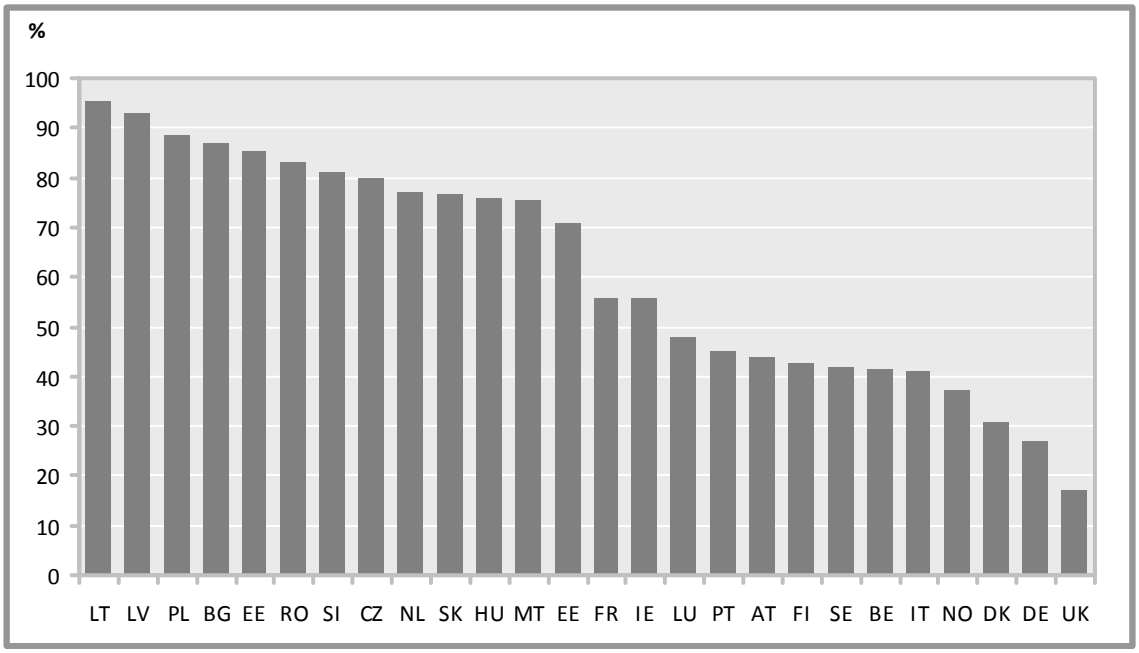
Sources: Eurostat ICT 2005; National quality reports of CVTS3; Céreq compilation.

7.5.3. Reflections on response rates

The main problem concerning quality is the unit response rate ([39]) (Figure 62). A low response rate affects the coefficient of variation and might result in a selection bias; the probability of answering a survey related to a specific field might be connected to the interest or behaviour in that field. A non-training enterprise may take little interest in CVT and so would be less likely to respond.

Note that in Figure 62, the UK response rate is recalculated according to the Eurostat definition, leading to a response rate of 16.9 %. Such a calculation might be recommended for all CVTS4 national quality reports. This states that 'for an interview survey, the numerator of the formula is the number of interviews. The denominator is the total sample size minus non-eligible respondents, i.e. minus those not meeting the criteria for a potential respondent as defined for that particular study' (Eurostat, quality glossary) ([40]).

Figure 62 **Unit response rates in CVTS3**



NB: The UK response rate recalculated according to the Eurostat definition of response rate.

Sources: National quality reports; Céreq compilation.

In Germany, survey implementation was disrupted by a strike (though the CVTS2 response rate of 31.3 % was also relatively low). The German quality report (Destatis, 2007) noted insistent follow-up occurred through letter and telephone reminders.

Table 24 shows that the distribution of countries in terms of response rates is clustered along geographical lines; east European countries have a higher response rate than the rest of the countries, with the exception of Spain and the Netherlands.

([39]) For more details concerning non-response bias, see Bergdahl et al. (1999, Part 2, Chap. 8).
([40]) The Eurostat quality glossary is available from Internet: http://circa.europa.eu/irc/dsis/coded/info/data/coded/en/gl005228.htm [cited 13.10.2009].

Table 24 **Response rates, methods of data collection, survey status, duration of data collection and correction of unit non-response in CVTS3**

Country	Response rate (%)		Procedure (PROC Value) ([c])	Compulsory survey (Y/N)	Duration of data collection (month)	Correction of unit non-response (Y/N)
CY ([a])	–		–	–	–	–
EL ([a])	–		–	–	–	–
LT	95.3		10-20	Y	5	N
LV	93.0		10-11	–	3	N
PL	88.6		20-10	Y	4	N
BG	87.1		10/20	–	2	N
ES	85.2		10-40	Y	6	N
RO	83.0		20	Y	2	Y
SI	80.9		10-11	Y	3	–
CZ	80.0		10-11	Y	5	–
NL	77.0		10-11	Y	8	–
SK	76.6		10-20	–	3	N
HU	75.8		10/11/20/30	Y	10	N
MT	75.6		11-20	Y	3	–
EE	70.6		11-20	Y	7	–
FR	55.6		31/50	Y	6	N
IE	55.6		10	Y	10	N
LU	47.8		20	N	6	N
PT	45.0		11-20	Y	7	N
AT	44.0		31-10-11	N	3	Y
FI	42.6		11/40	N	5	–
SE	42.0		–	N	10	Y
BE	41.4		31-50	N	7	N
IT	41.0		10	Y	12	–
NO	37.0		10-40-31	N	7	N
DK	31.0		10	N	5	Y
DE	26.9		10	N	5	Y
UK ([b])	17.0		31/21	N	4	–

([a]) quality report not available.
([b]) for the UK, the response rate was calculated as respondent/used sample.
([c]) code for variable PROC:

10-Postal non-electronic version
11-Postal electronic version
20-Face-to-face non-electronic version
21-Face-to-face electronic version
30-Telephone non-electronic version
31-Telephone electronic version
40-Use of Internet
50-Mixed mode data collection

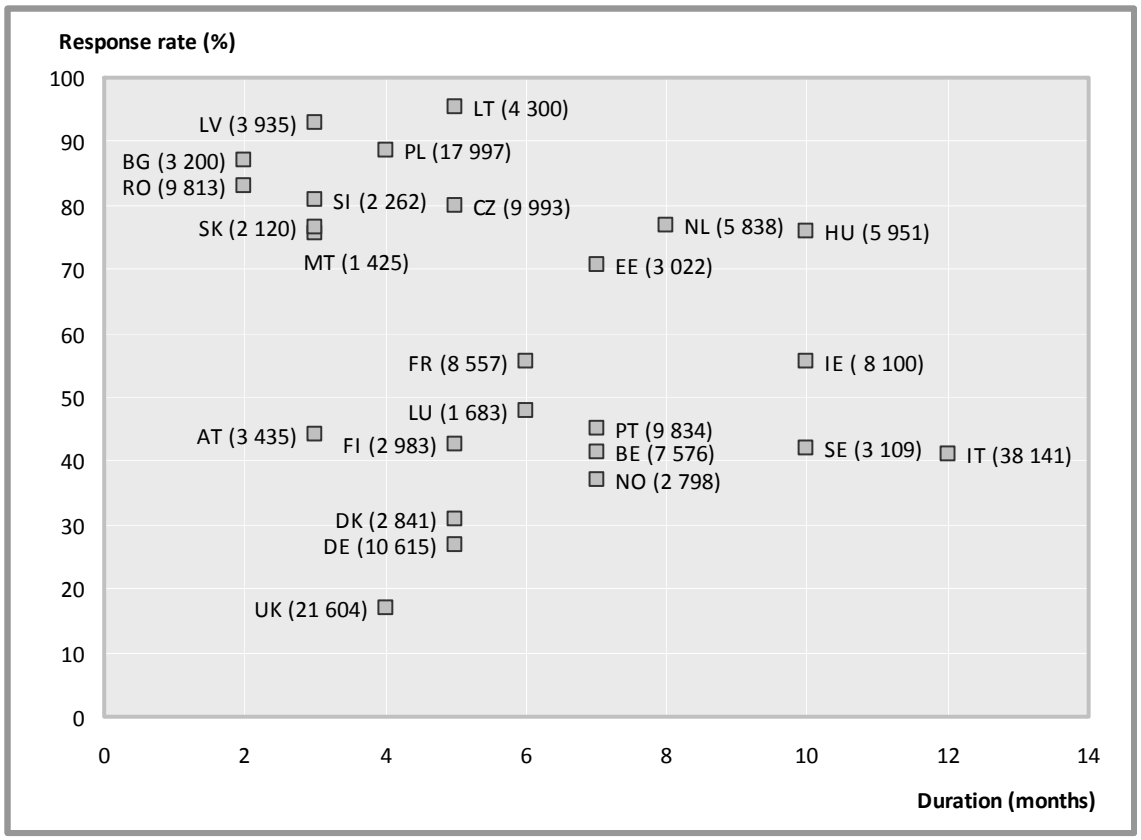
Source: National quality reports; Céreq compilation.

The compulsory status of the survey matches more countries with a high response rate, while voluntary surveys are concentrated among the low response rates. Countries used various data collection methods, but it is difficult to conclude unequivocally in favour or against any specific method.

It is frequently reported that the response rate for enterprise surveys is positively related to the duration of the data collection and to perseverance in getting a response (e.g. Statistics Canada, 2003, p. 29). Unfortunately, the relationship between duration and response rate is not linear, the latter rising to an asymptotic limit which depends on several other parameters of the survey.

Figure 63 shows the relationship between duration, response rate and sample size for CVTS3. Some countries decided to increase the duration of data collection (e.g. France, Italy, Norway) in reaction to a quite low response rate, causing a negative relationship. After a very short period, but allowing the respondent sufficient opportunity for answering, time does not bring many additional benefits. Improving response takes time, e.g. checking and correcting address and phone numbers, sending reminders. Obviously, the time needed depends on the media used and on the resources mobilised by the NSI. As an example, around 500 persons took part as interviewers in the face-to-face data collection in Romania which was extended from six to eight weeks.

Figure 63 **Duration, response rates and sample sizes in CVTS3**



Source: National quality reports of CVTS3; Céreq compilation.

The reason expressed most often by non-respondents during telephone contact in Luxembourg was a disinterest in statistical surveys (51 %).

In France, where employer syndicates voted for the mandatory status of the survey, persuading enterprises that would have otherwise declined to respond was a strong argument in favour. Involving employer's syndicates also increases survey legitimacy.

A further way to raise the general acceptability of surveys is providing relevant information to the enterprise in return. Belgium gives respondents individual output on where the enterprise is positioned in its sector, developing individual interest.

Given the broad dispersion of response rates across countries, it is possible that there might be a widely distributed non-response bias, and comparability problems. 'Different rates

of non-response are obvious sources of bias and therefore also of non-comparability. But also within similar rates of non-response, there may be potential for non-comparability resulting from differences in biases. It would be necessary to study the various subgroups contributing to non-response, both with respect to their general characteristics and their causes for not responding (refusal, no contact, etc.) in order to understand the risks for bias and its likely direction' (Dalén, 2005, p. 19). Without information on the sub-groups it is not possible to state precisely the impact of bias. Further, knowing that response rates do not affect the same groups in every country, bias may even have an opposite effect in different countries. According to some, there are links between low interest in CVT and low incidence, as well as between low interest in CVT and low response rate.

Respondents' reluctance to invest time in completing the questionnaire is negatively related to their appreciation of CVT. In this case, non-response bias might result in an over-estimation of the key indicators. However, survey burden is higher for those managing training, which could also increase the probability of non-response and lead to an underestimation. The latter probably exerts only moderate influence as the burden perceived by the respondent is not independent of their interest in CVT and in the media used (e.g. paper versus telephone interview). Many direct or indirect links can be envisaged between probability of response and variables of interest.

7.6. Data processing

Eurostat's data processing checking rules were sometimes considered too rigid, even though usually implemented in the national tools. Here, the computer assisted methods (CATI, CAPI, and CAWI) stand out. First, the filters in the questionnaire are automatically managed and, hence, many inconsistencies are avoided. Second, countries which used these methods frequently incorporated some of the checking rules, enabling the respondent to react in real time when a checking rule was violated.

Without access to the imputed and non-imputed microdata, it was not possible to verify the application of the rules relating to the imputation of variables (Eurostat, 2006, p. 54). Nevertheless, the item response rates given by countries in the quality reports do not arouse suspicion. In cases where missing data is high, the NSI decided not to impute data and expressed reservation on the quality of certain variables. However, according to the quality reports, usually the imputations were carried out in respect of the manual recommendations. In few cases might the imputation process have led to bias.

Norway managed the imputation through a more aggregated stratification (two size classes, more or less than 50 employees, 20 NACE categories). This process could have led to positive bias if there was a significant difference according to the size of enterprise but data show that the overall impact should not be important. Further, the number of respondent enterprises was a constraint which had to be managed in merging the strata to reach consistent average. In Norway, imputation of some core qualitative variables (questions B2aflag to B2eflag on other forms of CVT) is more unexpected (Statistics Norway, 2008, p. 39). The CVTS3 manual instructs that, in such cases, the record should be converted to a

unit non-response (Eurostat, 2006, p. 54), although accepting that there might be exceptions to this rule which should be fully justified and detailed in the quality report. Consequently, the normal unit response rate is artificially increased by 8.6 % (7.9 out of 92.1). This is problematic if considering the relatively low overall response rate in Norway (37 %) and the fact that it could be reduced again by another 7.9 % to 34.1 %.

It is also possible that imputation includes core variables in the Czech Republic insofar as there are core variables listed in the imputation chapter of their quality report. In very few cases, the method of imputation conflicts with the aim of the question. In the Czech Republic and Malta, the imputation of C1m and C1f (male/female participants) was conducted with the ratio of A2m05/A2tot05 and A2f05/A2tot05 (share of male/female in employees). To the extent that this is intended to measure potential inequalities in access rates of male and female employees, applying such an imputation undermines this aim.

The manual invites countries to use their experiences in imputing qualitative data so these imputations are not a deviation from the common methodology, as long as the imputation rate is under 20 % (for which microdata would be needed to check). The scope of imputation of qualitative variables appears wide. It ranges from no imputation to imputing almost all variables. Imputation of qualitative variables was done in the Czech Republic (donor method) and Germany (sequential hot-deck). In Malta, the three most common answers in each stratum were assigned to those enterprises that had not responded but this method leads to a bias in the indicators.

7.7. Coefficients of variation: key variables and indicators

As advocated by the manual, countries provided the coefficients of variation for key indicators. Some provided coefficients only stratum by stratum, in which case overall figures cannot be provided. Table 25 shows the available coefficients of variation, this being an indicator of precision. First, the coefficients of variation were generally calculated after imputation; the observed figures are less important than the number used for calculating them. Second, there are a few cases where imputation introduces bias. In the countries where it is assumed that imputation does not introduce bias, it leads to artificial reduction of the variance and, hence, of the coefficients of variation. Third, one should bear in mind that many of the errors in the results come from sources not covered by this method. The correctness (i.e. non-existence of bias) is not included in this indicator as it could be in the root mean squared error (MSE).

An extreme example is taken for illustration. The coefficients of variation for total costs of IVT in Denmark is 0.053. The sampling frame corresponds to 19 295 enterprises, of which 2 841 enterprises were selected. Among the selections only 884 are unit respondents (high non-response bias suspected). Among these 884 enterprises, only 34.4 % answered the question F2tot, that is to say 304 enterprises and thus 10.7 % of the sample frame.

It is wise to take the coefficient of variation with caution.

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Table 25 **Coefficients of variation for key CVTS3 variables and indicators**

Key variables	AT	DK	EE	FI	FR	HU	LT	LU	NO	PL	PT	RO	SE
Total number of persons employed	0.043	0.04	0.011	0.069	0.0502	0.01	0.008	0.16-1.59	0.03	0.004	0.016	0.011	0.08
Total number of enterprises that provided CVT	0.034	0.022	0.017	0.037	0.0343		0.02	0-1.27	0.02	0.017	0.022	0.023	0.03
Ratio of the total number of enterprises that provided CVT to the total number of enterprises	0.02	0.022	0.017	0.0371	0.0212	0.01	0.02		0.02	0.017	0.022	0.023	0.03
Total number of enterprises that provided CVT courses	0.042	0.025	0.021	0.042	0.0349		0.03	0-1.44	0.06	0.023		0.029	0.04
Ratio of the total number of enterprises that provided CVT courses to the total number of enterprises	0.034	0.025	0.021	0.0416	0.0228	0.01	0.03		0.06	0.022	0.028	0.029	0.04
Total number of persons employed in enterprises that provided CVT	0.051	0.042	0.016	0.077	0.0538	0.02	0.013	0.1-1.59	0.03	0.008	0.025	0.016	0.09
Total number of participants in CVT courses	0.069	0.063	0.025	0.082	0.0812	0.04	0.022	0.2-1.37	0.07	0.013	0.037	0.017	0.09
Ratio of the total number of participants in CVT courses to the total number of persons employed	0.046	0.045	0.022	0.0633	0.0388	0.02	0.019		0.07	0.012	0.026	0.056	0.04
Ratio of the total number of participants in CVT courses to the total number of persons employed in enterprises that provided CVT	0.044	0.064	0.02	0.0656	0.0314	0.03	0.018	0.11-1.28	0.07	0.011	0.022	0.056	0.04
Total costs of CVT courses	0.123	0.38	0.075	0.095	0.077	0.3	0.055	0.28-2.88	0.09	0.029	0.051	0.036	0.15
Total number of enterprises providing IVT	0.05	0.052	0.18	0.152	0.0508		0.038			0.032	0.085		
Total number of participants in IVT	0.078	0.062	0.122	0.171	0.059	0.25	0.0004	0-5.20		0.041	0.081	0.074	
Total costs of IVT		0.053	0.204	0.424	0.0695	0.45	0.813	-133.92-6.63		-0.072	-0.433	0.08	
Ratio of the total number of enterprises providing IVT to the total number of enterprises	0.045	0.053	0.18	0.1256	0.043	0.04	0.038			0.032	0.083	0.119	

NB: Other countries unavailable or late delivery.
Source: National quality reports; Céreq compilation.

7.8. Summary of data quality across countries

This section provides an overall assessment of the CVTS3 data quality and specifically its comparability across countries. The focus is on response rates and possible non-response bias, being fundamental to data quality.

According to the Eurostat handbook (Ehling and Körner, 2007, p. 68), 'in statistics, the final product quality is not only multidimensional, but is achieved through a package of interrelated process specification. In some cases, a product quality requirement could be achieved with different "packages" ' (also Linden, 2007).

The response rate is critical point for a survey. The very low response rate in some countries might lead to the conclusion of an insurmountable non-response bias. This potential bias refers to a specific profile of non-respondent enterprises, as the probability of obtaining a response to the survey is correlated to the interest in the subject of the survey.

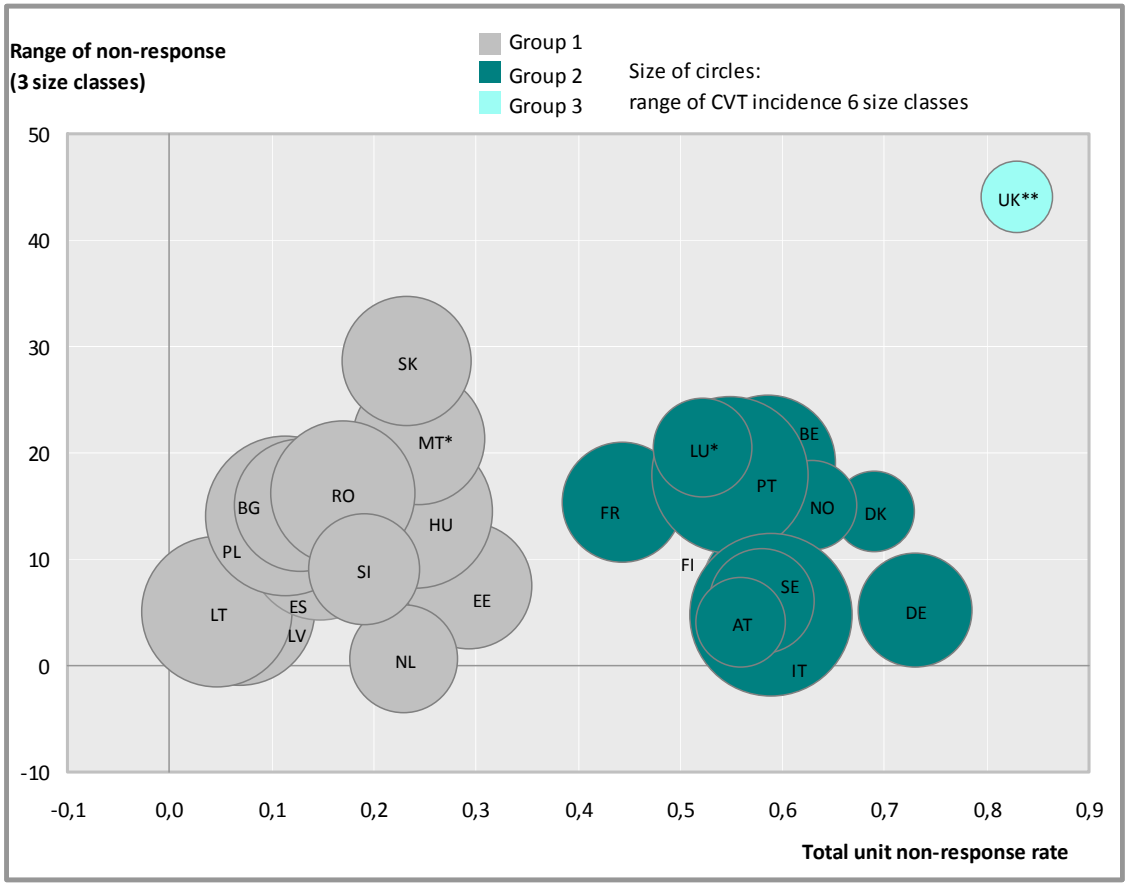
In Figure 64, the unit non-response rate is represented on the abscissa (X), as it is the fundamental point which informs about the existence of a bias as well as the scope of this bias. The response-rate range by three size categories on the Y-axis indicates the link between the probability of answering and the reference variable (maximum response rate – minimum response rate by size class). The third dimension, the difference of CVT incidence by size classes, indicates the link between CVT behaviour and the reference variable (maximum incidence – minimum incidence by six size classes), and is represented by the size of the circles. Note that this third dimension is measured with data from the Eurostat online database, which means after the occurrence of the potential bias (CVT incidence in six size classes considered even if only three size-class stratification was implemented in the country).

If three conditions are combined, a non-response bias is suspected; if the response rate is low and linked to enterprise size which is linked to CVT behaviour.

Note that a bias could also exist unobserved if it is not linked to a characteristic of the enterprise for which data are available. An obvious link is interest in CVT. Therefore, 'false positives' can exist, while 'false negatives' are probably lower. Further, this diagrammatic approach does not take care of the direction of the bias.

Figure 64 shows three groups of countries. The first group contains 12 countries (Bulgaria, Estonia, Spain, Latvia, Lithuania, Hungary, Malta, the Netherlands, Poland, Romania, Slovenia and Slovakia). This group shows response rates over 70 %, and, except in Malta, Romania and Slovakia, quite homogeneous. Table 26 gives information on response rates and CVT incidence for these three particular cases.

Figure 64 **Evaluation of potential significant bias in CVTS3**



* For Luxembourg and Malta, the range of incidence was calculated by three size class (underestimation).
** For the UK the response-rate range is calculated as achieved sample/target sample.
*** Relevant information not available for the Czech Republic, Ireland, Cyprus and the UK.
Source: National quality reports; Eurostat CVTS3; Céreq calculations.

Table 26 **Response rates and CVT incidence in Malta, Romania and Slovakia (%)**

	Malta		Romania		Slovakia	
	Response rate	**CVT incidence**	**Response rate**	**CVT incidence**	**Response rate**	**CVT incidence**
Total	76	46	83	40	77	60
Small (10-49)	74	40	76	36	64	56
Medium (50-249)	77	65	89	50	87	74
Large (250 and more)	96	87	92	74	93	92

Source: National quality reports; Céreq compilation.

In Malta, the response-rate range is due to the high response level for enterprises with 250 or more employees. The response rate does not seem to be too strongly linked to CVT incidence in enterprises with less than 250 employees, which is the significant part of the sample (97 % of enterprises in Malta have less than 250 employees, the same as in the sample). In Romania, both incidence and response rate are correlated with size, however Romania did correct for non-response. In Slovakia, both incidence and response rate are

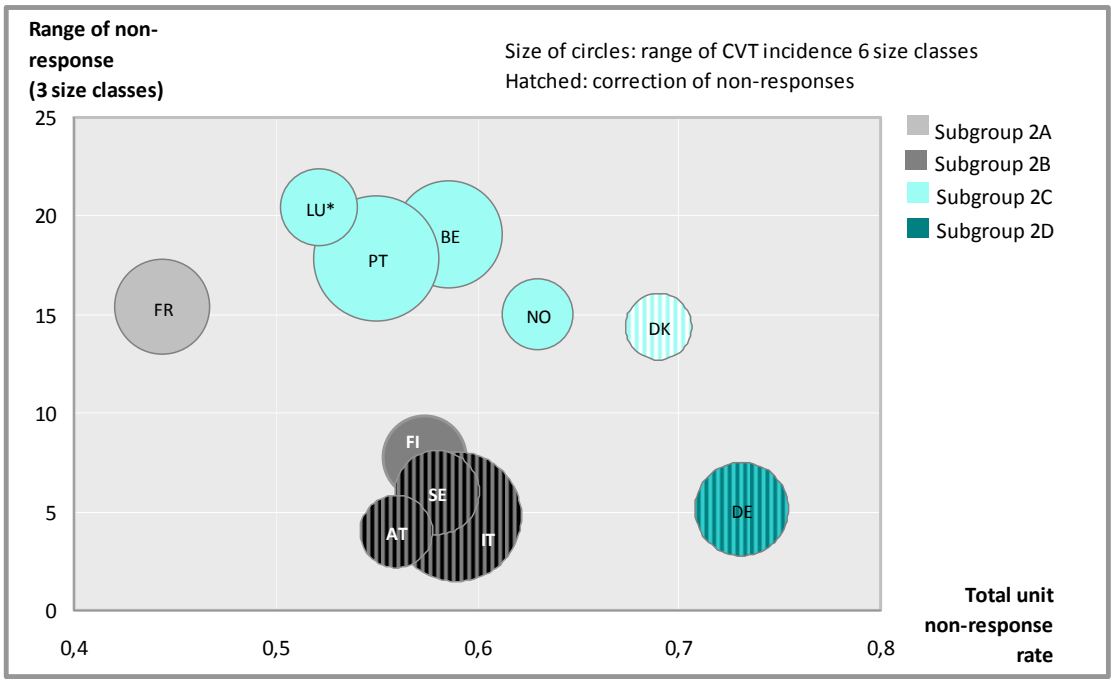
also correlated with size but, in this case, there is no correction of non-response. Nevertheless, Slovakia implemented a detailed stratification with six size classes and 30 NACE categories, and it can be assumed that the reweighting process was detailed enough to confine the bias.

Group 2 requires a refined analysis. The existence of non-response correction is indicated in Figure 65 (see hatched circles). Several subgroups emerge.

The first subgroup 2A includes France, where the response rate is quite satisfactory (56 %), but depends on enterprise size by a non-linear link (10-49: 50 %; 50-249: 66 %; 250 and over: 60 %). The stratification by six size classes permits better control of non-response bias. Comparison with CVTS2 should be carried out by size class only, because of an underestimation in the number of small enterprises in CVTS2.

The second subgroup 2B includes four countries: Italy, Austria, Finland, and Sweden. For these, the response rate does not seem to depend on enterprise size. Training behaviour (at least in terms of incidence) seems to be homogeneous according to the size classes. As a result, there is no argument to suspect a bias expressed through enterprise size. Nevertheless, the overall response rate could be higher. The analysis takes these correlations (size versus response rate and size versus incidence) only as an imperfect and asymmetric indicator. Hence, the existence of the two correlations simultaneously leads to the suspicion of bias, but their inexistence cannot indicate there is no bias. This is due to the lack of information on non-respondent units

Figure 65 **Evaluation of potential non-response bias, focus group 2**



* For Luxembourg, the range of incidence was calculated by three size class (underestimation).

Source: National quality reports; Eurostat CVTS3; Céreq compilation.

The third subgroup 2C includes five countries: Belgium, Denmark, Luxembourg, Norway and Portugal. In Denmark, non-response is very high and linked to size. However, larger enterprises which are more likely to provide training appear more reluctant to answer; a correction of non-response was implemented. In addition, incidence is very high (85 % to 99 %) so the range is less significant. Because of homogeneity of behaviour and high indicators, the impact can be considered as limited.

In Luxembourg, the overall response rate is 48 % (from 44 % for 10-49 enterprises to 64 % for enterprises with 500 employees and over). A three-size class stratification was implemented and there is no correction for non-response. The data collection was stopped when a minimum of responses was achieved in a stratum. The range of incidence is not available by six size classes. Finally, it appears difficult to draw conclusions on the homogeneity of enterprise behaviour.

In Belgium, there was no correction of non-response. Because of heterogeneous behaviour and its middle position in terms of response and range, there are reservations.

In Portugal, 56 % stratum-switching indicates that the quality of the statistical business register might be questionable. The response rate is low and correlated to size class. Incidence and size class are also correlated. Some reservations exist due to heterogeneous behaviour.

The Norwegian NSI said, ‘unit response rate is not acceptable’ and comparability is not warranted. The statistical unit is the local unit and not the enterprise. This has a strong impact on comparability, in particular on incidence, which is very high, so the range is less significant (86 to 95).

The fourth subgroup 2D is Germany. Here there is a rather low response rate of 27 % and considerable stratum switching (23 %). A more detailed stratification (30*6) was implemented, hence the bias is more controlled. In addition, Germany fitted a non-response model to predict the probability of answering according to size. According to this test, there was no significant correlation between size and the probability of responding, so the correction would have had no effect/is not necessary ([41]). There is no indication of a non-response bias by size class.

In Figure 64, the third group only includes the UK and appears very specific. The sampling method seems similar to a quota method. The random selection of the total sample from the sampling frame (population: 178 965; total sample: 29 212 = 16 %) plays a minor role compared to the non-random selection of the achieved sample from total sample. Because a non-random selection leads to similar problems as non-response (selection bias), the comparability of the figures might be problematic.

This specific analysis tried to summarise CVTS3 data quality aspects, and results in four categories of countries, although several other aspects of data quality were not considered in this analysis. Therefore, this assessment should assist users when analysing and interpreting the data but the impact of quality problems on the results is dependent on the specific field of analysis, the methods used, and the countries included in the analysis. This

([41]) Because the correction for a possible non-response bias was tested, but would not have had an effect, Germany is shown as having a correction on non-response in Figure 65.

quality assessment has highlighted potential problems, but it is up to users to decide on how to use and analyse the data, considering quality aspects. The four categories of countries are as follows:

(1) no reservations: Bulgaria, Estonia, Spain, France, Latvia, Lithuania, Hungary, Malta, the Netherlands, Poland, Romania, Slovenia, Slovakia;
(2) recommendation to use only relative figures for the basic indicators: Germany and Luxembourg;
(3) indication that the basic indicator precision is relatively low: Belgium, Denmark, Italy, Austria, Portugal, Finland, Sweden;
(4) recommendation not to use the CVTS3 data in comparative analyses: Norway and the UK.

Note that four countries (the Czech Republic, Ireland, Greece and Cyprus) were not included in this analysis, since the necessary information was unavailable at the time of writing.

7.9. Recommendations for improving the quality of the survey

The evaluation of CVTS3 shows several opportunities to improve the survey and its data quality; some have already been mentioned in this assessment. The following summary recommendations aim to support Eurostat's work but are limited to aspects of the survey approach and some methodological issues. They would need to be discussed in more detail, further specified, and agreed at European level. Additional efforts are not as significant as they may appear at first: in most cases it is proposed to standardise or harmonise known methods and procedures, and to consolidate at national and Eurostat levels.

The following recommendations have different importance and impact; their order does not correspond to these criteria.

7.9.1. Accordance with the common survey approach

The European manual was generally followed but there were deviations for some key issues. The whole survey approach, starting with the planning, could be refined to reduce these deviations at an early stage. The objective is to enhance the concrete effectiveness of the European manual: 'all deviations from the common agreed survey approach and survey guidelines must be clearly stated in the national sampling plan and be agreed in advance with Eurostat' (Eurostat, 2006, p. 46).

It seems that countries have different interpretations of the prescriptions of the manual, with not all deviations reported to the European Commission in the grant agreements. After three rounds of CVTS, major deviations that impact comparability across countries and over time could be excluded, while respecting conditions and proven methods and principles nationally.

One way of doing this is pre-checking the survey process, for example through a generic Excel tool ([42]). This tool would focus on and summarise in various forms some critical issues at the planning stage and would allow Eurostat to check the impact on comparability at European level and to follow-up the process. The final survey approach could be agreed on by Eurostat and partner countries.

Recommendation 1: comparability

Preliminary check of the survey approach and planned process in countries by Eurostat for agreement.

7.9.2. Response burden and questionnaire

Requested data is frequently not easily available as needed (e.g. level of detail) because it is not recorded in enterprise information systems. A good practice could be to consult some potential respondents (enterprises) when preparing the questionnaire. In some countries, pre-tests or laboratory tests were done, however this happened at a stage when most of the questions were already 'frozen' at European level.

Some of the financial data requested from enterprises is readily available from their accounts. Correspondence between some of the data requested and their availability in other national and/or European information systems should be considered (quality control).

Recommendation 2: burden

Consult potential respondents during questionnaire development

Recommendation 3: burden comparability

Find correspondence between CVTS data and other information systems.

7.9.2.1. *Translation/adaptation of the questionnaire*

The pre-checking process for the survey could involve completing a table which indicates for all questions:

(a) if the question is an exact translation;
(b) if it is adapted to the national context and why (an exact retranslation of the national adaptation in English should be provided);
(c) if data for this question come from another source and why (concept and definition of the item in the external source);
(d) if it is dropped without replacement and why.

([42]) A first version of the Excel tool was delivered to Eurostat.

Recommendation 4: comparability

Request a translation report for the questionnaire (included in the checking tool/form).

7.9.2.2. *Complement information needed on CVT by results from other surveys*

The relevance of the CVTS3 questions could be examined for a better combination of individual surveys (such as the adult education survey and labour force survey) and enterprise surveys (CVTS). As a precondition, harmonisation of definitions and concepts is needed (starting with simple things such as the size classification (10 and more/11 and more), but also a concept of employer-provided training in the adult education survey that would be coherent with the established concept of employer-provided training in CVTS. This might finally result in a 'lighter' CVTS questionnaire.

Recommendation 5: burden

Increase the adult education survey, labour force survey and CVTS complementarities.

7.9.2.3. *Insert data from other sources directly into CVTS*

As the use of external sources was not fully documented in the quality reports, their consistency with CVTS concepts and definitions could not be checked. The use of data from other sources for important variables should be explicitly justified; the concepts and definitions need to be compared.

Recommendation 6: comparability

Use external sources but check their consistency and comparability with CVTS.

7.9.3. Concepts

7.9.3.1. *Training events versus training participants*

It is recommended to ask for 'training events' in addition to 'participants' to avoid confusion. Moreover, the number of training events can be used for imputation of participants with more accuracy.

Recommendation 7: quality comparability

Always ask for the number of participants. If no response, ask for training events. Eurostat should agree with countries on guidelines for recalculating participants based on events.

7.9.3.2. *IVT*

Given the first experience of collecting this data in CVTS3, the conceptual framework of this important subject needs to be revised and complemented by an operational definition of any vocational training beyond CVT, understandable by respondents and comparable across countries. It might also be worth splitting the question on participants into subgroups, such as apprentices and trainees, reflecting different frameworks for training provision beyond CVT in countries.

> **Recommendation 8: quality**
> Improve the conceptual framework for training beyond CVT and develop guidelines for implementation.

7.9.4. Sampling

7.9.4.1. *Sample size calculation*

Eurostat's sample size calculation should be refined by taking into account the unit response rates by stratum.

7.9.4.2. *Stratification*

Because both unit response rate and training provision are frequently connected to enterprise size, stratification in six size classes leads to a more accurate reweighting. The use of six size classes might be recommended, where country size allows.

> **Recommendation 9: quality comparability**
> Use six size classes for stratification considering country size; calculate the sample size by using the anticipated response rate by stratum.

Good survey quality requires that the sampling frame is of good quality and is up to date. Countries should control and report the date of the update of the stratification variables (NACE_SP and SIZE_SP). Countries might drop the question on the NACE sector of the enterprise, and insert the variable using the statistical business register, considering quantitative measures regarding the stability of NACE classes in the register.

> **Recommendation 10: quality**
> Control and report the date of updating stratification variables.

The quality report should contain more detailed information on reasons for non-response (not possible to contact due to wrong address and/or phone number, impossible to reach the relevant respondent, refusals, etc.).

Recommendation 11: quality
Analyse and report the causes of non-response.

7.9.4.3. *Statistical units*

The statistical unit to be used in countries should be checked by Eurostat before the survey. Previous experience shows that using 'local units' does not improve the response rate significantly, but results in problems of comparability. Using the 'enterprise' as the statistical unit should be a requirement (according to the European Parliament/Council regulation).

Nevertheless, using the enterprise as the statistical unit leads to some practical problems when information from enterprises/local units is consolidated at higher level where training policy is defined. Eurostat should define and recommend a harmonised procedure if the information/data comes from a group of enterprises or from a local unit.

Recommendation 12: quality
Strong prescription of the statistical unit; define common methods to manage responses from groups or local units.

7.9.5. Improving response rates

The unit response rate is critical to final quality. Moreover, non-response bias affects the key indicators. To reduce this bias, two actions should be taken simultaneously:

(a) increase the response rate to at least 50 % in every country;
(b) control the impact of non-response; use sufficiently detailed stratification to confine the impact of non-response.

7.9.5.1. *Increase the response rate*

Adapt the data collection methods to the preferences of enterprises: face-to-face interviewing increases response rates and data quality. The use of CAPI/CATI/CAWI should be reinforced.

Extend the data collection period and intensify the follow-up of non-respondents. Non-response bias is strongly related to insistence on data delivery. Extending the data collection period and defining a high 'coefficient of persistence' would both increase the response rate and reduce the bias.

Keep the number of additional national questions at a minimum. Additional questions should not distort the flow of the European questionnaire, and should preferably be at the end of the questionnaire.

In countries with generally low response rate in CVTS, the survey might have a compulsory status, if possible. National legislation or conditions might prevent such an approach.

Recommendation 13: quality

Eurostat should control the data collection process and ask countries for special measures if the response rate is low.

7.9.5.2. *Control the non-response bias*

In several countries, training provision and the willingness to answer depends on the size of the enterprise. Too broad a sample stratification can have a significant impact on reweighting. Two non-exclusive ways are possible:

(a) stratification in six size classes is an *ex ante* partial response to the problem to ensure a sufficient number of observations in a homogeneous stratum. It results in an increase of the sample size and, consequently, the costs. However, the use of 'optimal allocation' methods would maximise (ensure) precision, given the six size classes and a fixed budget;

(b) correction of non-response is an *ex post* treatment which adapts weights to the probability of answering. Non-response analysis would provide important basic characteristics of non-respondents for adapting weights (trainer/non-trainer). Several methods can be used, but consistency depends on the number of final real observations.

Recommendation 14: quality

Use six size classes for stratification considering country size.

Recommendation 15: quality

Suggest a non-response analysis and treatment of non-response when response rate is less than 70 %.

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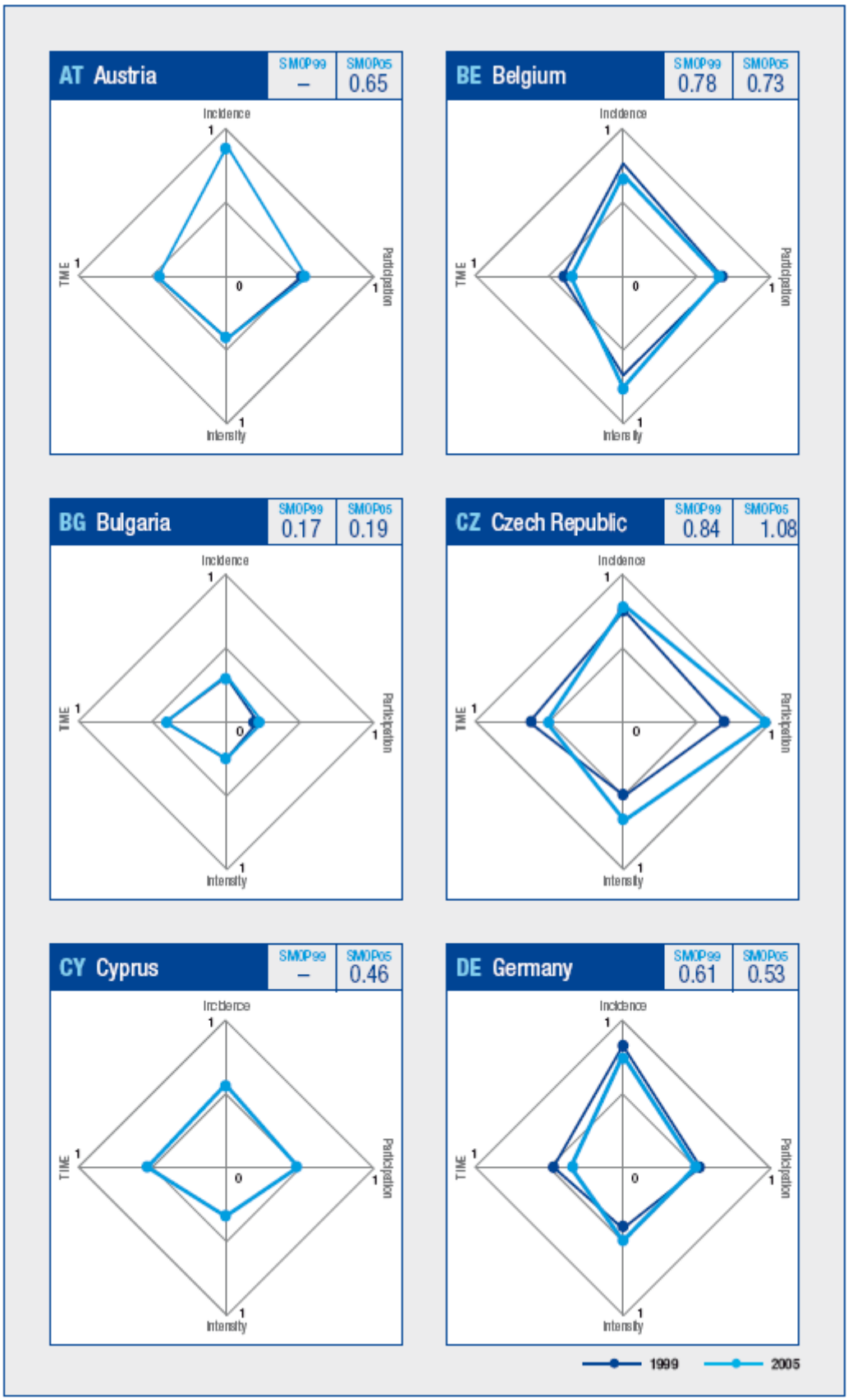
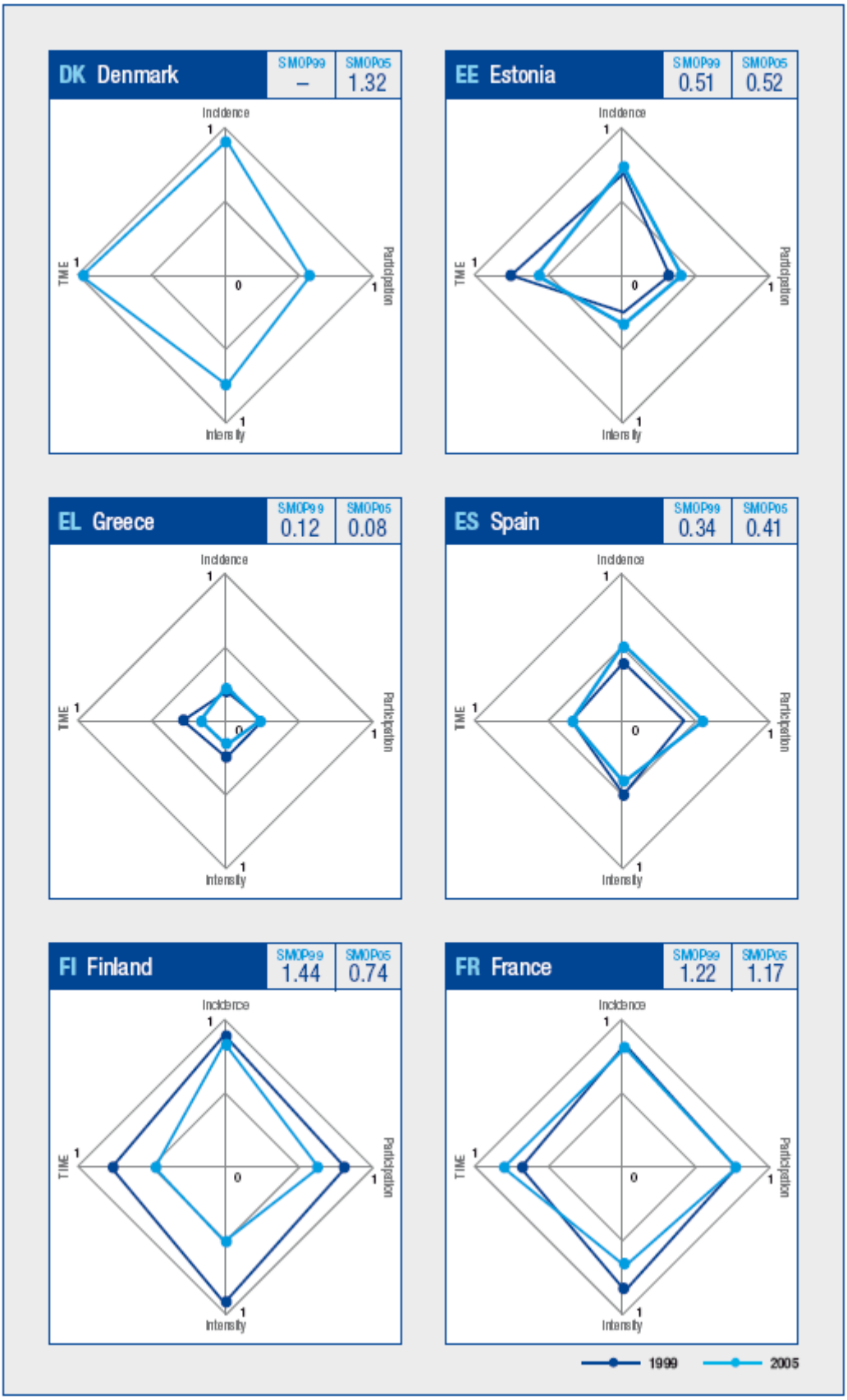
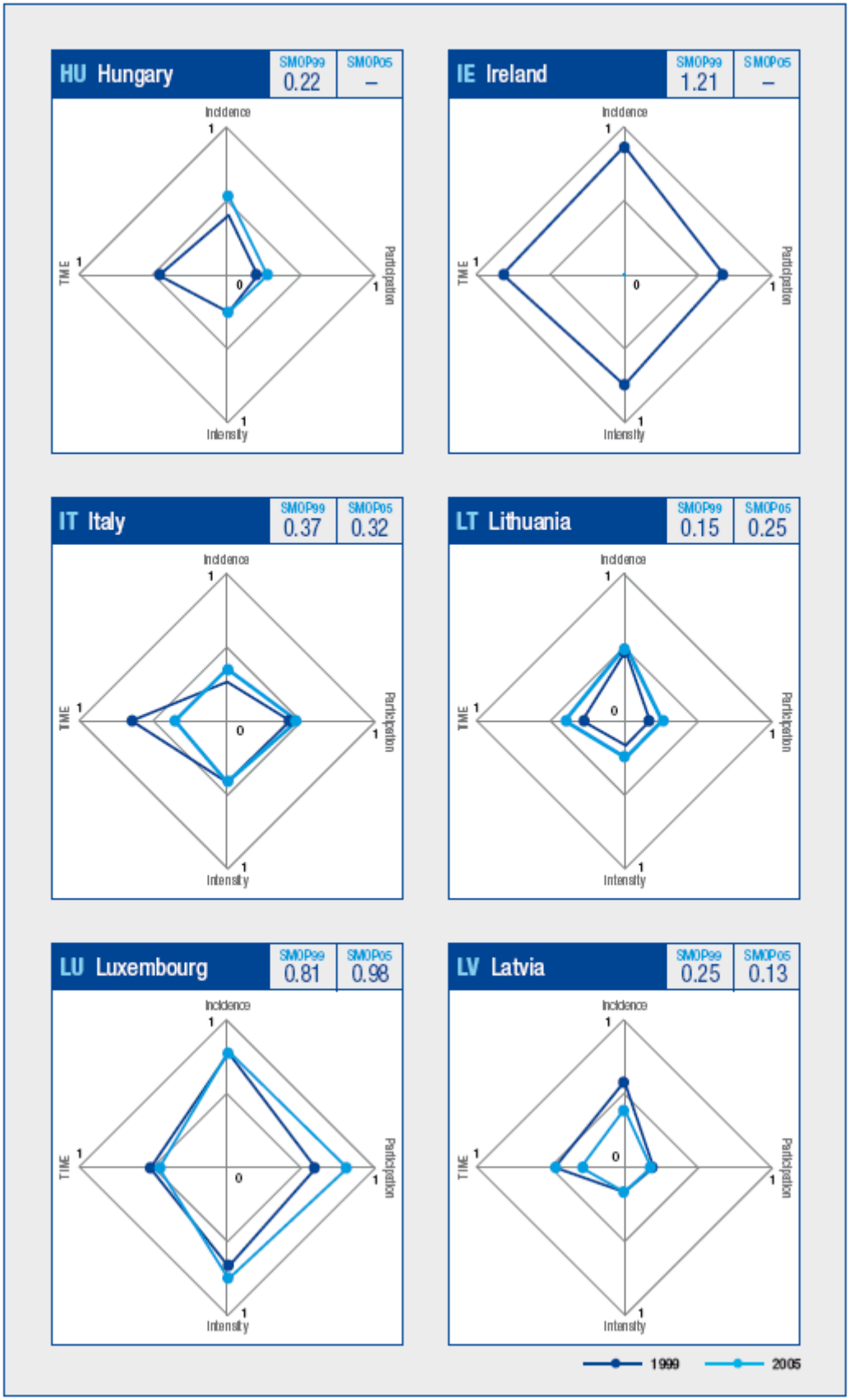
List of abbreviations

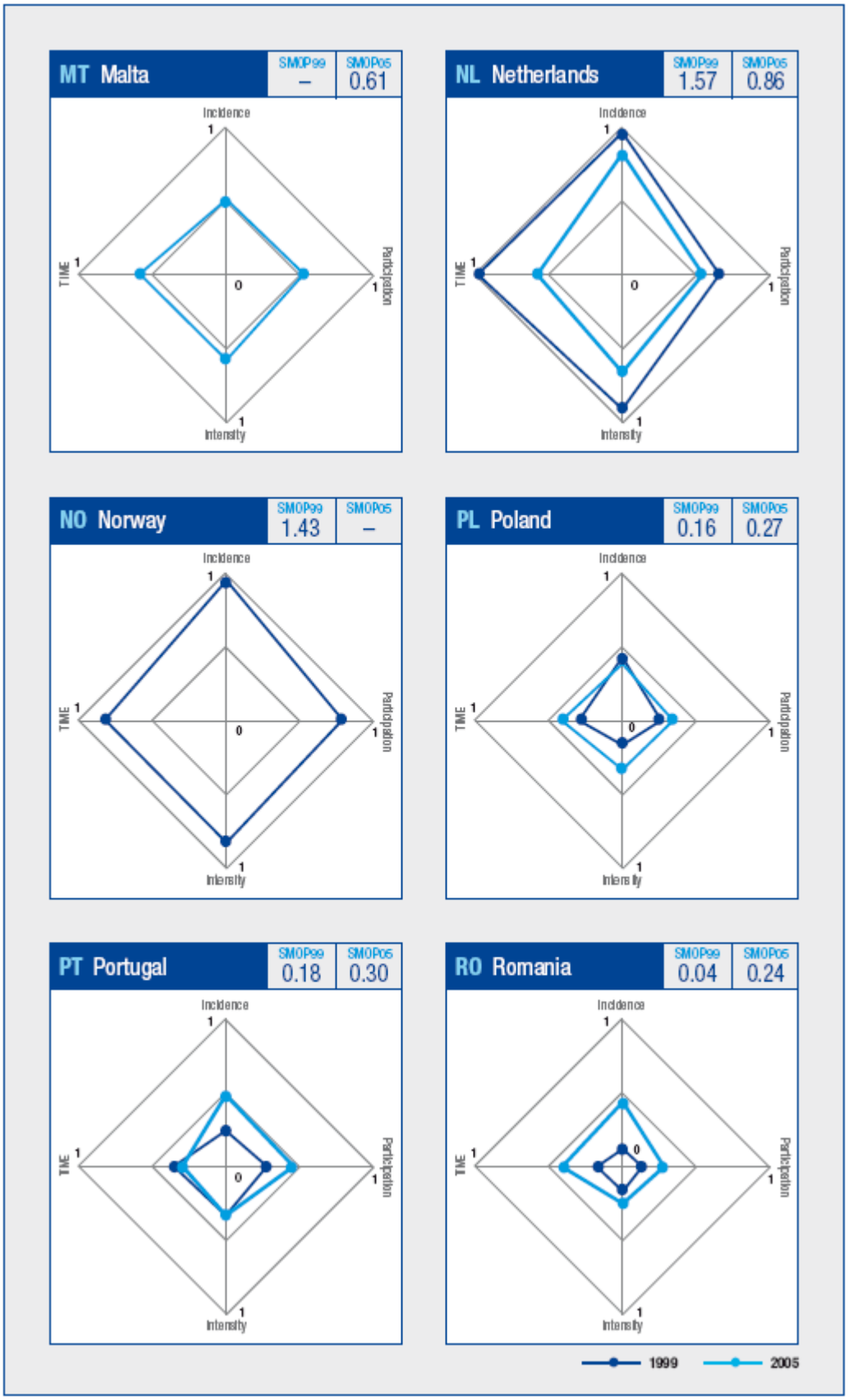
CVT	continuing vocational training
CVTS	continuing vocational training survey
CVTS2	second continuing vocational training survey
CVTS3	third continuing vocational training survey
IVT	initial vocational training
PAC	personnel absence costs
PPS	purchasing power standard
SME	small and medium-sized enterprise
TME	total monetary expenditure

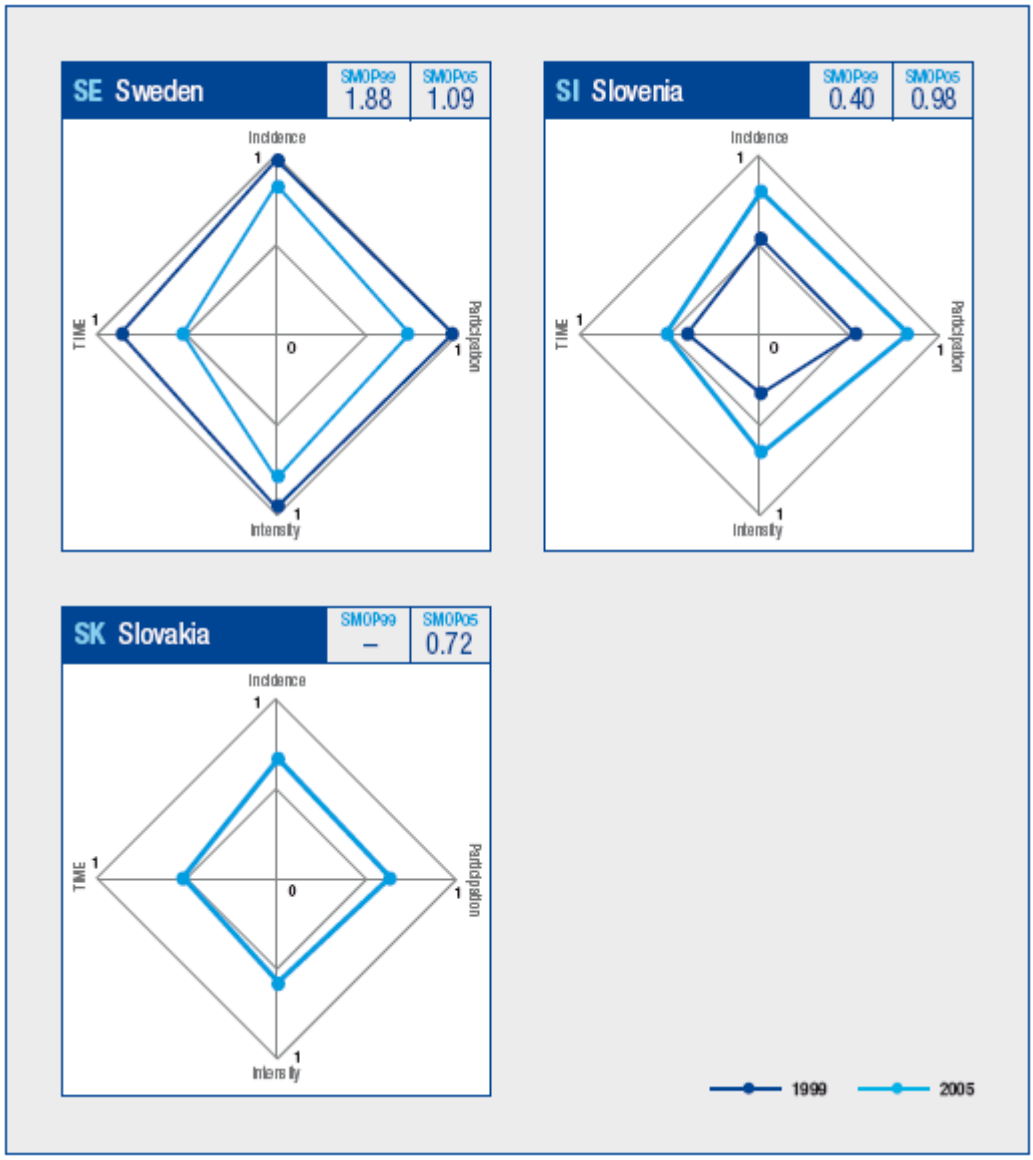
Annex 1. Country radar charts




DK Denmark
SMOP99 –
SMOP05 1.32
EE Estonia
SMOP99 0.51
SMOP05 0.52
EL Greece
SMOP99 0.12
SMOP05 0.08
ES Spain
SMOP99 0.34
SMOP05 0.41
FI Finland
SMOP99 1.44
SMOP05 0.74
FR France
SMOP99 1.22
SMOP05 1.17
Incidence
Participation
Intensity
TIME
1
0
1999
2005


HU Hungary
SMOP99 0.22
SMOP05 –
IE Ireland
SMOP99 1.21
SMOP05 –
IT Italy
SMOP99 0.37
SMOP05 0.32
LT Lithuania
SMOP99 0.15
SMOP05 0.25
LU Luxembourg
SMOP99 0.81
SMOP05 0.98
LV Latvia
SMOP99 0.25
SMOP05 0.13
Incidence
Participation
Intensity
TIME
1
0
1999
2005


MT Malta
SMOP99 –
SMOP05 0.61
NL Netherlands
SMOP99 1.57
SMOP05 0.86
NO Norway
SMOP99 1.43
SMOP05 –
PL Poland
SMOP99 0.16
SMOP05 0.27
PT Portugal
SMOP99 0.18
SMOP05 0.30
RO Romania
SMOP99 0.04
SMOP05 0.24
Incidence
Participation
Intensity
TIME
1
0
1999
2005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SMOP99 1.88
SMOP05 1.09
SI Slovenia
SMOP99 0.40
SMOP05 0.98
SK Slovakia
SMOP99 –
SMOP05 0.72
Incidence
Participation
Intensity
TIME
1
0
1999
2005

Annex 2. List of variables and variable descriptions

Variable	Variable description
COUNTRY	Country code
ENTERPR	Enterprise ID
WEIGHT	Two decimal positions – use '.' as decimal separator
NACE_SP	Sampling plan NACE – category economic activity
SIZE_SP	Sampling plan size group
NSTRA_SP	Sampling plan – number of enterprises in the stratum defined by NACE_SP and SIZE_SP, i.e. the population
N_SP	Sampling plan – number of sampled enterprises from the sample-frame in the stratum defined by NACE_SP and SIZE_SP
SUB_SP	Sub-sample indicator, shows if enterprise belongs to sub-sample
N_RESPST	Number of responding enterprises in the stratum defined by NACE_SP and SIZE_SP, i.e. the population
N_EMPREG 6	Number of persons employed according to the register
RESPONSE	Response indicator
PROC	Record data collection method
IDLANGUA	Language identification
IDREGION	Region identification NUTS – level 1
EXTRA1	Extra variable 1
EXTRA2	Extra variable 2
EXTRA3	Extra variable 3
A1	Actual NACE code
A2tot04	Total number of persons employed 31.12.2004
A2tot05	Total number of persons employed 31.12.2005
A2m05	Total number of males employed 31.12.2005
A2f05	Total number of females employed 31.12.2005
A3a	Persons employed – under 25 years of age
A3b	Persons employed – 25 to 54 years of age
A3c	Persons employed – 55 years and older
A4	Total number of hours worked in the reference year 2005 by persons employed
A4m	Total number of hours worked in the reference year 2005 by male persons employed
A4f	Total number of hours worked in the reference year 2005 by female persons employed
A5	Total labour costs (direct + indirect) of all persons employed in the reference year 2005
A6	Significantly new technologically-improved products or services or methods of producing or delivering products and services during the reference year
B1a	Internal CVT courses
B1b	External CVT courses

B2aflag	Flag – on-the-job training
B2a	Participants in other forms of CVT – on-the-job training
B2bflag	Flag – job rotation
B2b	Participants in other forms of CVT – job rotation, exchanges, secondments or study visits
B2cflag	Flag – learning or quality circles
B2c	Participants in other forms of CVT – learning or quality circles
B2dflag	Flag – self-directed learning
B2d	Participants in other forms of CVT – self-directed learning
B2eflag	Flag – attendance at conferences, etc.
B2e	Participants in other forms of CVT – attendance at conferences, etc.
B3a	CVT courses for persons employed in the previous year 2004
B3b	Expect to provide CVT courses for persons employed during the next year 2006
B4a	Other forms of CVT for persons employed in the previous year 2004
B4b	Expect to provide other forms of CVT for persons employed during the next year 2006
C1tot	Total CVT course participants
C1m	CVT course participants – male
C1f	CVT course participants – female
C2a	CVT participants – under 25 years of age
C2b	CVT participants – 25 to 54 years of age
C2c	CVT participants – 55 years and older
C3tot	Paid working time (in hours) spent on all CVT courses
C3i	Paid working time (in hours) for internal CVT courses
C3e	Paid working time (in hours) for external CVT courses
C4tot	Paid working time (in hours) spent on all CVT courses
C4m	Paid working time (in hours) in CVT courses – male
C4f	Paid working time (in hours) in CVT courses – female
C5a	Paid working time in hours – languages, foreign (222) and mother tongue (223)
C5b	Paid working time in hours – sales (341) and marketing (342)
C5c	Paid working time in hours – accounting (344) and finance (343), management and administration (345) and office work(346)
C5d	Paid working time in hours – personal skills/development (090), working life (347)
C5e	Paid working time in hours – computer science (481) and computer use (482)
C5f	Paid working time in hours – engineering, manufacturing and construction (5)
C5g	Paid working time in hours – environment protection (850) and occupational health and safety (862)
C5h	Paid working time in hours – Personal services (81), transport services (84), protection of property and persons (861) and military (863)
C5i	Paid working time in hours – other training subjects
C6a	Paid working time (in hours) – schools, colleges, universities and other higher education institutions
C6b	Paid working time (in hours) – public training institutions (financed or guided by the government; e.g. adult education centre)
C6c	Paid working time (in hours) – private training companies

C6d	Paid working time (in hours) – private companies whose main activity is not training, (equipment suppliers, parent/associate companies)
C6e	Paid working time (in hours) – employers' associations, chambers of commerce, sector bodies
C6f	Paid working time (in hours) – trade unions
C6g	Paid working time (in hours) – other training providers
C7aflag	Flag – fees
C7a	CVT course costs – fees and payments for courses for employees
C7bflag	Flag – travel costs
C7b	CVT course costs – travel and subsistence payments
C7cflag	Flag – labour costs trainers
C7c	CVT course costs – labour costs of internal trainers
C7dflag	Flag – training centre and teaching materials, etc.
C7d	CVT course costs – training centre, or rooms and teaching materials for CVT courses
C7sflag	'Sub-total only' flag
C7sub	CVT costs sub-total
PAC	Personal absence cost – to be calculated (PAC=C3tot*A5/A4)
C8aflag	Flag – CVT contributions
C8a	Contributions CVT
C8bflag	Flag – CVT receipts
C8b	Receipts CVT
C7tot	Total cost CVT – to be calculated (C7sub + C8a -C8b)
C9a1	Migrants and ethnic minorities – employed
C9a2	Migrants and ethnic minorities – specific courses
C9b1	Persons with a disability – employed
C9b2	Persons with a disability – specific courses
C9c1	Persons without formal qualifications – employed
C9c2	Persons without formal qualifications – specific courses
D1	Own or shared training centre
D2	Person or unit within your enterprise with responsibility for the organisation of CVT
D3	Enterprise makes use of an external advisory service
D4	Enterprise implements regular formal procedures with the objective of evaluating the future skills needs of the enterprise
D5	Conduct structured interviews with its employees with the objective of establishing the specific training needs of persons employed
D6	Planning of CVT in the enterprise leads to a written training plan or programme
D7	Annual training budget, which includes provision for CVT
D8	Measure the satisfaction of the persons trained after the training
D9	After the training assess the trainees to establish whether the targeted skills were in fact successfully acquired
D10	Enterprise assesses the participants' occupational behaviour and change in performance following the training
D11	Measures the impact of training on business performance by using indicators

D12	National, sectoral or other agreements between the social partners, which influenced the CVT plans, policies and practices
D13	Existence of a formal structure
D13a	Role of formal structure – objective and priority setting for CVT activities
D13b	Role of formal structure – establishing the criteria for the selection of the target population who should participate in CVT
D13c	Role of formal structure – the subject matter of the CVT activity
D13d	Role of formal structure – the budgeting process related to CVT
D13e	Role of formal structure – the procedure for the selection external CVT providers
D13f	Role of formal structure – evaluation of training outcomes
D14a	Publicly-funded advisory service aimed at identifying training needs and/or developing training plans
D14b	Financial subsidies towards the costs of training persons employed
D14c	Tax relief on expenditure on training persons employed
D14d	Procedures to ensure the standards of trainers (e.g. by national registers, assessment, etc.)
D14e	Provision of recognised standards and frameworks for qualifications and certification
D15a	The high costs of CVT courses
D15b	The lack of suitable CVT courses in the market
D15c	Difficulties in assessing the enterprise's CVT needs
D15d	A major training effort was realised in a previous year
D15e	The high workload and the limited available time of persons employed
D15f	The current level of training is appropriate to the enterprise’s needs
D15g	A higher focus on IVT than CVT
D15h	Other reasons
E1a	The existing skills and competences corresponded to the current needs of the enterprise
E1b	The enterprise’s preferred strategy was to recruit individuals with the required skills and competences
E1c	The enterprise had difficulties in assessing its needs concerning CVT
E1d	The lack of suitable CVT courses in the market
E1e	The costs of CVT courses were too high for the enterprise
E1f	The enterprise preferred to focus on IVT rather than CVT
E1g	An investment in CVT was made in a previous year and did not require to be repeated in 2005
E1h	The persons employed had no available time to take part in CVT
E1i	Other reasons
F1tot05	Total number of IVT participants in the enterprise during 2005
F1m05	Total number of male IVT participants in the enterprise during 2005
F1f05	Total number of female IVT participants in the enterprise during 2005
F2aflag	Flag – IVT individual labour costs
F2a	IVT costs – labour costs of individuals registered on an IVT activity
F2bflag	Flag – IVT other costs
F2b	IVT costs – other costs – training fees, travel costs, teaching materials, costs of training centres, etc.

F2cflag	Flag – IVT trainer or mentor labour costs
F2c	IVT costs – labour costs of IVT trainers or mentors
F3aflag	Flag IVT contributions
F3a	Contributions IVT
F3bflag	Flag IVT receipts
F3b	Receipts IVT
F2tot	Total IVT costs (F2b + F3a -F3b)

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The European continuing vocational training survey (CVTS) is a unique source of internationally comparable data on training in enterprises. This report provides the first European detailed comparative analysis of the results of the third survey (CVTS3, 2005).

Radar charts are used to assess national CVT performance in incidence, participation, intensity and expenditure. The analysis reveals that other forms of training in enterprises complements rather than competes with the more traditional courses.

The concern about enterprises not providing training is substantiated from a social and economic perspective. In-depth analysis of CVTS3 data shows that professional management of training, involvement of social partners and targeted public measures are crucial to fostering training. It also shows gaps in enterprises' perception of skills and training needs. As most enterprises do not change their training behaviour over time, triggering non-trainers to provide training remains a challenge.

Generally, policy measures to lower training costs remain of minor relevance to enterprises. Therefore, European and national policies should develop targeted financial instruments.

The report ends with a detailed quality evaluation of CVTS3 from the European perspective and gives various recommendations to improve the quality of the survey.

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