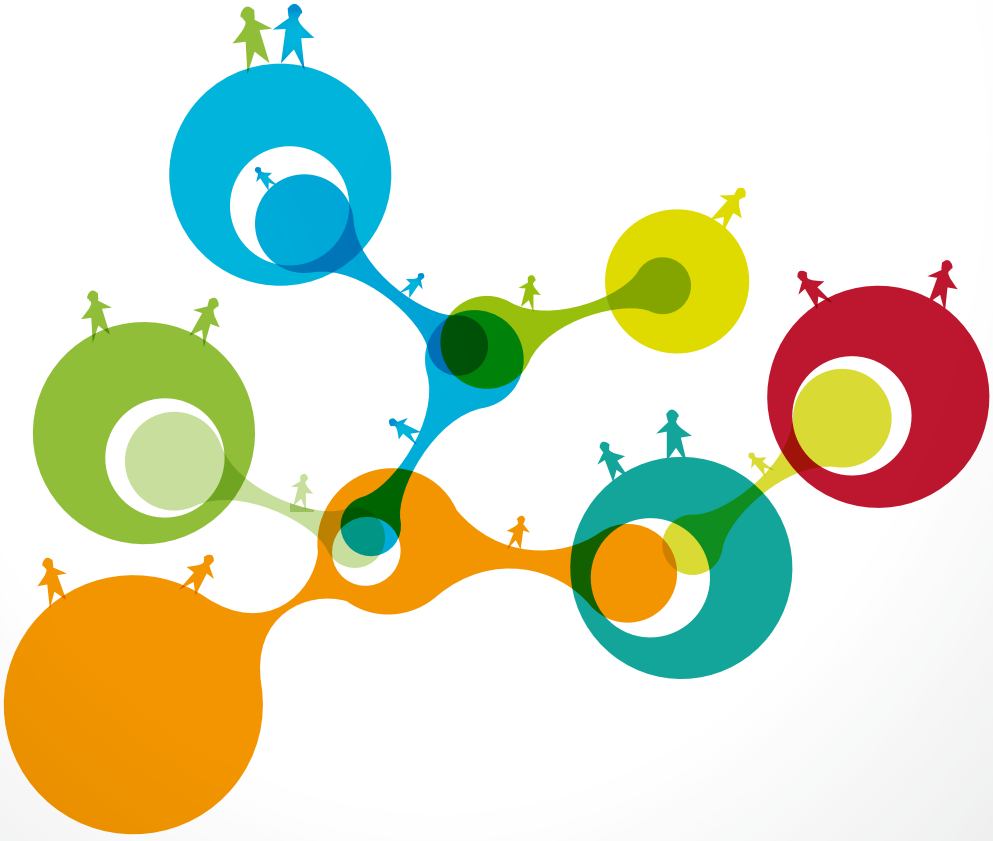
European Commission

ANALYTICAL PAPER

HOW DO PES ACT TO PREVENT UNEMPLOYMENT IN A CHANGING WORLD OF WORK?



Employment, Social Affairs and Inclusion

JANUARY 2019

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The European Network of Public Employment Services was created following a Decision of the European Parliament and Council in June 2014 (DECISION No 573/2014/EU). Its objective is to reinforce PES capacity, effectiveness and efficiency. This activity has been developed within the work programme of the European PES Network. For further information: http://ec.europa.eu/social/PESNetwork.

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in cooperation with ICF

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CONTENTS

1. INTRODUCTION

Technological progress (especially robotisation and digitalisation) has quickly changed labour markets and the very nature of work and employment contracts over the past decade, and this has implied profound changes in labour market risks.

At a European level, the Council Recommendation of 20 December 2012 on the validation of non-formal and informal learning (2012/C 398/01)[1] is already addressing some of the challenges by promoting a 'skills audit' for at-risk workers and jobseekers, ideally within six months of an identified need. Furthermore, the European Pillar of Social Rights[2] set out the key principles of fair and well-functioning labour markets, with a special focus on emerging types of employment deriving from new technologies and the digital revolution. These principles and rights cover the areas of employment, social protection, social inclusion, education and equal opportunities.

Public Employment Services (PES) clearly are a key actor to enable workers to build up the right skills and adapt to these new challenges throughout their working lives. The PES Network Board meeting in Tallinn, December 2017, has acknowledged this and emphasised the growing importance of preventing unemployment, focusing on the risk of recurrent unemployment as well as the loss of work due to skills gaps. One of the priorities that emerged in the PES Network Board Meeting is to reduce the lack of relevant skills such as digital skills.

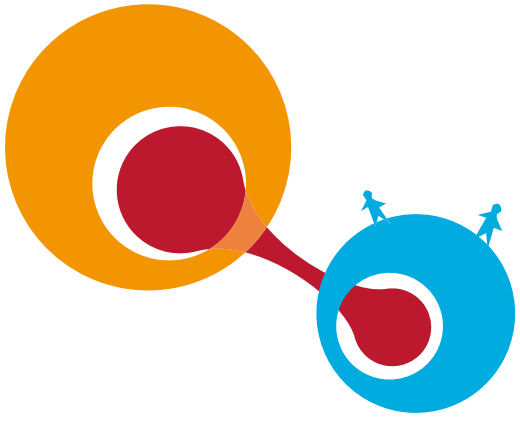
This Analytical Paper reviews PES activities in response to the recent acceleration of technological progress. The focus is especially on PES services for people currently in employment, but at risk of losing their jobs and becoming long-term unemployed.

To understand the challenges faced by PES, the second chapter reviews the recent empirical literature describing the labour market consequences of technological change. The third chapter briefly outlines how PES has responded to this challenge, depending on its remit and the institutional environment. The following chapters describe particular measures taken by a sample of PES as well as their transferability to other countries.

Based on an overview of what activities are currently undertaken by PES, the Analytical Paper will focus on four broad topics:

- Prediction of employers' future skills needs and changing occupational structures;
- Using competence-based job-matching tools to extract information on changing skills requirements;
- Channelling information about skills needs into jobseekers' career counselling and up-skilling; and
- Providing incentives for up-skilling activities.

To produce this Analytical Paper, we relied primarily on four case-study countries. Currently, there seem to be very few PES who explicitly aim at either preventing unemployment or becoming a service provider throughout a person's career. Thus, while many PES have developed a range of services which could facilitate career transitions, these are often not seen as a comprehensive 'system' or approach. In our selection of case-study countries, we sought to include those PES that have a relatively long tradition in preventing unemployment and working with employed jobseekers (the German PES, Bundesagentur für Arbeit (BA); and the Belgian-Flemish PES, Vlaamse Dienst voor Arbeidsbemiddeling en Beroepsopleiding (VDAB)), and PES which have recently initiated such programmes (the Maltese PES, Jobsplus; and the Estonian PES, the Estonian Unemployment Insurance Funds (Eesti Töötukassa)). The information collected here was largely based on interviews with PES experts, whose support is gratefully acknowledged.



1 https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32012H1222%2801%29

2 The Pillar was proclaimed on 17 November 2017 by the European Parliament, the Council and the Commission.

2. LITERATURE OVERVIEW: THE EFFECT OF TECHNOLOGICAL CHANGE ON LABOUR DEMAND

This section reviews the available literature on the impact of technological advancement on labour demand, focusing on different approaches taken by researchers and their implications for European PES. The goal of this literature review is to systematise and summarise different methods for measuring the share of employment/jobs that are potentially automatable as well as the composition of these jobs, the negative and positive impact of automation on employment, and the factors that drive the differences in effects between countries.

2.1 Estimating the share of jobs potentially affected by automation

McKinsey (2017) shows that the technological advancement will affect the employer demand for skills. By 2030, 3 to 14% of the global workforce will have to change their occupations and take up professional training. The employer demand for lower than secondary education is expected to decline in advanced economies, and demand for technical skills and secondary education in developing economies is likely to increase. In advanced economies, the jobs that require an ability to analyse information and jobs that give more control to employees over their own tasks are associated with higher cognitive skill requirements (as well as a higher education level) as proxied by literacy and numeracy; this requires policy makers to encourage more complex task structures (Pouliakas and Russo, 2015).

In the medium and long run, as the economy grows, the technological advancement can create new jobs. When technology advances, productivity increases which, in turn, pushes GDP per capita upwards. McKinsey (2017) provides a number of 'channels' through which the per capita GDP drives the labour demand and generates new jobs: higher expenditure on consumer goods, healthcare and education, technological goods, infrastructure, residential and commercial buildings, and energy resources (utilities) create new jobs in the respective industries. Chiacchio et al. (2018) claims that the displacement effect enforces the productivity effect in associated sectors. Chiacchio et al. (2018) suggest that a deeper insight into the previous industrial revolution showed that there was a negative impact on employment in the short run; however, in the long run, it created new jobs in associated industries such as the automobile sector.

Although there is a high potential of job automation in the world, the capabilities of technological advancement should not be overestimated. According to Arntz et al. (2016), a lack of qualified labour able to handle the new technologies, the price of the capital relative to labour, legal barriers, ethical considerations, and societal preference may hinder the speed of adoption of new technologies. Also, the substitution of labour by technology may be overestimated because the adoption of new technologies is a complicated and slow process. However, where substitution happens, affected workers may switch tasks, thus adjusting to the changing technological environment. A large pool of literature on the effect of technological change on employment and labour demand define it as the 'displacement effect' – workers being displaced by technology for performing the same tasks. Chiacchio et al. (2018) estimated that one additional robot per thousand workers reduces the employment rate by 0.18% points, on average, in six EU countries.[3] Frey and Osborne (2013) in their seminal paper estimated the probability of automations for occupation in the US and found that 47% of total employment was at high risk. Arntz et al. (2016) concluded that 9% of jobs are potentially automatable across the 21 EU countries.

Most of the literature takes one of the two main approaches to addressing the displacement effect of technological change on employment: task-based and occupation-based. The proponents of the occupation-based approach assume that the task structures within the same occupation are identical; thus, the whole occupations are subject to automation (this approach was first proposed by Frey and Osborne, 2013). Arntz et al. (2016), in contrast, claim that the occupation-based approach overestimates the automatability of jobs; hence, it depends on the structure of the tasks which may differ across different workplaces within the same occupation.

3 Finland, France, Germany, Italy, Spain and Sweden, the largest producers of industrial robots in the EU (85%).

McKinsey (2017) uses a different approach by estimating the share of hours in an occupation which is potentially subject to automation and assumes that the same share of jobs in that occupation is automatable. The report has predicted that, depending on occupation, up to one-third of global working hours may be automated by 2030.

When talking about task-based automation, scholars differentiate between routine and non-routine tasks. Frey and Osborne (2013) define the routine tasks as 'tasks that follow explicit rules that can be accomplished by machines', whereas non-routine tasks are tasks that are difficult to code. The tasks that require a high level of problem-solving skills, creativity, and personal interactions are also defined as non-routine tasks. Such activities cannot be ascribed to specific rules (Autor, 2015). McKinsey (2017) provides some examples of routine tasks such as operating machinery, preparing fast food and processing data, and non-routine tasks such as tasks performed by gardeners, plumbers and people who provide care and assistance (i.e. childcare, elderly care). Thus, by definition, routine tasks are more likely to be automated, as supported by Autor (2015), Goos et al. (2018) and McKinsey (2017). Frey and Osborne (2013) go a little deeper and differentiate between the two types of non-routine tasks: cognitive and manual. Non-routine cognitive tasks that are automated with the help of machine learning and big data can eliminate human bias in performing such tasks; and the automation of non-routine manual tasks by mobile robots is expected to increase due to constantly declining prices of robotics. In principle, more accurate specification of the job task increases the chances of its potential automation.

2.2 The challenge posed by technological change: cross-country differences

The literature discussed in this section covers most of the OECD countries and contrasts the results and suggests factors that may drive the differences. McKinsey (2017) emphasises that in advanced economies, occupations that are paid higher wages are at a lower risk of automation by 2030 due to increased demand for high-skill professionals, whereas the developing countries will not see a substantial rise in automation of middle-wage occupations because of the relatively lower labour price. The differences between countries are also related to how liberalised the labour market in the country is: more liberalised labour markets make it easier to fire a worker, which in turn enables higher staff turnover after the introduction of a new robot (Chiacchio et al., 2018). The countries that are subject to high levels of automation are associated with lower increases in shares of highly educated workers (Chiacchio et al., 2018).

According to Arntz et al. (2016), the cross-country differences in shares of automatability may be driven by differences in the structure of the tasks within the same occupation or industry; and varying task structures may be due to differences in workplace organisation (the lower the intensity of communication, the higher the risk of automation) and differences in adoption of new technologies (the larger the already existing investment in new technology, the lower the risk of automation). For example, jobs in Germany exhibit a lower intensity of communication. Arntz et al (2016) estimated that the highest share of workers at high risk of automation is in Germany and Austria (12%) and the lowest in Estonia (6%). The authors suggest that the differences in shares of automatable jobs between countries are due to the differences in task structure: in Germany, workers perform fewer automatable tasks than workers with the same education in Estonia; but because there are more lower- and medium-educated workers whose jobs are at high risk of automation in Germany, the workers in Germany are at a higher risk of automation than in Estonia.

McKinsey (2017) estimated the number of jobs that will be potentially lost and created by 2030 in Germany due to technological progress given the country's macroeconomic context. Nine million jobs – 24% of current working hours – will be potentially automated by 2030. However, projected per capita GDP growth rates will increase consumer expenditure and increase the labour demand in corresponding industries; and the ageing population in Germany will be likely to drive job creation in the healthcare industry. Thus, around 11 million jobs are likely to be created and offset the predicted job loss. The occupations that employ farm workers, firefighters, payroll clerks, machinists and cooks are likely to lose jobs, and occupations that employ professionals, care providers and IT specialists are likely to create most of the new jobs by 2030.

2.3 Up-skilling and technological progress: what do we know about the trajectories of potentially affected workers?

The research on the labour market status of workers who have been affected by automation is still rather small. Dauth et al. (2017) studied how robots affected the careers of German workers in the

manufacturing industry at an individual level. The authors found that, over the period of 1994–2014, two manufacturing jobs were replaced by one additional robot. These robots did not directly displace jobs in the manufacturing sector, but they prevented firms from creating more jobs for young people. The lost jobs in the manufacturing sector were compensated by the jobs that were created in the service or public (non-manufacturing) sector. Thus, robots did not destroy jobs at the aggregate level but instead changed the composition of employment. Nawakitphaitoon and Ormiston (2015) and Nedelkoska et al. (2015) studied the trajectories of displaced workers based on the occupations of re-employed workers. They found that the displacement increases the probability that the worker changes occupation by 30%, and workers who change occupation have larger earnings losses than those who stay in the same occupation. However, Nawakitphaitoon and Ormiston (2015) also found that the more the skills were transferable across occupations, the less the earnings losses. Suleman and Lagoa (2016) pointed out that changing industry can also have large negative effects (similarly to changing occupation).[4]

4 Earning losses, due to having to change industry/occupation, are highest among workers at intermediate occupational levels (lower level professionals, highly skilled physical occupations). This suggests that these occupations are most likely to require skills that are not transferrable across workplaces.

2.4 Technological progress and the role of the PES

It seems to be clear that workers with lower levels of education are more likely to perform routine tasks that run the risk of being replaced by robots. However, the likelihood that a worker receives on-the-job training through their employer is three times lower for those in automatable jobs than for those in non-automatable jobs (Nedelkoska and Quintini, 2018).[5] Thus, current patterns of up-skilling might lead to a rise in the inequality of labour market outcomes. This suggests important roles for public policy in: (i) providing incentives and opportunities for lower-educated people to pursue up-skilling activities which will increase their chances of adapting to technological progress, and (ii) delivering adequate income support and re-employment services to displaced workers. The PES is in a key position to ensure that support is provided to those who need it the most. First, it regularly analyses employers' future employment needs and workers' existing capabilities. Second, the PES most often is the public body which co-ordinates, and in many cases supervises and finances, adult learning and up-skilling opportunities. Finally, since the PES is the institution par excellence which provides services to unemployed people and those at risk of job-loss they will play a central role in easing transitions to jobs that have a lower risk of automatisation.

5 Furthermore, training is often used to move to tasks (which require using analytical or social intelligence) which lead to a lower risk of automatability.

3. HOW DID PREVENTION EMERGE IN THE TOOLBOX OF PES?

Formulating policies that might help workers who are threatened by unemployment to make job-to-job transitions did not explicitly feature among the main objectives of most European PES in 2014. In the EU (2014), most PES formulated the objective to efficiently match the supply and demand of labour. Among the four PES studied in this paper, the objective of prevention of unemployment appeared at slightly different points in time and the underlying reasons largely differ. At the same time, it is worth noting that the four PES studied operate in a different environment in terms of the risk of automatisation of jobs. A large proportion of workers in Germany seem to work in jobs that are likely to be automated, while workers in Belgium and Estonia seem to be less affected (see Arntz et al., 2016; Nedelkoska and Quintini, 2018). It needs to be emphasised that currently we have no precise data about the extent to which employees are at risk of job-loss, or have actually become unemployed due to technological advances. This is due to the fact that it is very difficult to collect such information from workers (as they are not necessarily aware of the reason behind their job loss), while no pan-European employer survey involving these questions exists.[6]

6 A potential way forward might be to consider including questions on this issue in the European Company Survey.

Putting prevention of unemployment as one of the focal points of its activity for the German PES is made possible by the early registration legislation in Germany. Specifically, all workers who have received a notice of dismissal or have a fixed-term contract which is approaching its end are required to register at the German PES as jobseekers.[7] The German PES adopted the specific (quantitative) target of improving the job-to-job transition rate as early as 2008. This can be traced back to the overarching objective negotiated between the Federal Ministry of Employment and Social Affairs and the German PES to counteract the emergence of unemployment and to improve labour market matching. This overall objective was translated by the German PES into several numeric targets, including the 'unemployment prevention' target.

In the three other case study PES (the PES in Belgium-Flanders, Estonia, and Malta), working with at-risk employees is not an explicit performance objective; however, it appeared partly in response to the labour market situation in the recent past, as well as due to long-standing roles and visions of these PES.[8]

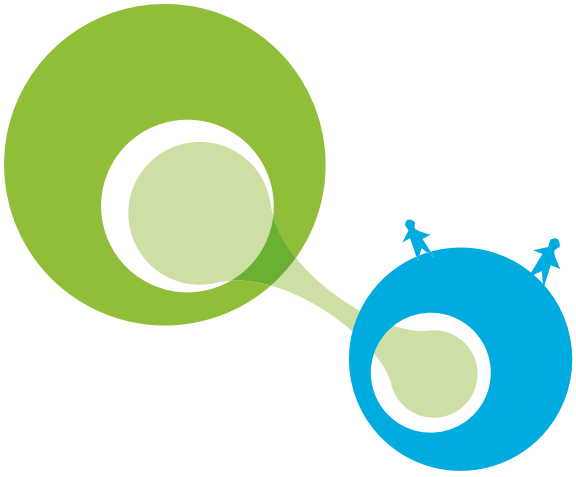
The Belgian-Flemish PES has the long-standing vision that it ought to be the provider of services to citizens related to their labour market career throughout their life. This is supported by the fact that the Belgian-Flemish PES not only provides counselling services, but is also responsible for the delivery of vocational training courses. There are two developments which will also enable the Belgian-Flemish PES to increasingly work with (at-risk) employees. First, the Belgian-Flemish PES has an exceptionally well-developed use of ICT solutions which makes it possible to potentially reach employed jobseekers. Second, thanks to the recent amelioration of labour market prospects and apparent skills shortages, the Belgian-Flemish PES will likely need to focus more efforts on up-skilling. Thus, providing more services to at-risk employees is the next large step that the Belgian-Flemish PES will likely take in the future.

The situation of the Maltese PES is somewhat similar, insofar as it also provides training opportunities to clients. The main driver of a change towards providing services to employed jobseekers was the shortage of labour across different skill levels that appeared in 2016. It seemed to be clear that the needs of the economy could not be fulfilled solely by training unemployed people, and that the PES needed to enlarge its clientele by up-skilling employed workers and attracting foreigners to the Maltese labour market.

In a very similar vein, in Estonia, the need for preventive measures was marked by various employers and clearly stated by the Supervisory Board of the Estonian PES. The need for creating and launching preventive measures was also foreseen from the situation on the labour market, where the lack of *skilled* labour was becoming a serious problem for employers. Thus, contrary to conventional wisdom that training programmes are used overwhelmingly in times of an economic slowdown, when demand for skills increases quickly the PES has a new role as the initiator of up-skilling programmes for employed people.

7 This is to take place at least three months prior to the end of the contract. If the time between receiving the notice and the last day of work is shorter than three months, the individual has to report to BA not later than three days after receiving the notice.

8 It needs to be noted that measures for those affected by group dismissals have been part of the toolbox of these three PES for a long time.



4. SKILLS FORECASTING AND MATCHING SYSTEMS: THEIR USE IN PREVENTION OF UNEMPLOYMENT

In order to prevent unemployment due primarily to technological progress, it is essential for PES to have a clear view of (i) which professions and workplaces are most at risk; (ii) which professions are likely to be in high demand in the near future and what skills are needed for these jobs; and (iii) to what extent workers at high risk of losing their jobs have competences and skills which can be easily transferred to jobs that are in demand. In the next section, we will outline how PES in the four country case studies gather information on these questions.

4.1 Skills surveys to underpin up-skilling and preventive measures

Skills forecasting has been slowly evolving in PES; however, they are using the same principles to a large extent. Thus, longer-term forecasting of labour demand and supply is done based on Labour Force Surveys, administrative datasets using econometric methodology, and economic modelling. These are used to inform high-level policy makers at government ministries, and are also communicated to PES. However, PES in general use somewhat more short-term predictive exercises, which tend to rely on the analysis of vacancy information complemented with employers' opinions. It seems to be clear that countries where the PES has a more advanced conductor role on the labour market, and as a consequence has access to a rich flow of information from employers, and where PES data collection strategies are advanced, the PES can rely on these sources to distinguish in what areas up-skilling for prevention is needed. At the same time, in countries with a less developed tradition, it is essential to conduct up-to-date surveys about employers' skills needs and to have regular feedback on the directions proposed by PES. In the two PES which have recently launched preventive up-skilling measures (in Malta and Estonia), research was not specifically developed to aid the design of measures previously. However, later, during the design of the implementation of the new measures, consulting ongoing research proved essential for ensuring success. This was particularly important in finding the proper targeting of measures to the most relevant training courses.

The Estonian PES, prior to launching its new prevention and up-skilling measures, faced a difficult situation: it needed to decide what fields of study ought to be supported through financial incentives. Existing strategic documents and labour forecasts proved to be insufficient, as they seemed not specific enough. On the one hand, most strategic documents indicated generally only 'fields in growth';[9] on the other hand, the quantitative labour forecasting analysis conducted by the Ministry of Economic Affairs and Communications only provides prognoses by sector and broad occupational groups, but aspects of skills needed to work in these jobs were not addressed.

Concurrently to the planning of preventive measures, a new set of analyses (called OSKA forecasts), coordinated by the Estonian Qualification Authority, started with the objective of revealing the needs for labour and skills necessary for Estonia's economic development over the next 10 years. Thus, the OSKA system helps to learn about the right skills and analyses the needs for labour and skills necessary for Estonia's economic development. These OSKA-applied research surveys cover the needs for labour and skills in 24 different sectors, are to be carried out initially between 2016 and 2020, and are to be repeated every six years. These surveys use both statistical data and information collected from personal interviews with sectoral experts and from group discussions. The importance of the latter is that they are to involve stakeholders much more than previous forecasting activities. Within the OSKA research projects, qualitative methods are used to examine future changes in the needs for workers, skills, education and training in each sector, and to provide input with suggestions for improving qualifications. Finally, the surveys also assess labour requirements in quantitative terms and training capacities broken down by key professions.

9 The following are usually addressed as fields of growth: ICT as a horizontal field that is thorough in all other sectors; health-related technologies and services (for example biotechnology, e-health, including using ICT in the developmental process of medical services); more efficient use of resources (in materials science and the materials industry, innovative construction work, chemical industry).

In Malta, the system of skills anticipation was somewhat fragmented prior to the establishment of the National Skills Council in 2016.[10] There have been several positive developments since. First, a partnership between the Government of Malta and the Slovak Academy of Sciences (SAS) was forged: the latter was contracted to set up an occupational forecasting model for Malta and provide the necessary capacity building to the national authorities to incorporate this forecasting exercise into its core competences. This project is to be finished by the end of 2018. The model is expected to forecast the employment structure in the medium and longer term, and will serve as a tool to inform policy-makers of the future skill requirements, as well as create different scenarios based on underlying assumptions.

Second, a comprehensive National Employee Skills Survey was conducted (commissioned by the National Commission for Further and Higher Education and the Maltese PES). This is a survey of employers which collects data on vacancies, recruitment difficulties, and the expected number of vacancies over the next 12 months/3 years, and the qualifications and experience that will be required of applicants. In particular, employers' detailed skills needs and areas where these need to be improved were surveyed. Third, a specific Employer Relations Unit was set up in 2016, which – among other roles – was tasked with discussing with employers their labour and skills needs, as well as training initiatives expected to be offered to their staff. Finally, a co-operation was set up between the Maltese and Belgian-Flemish PES, whereby competence-based job matching has been adapted to the Maltese context.

In Belgium-Flanders, there are a number of different skills anticipation exercises, which are used by the Belgian-Flemish PES for different purposes. The Belgian-Flemish PES relies on the skills forecast made by the Centre of Expertise for Labour market Monitoring (CELM), which is a university-based knowledge centre for the monitoring and analysis of the labour market. Furthermore, the Belgian-Flemish PES undertakes two yearly research projects to gauge the scarcity of certain skills in the current labour market. First, it monitors how recently graduated youngsters enter the labour market and reports on their success in finding a job one year after entering the labour market. Thus it guides the study choice of young people with up-to-date information on labour market opportunities. Second, it checks its vacancy database, discusses it with employer organisations and reports on job aspirations that are hard/easy to fulfil (qualitative and quantitative assessment). The latter information is used to shape the services that the Belgian-Flemish PES offers, e.g. the type of courses that will be available. More specifically, the Belgian-Flemish PES develops annual sectoral business plans, which are further broken down into provincial sectoral business plans. These plans provide sufficient flexibility such that local labour market developments, including the opinions of local employers, can be channelled into the planning process.

The German PES uses a large range of surveys and a variety of data sources to underpin skills forecasts. The German PES uses statistic evaluations, such as the bottleneck analysis, and industry assessments to determine qualification requirements, which are taken into account in the planning and implementation of further education funding. In general, the forecasting and planning is a two-stage process: based on data and an econometric model, forecasts are made for a large number of professions at the regional level. Following this step, local PES offices are consulted and industry-specific forecasts are adjusted to the local PES office level after this consultation process. The German PES also calculates a large number of statistics about the supply and demand of people in different occupations and training fields (bottleneck occupations, occupational and training opportunities radar etc.), which informs stakeholders and clients in an accessible way.

4.2 Competence-based job matching to uncover skills gaps

Automated job-matching algorithms have the potential to inform both jobseekers and employment counsellors about the short-term skills needs of employers, and competence-based matching systems give richer and more informative solutions.[11] We will primarily discuss the case of the Belgian-Flemish PES, which has been developing the approach of competence-based matching for a long time. A fundamental concept of the Belgian-

10 This is a forum which brings together representatives of different stakeholders, with the role of coordinating skills forecasting exercises and formulating recommendations for the government on policies to reduce skills gaps.

11 The European Skills/Competences, Qualifications and Occupations classification (ESCO), is one example which enables such job-matching. It is already used in the EU's EURES job platform and PES are currently engaged in mapping national competence and occupation classifications so this can be more actively used at the national and regional level.

Flemish PES is that working with competences throughout the job-matching process, instead of simply working with professions and (formal) certificates, is more efficient. In fact, the Maltese PES has reached an agreement with the Belgian-Flemish PES that it is the Belgian-Flemish PES which technically performs job matching for the Maltese PES. Thus, most of what is discussed for the Belgian-Flemish PES also applies to the Maltese PES. We will also present the approach of the German PES, which also uses bi-directional (including competences) matching. The case of the Estonian PES will not be presented, since the automated matching algorithm is currently (in 2018) being redesigned, and it would be too early to present it.

The main idea behind moving towards competences is that in a labour market characterised by more fluidity, it is finding the jobseeker with the right set of competences (skills) combined with motivation for the job that demands a competence in a given set of tasks that will make a successful and productive match. Furthermore, this approach underlies the notion that with some additional training (either on or off the job) a jobseeker who might not be formally qualified for the job will likely be a successful employee. Thus, competence-based matching can be a step towards solving a given firm's skills shortage, by giving access to a larger pool of jobseekers to choose from. At the same time, competence-based matching gives jobseekers a broader perspective on career possibilities, by helping them realise that a range of jobs that appear unreachable can turn out to require many skills that were already acquired in previous jobs or education. Finally, competence-based matching is also informative for PES as it offers guidance on what up-skilling courses to offer to potentially bridge existing competence gaps. Furthermore, using a system of competences can also provide insight into the transferability of skills across different jobs, and how, in the future, when the automation of certain tasks advances, employees can change their career orientation.

Currently, all jobseekers in Belgium-Flanders, including those who are already employed, have access to an online career portfolio (Mijn Loopbaan), where they can manage their CV and enter and update their competences. Through the Belgian-Flemish PES' online platform, they can easily see, search and apply for vacancies. There are several other online tools, including for career orientation, training possibilities, etc. Employers similarly use the Belgian-Flemish PES' platform to enter job adverts, search for candidates, etc. An important building block is that both jobseekers and employers are required to enter competencies (skills) they possess (for the jobseeker) and competencies which are required/preferred for a given job (for employers). All users are supported by a 'competence finder', which does two things: (i) it translates CVs and job descriptions into competences[12] and (ii) it translates competences into everyday language. When jobseekers (and employers) search for a job using the competence-based matching algorithm, they will be shown the potential matches, the level of matching (or matching score), and a gap analysis. This latter details what aspects of a jobseeker's profile differ from that of the requirements of the job. Thus, this latter can serve as guidance to both the jobseeker and the (potential) employer of what training might be necessary for the candidates to be successful at the job.

Goos et al. (2018) discuss the importance of the task overlap across jobs using data on unemployed jobseekers from the Belgian-Flemish PES' job-matching portal. They estimate that a person can compete for a job if s/he meets at least 80 % of a job's competence requirements. To show the effect of technological change and those of competences, they assume technological change decreases the number of routine-task-based jobs, and compare two situations: one where the unemployed compete for jobs based on their competences, and one where all the unemployed have equal chances of re-employment, regardless of their competences. They show that in a labour market where competences matter, workers who are employed in jobs with a high proportion of routine tasks are likely to fare badly: their unemployment durations will increase significantly due to technological changes. The authors also show that there is only limited scope for policies that direct unemployed jobseekers with routine-task competencies to less routine-task-intensive vacancies for which they also in part qualify. In other words, the transferability of skills from jobs with high routine-task content is limited, and hence there is important need for up-skilling measures.

In Germany, there are a variety of information sources and approaches which can be used to discover skills gaps and analyse the transferability of skills. Bi-directional matching has been used in the German PES since the introduction of the Virtual Labour Market in 2005, which can include – in addition to occupation, place of work, working

12 Note that this requires a constant updating of occupational competence standards, which the Belgian-Flemish PES does in collaboration with the French PES (Pôle emploi).

hours, etc. – competencies and skills. The matching procedure comprises two steps. First, automatic matching generates a list of potentially suitable candidates presented in decreasing matching accuracy. Second, the counsellors at the German PES' employer service use this list and cross-check with employers' requirements for quality assurance, and employer service counsellors can also contact the jobseekers' counselling agent to clarify the applicant's suitability for the job. In the German PES' matching algorithm, while profession is a mandatory field, skills (including personal strengths) can be added. The employer can specify which of these requirements (in particular occupation, place of work, hours) are essential for the job (whether they will be used as hard criteria during job matching). In terms of everyday career counselling, the German PES refers clients to the BERUFENET online service, which not only describes each profession (including skills and competences required), but also informs clients about potential training courses as well as giving access to statistics on labour market opportunities (the evolution of vacancies, etc.) Furthermore, the online service also suggests alternative/related occupations to clients.

New 'merger profession' statistic in Germany

More recently, the Institute for Employment Research (the research institute of the German PES) has developed the statistic of 'merger profession' (Einmündungsberuf) about the profession in which a person actually takes up employment, based on the German PES' linked administrative databases. Thus, based on this statistic not only are statements possible about which occupation the unemployed person has learned (vocational training), in which occupation the unemployed person was made unemployed (origin profession), and in which occupation the unemployed person seeks employment (target occupation), but also, in which occupation the person actually takes up employment (employment). This measure can be used in a variety of ways: for example, (i) the accuracy of fit of the placement can be examined by comparing the information on the placement and target profession; (ii) it can enrich the knowledge about market opportunities and risks for certain occupations; and (iii) the similarity of occupations' skills content can also be verified based on these statistics by examining the trajectories of workers across different occupations.

5. SERVICES FOR EMPLOYED JOBSEEKERS

We will discuss both the innovative services and programmes recently launched for employed jobseekers, as well as those which have existed for a number of years. There are two main policies with which PES currently can potentially forestall the negative consequences of technological progress. First, PES can provide information through career counselling in order to persuade jobseekers to consider alternative jobs. Second, PES can propose up-skilling programmes for employed jobseekers likely to be affected. In this section, we will focus primarily the second type of policy.

It is important to note that the situation in Germany is specific: given the early registration of those threatened by job-loss, employed registered jobseekers can have access to the full range of services (albeit not all active measures) that those registered as unemployed can use. Thus, the well-known 4phase model of activation and counselling is also used for employed jobseekers.[13]

5.1 Career counselling for employed jobseekers

There do not seem to be employment counsellors specialising in working with employed jobseekers in the case-study PES. Thus, these counsellors are regularly informed about skills forecasts and are trained in using the results of (automated) job-matching systems.

13 For more information on this model, please consult the PES Practice on this approach, available here: http://ec.europa.eu/social/BlobServlet?docId=17550&langId=en

Information sharing is very well developed at the Belgian-Flemish PES. First, counsellors are trained to interpret the results of competence-based matching and to encourage jobseekers to look for a large range of jobs. Clearly, including jobs among those acceptable for a jobseeker for which she might have competences that can be easily transferred might increase re-employment chances. However, given that this job search for at-risk employed people is just in its early stages, employment counsellors use soft approaches. Second, the Belgian-Flemish PES re-organised the daily work in local PES offices' sectoral teams. This means that all the knowledge and expertise of a certain sector is combined in one 'sectoral service point'. Thus knowledge sharing between counsellors working with jobseekers and those servicing employers is immediate.

An important feature of the Belgian-Flemish PES system is that employed and self-employed citizens[14] are entitled to 'career counselling vouchers' at a low cost, with the aim of providing a demand-driven service. The voucher gives citizens the rights to two four-hour career counselling sessions in a six-year period.[15] The result of this career counselling is a Personal Development Plan, which is to give insights into employees' talents, interests and competences, and make clients capable of self-steering on the labour market. Career guidance is offered by a number of recognised guidance centres, and the Belgian-Flemish PES assures quality control.

Besides this, the Belgian-Flemish PES also offers online career counselling, which includes (among other features) suggestions for most relevant professions based on their interests for those wanting to change jobs.

5.2 Steering jobseekers towards relevant training programmes

In Belgium-Flanders, since 2003 all employed citizens are entitled to subsidised training via 'training vouchers'.[16] Prior to 2010, employees were free to choose training courses from the supply of courses by registered training providers (including the Belgian-Flemish PES); but due to the risk of deadweight, conditions were revised. Currently, employees are only entitled to participate in training related to their job. Similarly, firms can also request training programmes for their employees, and some of these companies can receive substantial reimbursement.[17] It needs to be noted that in line with its vision as a conductor on the labour market, the Belgian-Flemish PES does offer training courses, but relies to a substantial extent on private providers.[18] Furthermore, given the online orientation of the Belgian-Flemish PES, it offers a large number of training courses online for free, with a large number of citizens (up to 10 000 yearly) following primarily business support courses.

Online guidance for jobseekers in Belgium-Flanders

The Belgian-Flemish PES provides online guidance on what courses might be appropriate through a jobseekers' online career guidance system. Within this online system, jobseekers receive suggestions on what training courses might be appropriate, based on what occupations the clients is searching for. As the Belgian-Flemish PES is looking to integrate more activities in the framework of a competence-based approach, the vision is that jobseekers can get online suggestions for training courses based on the 'competence gaps' uncovered through the online competence-based matching approach. However, this future development also has implications for the way training courses are organised, as these have to be 'modularised'.

14 Unemployed citizens also receive career counselling services from the Belgian-Flemish PES; however, these are not 'purchased' with vouchers – instead, they are free.

15 Citizens have to contribute EUR 40 to each voucher which entitles them to one four-hour training session.

16 Note that these are only for off-the-job training outside working hours.

17 It is important to note that employer-initiated training represents the bulk of training provided by the Belgian-Flemish PES for employed persons, as less than 6% are initiated by employees.

18 Thus in 2017, there were in total roughly 60 000 participants in training courses, of which only 10 000 were directly provided for by the Belgian-Flemish PES.

In terms of the offer of training by the Belgian-Flemish PES, this relies to a large extent in the medium run on 'sectoral business plans'. However, there is also close co-operation with employers, particularly when large employers initiate training (for instance, due to restructuring), when training courses can be tailor-made.

Work and Study Programme in Estonia

The Estonian PES, Töötukassa (EUIF), launched a broad range of measures aiming to prevent the onset of unemployment through supporting up-skilling of at-risk employees in the Work and Study Programme.19 These measures in general support up-skilling by giving access to financial aid for studying to employees (and the unemployed) as well as to employers. The main aim of these programmes is to support training of skills in two broad types of fields: either (a) in skills which are general and thus easily transferrable, such as Estonian language skills, or IT skills; or (b) support the development of knowledge in professions for which there is increasing demand in the near future. Thus, these measures use direct administrative instruments to steer jobseekers, by limiting eligibility to training courses to professions and skills that are likely to be in excess demand in the upcoming years. Furthermore, to better match the needs of jobseekers to the requirements of the labour market, personalised career counselling for applicants to the preventive measures is compulsory.

It is important to note that prior to the launch of the Work and Study Programme, the Estonian PES analysed the supply of similar up-skilling measures, and in particular measures supported by the European Social Fund (ESF). Thus, there are a number of programmes which can be thought of as complementary to those offered by the Estonian PES, such as bringing adults with low education levels to vocational or professional education; or subsidising training courses to support obtaining key competences.

The Maltese PES also launched a new set of measures which aim to encourage up-skilling of unemployed and (at-risk) employed people. These include allowances for low-earning individuals following the Maltese PES' training courses (the 'Average Wage Earners Scheme'), which are themselves free for participants; a reimbursement to individuals (irrespective of their employment status) of the costs of participating in off-the-job training for courses offered by private providers (the 'Training Pays Scheme'); and finally a subsidy scheme for firms which have their employees participate in training courses (the 'Investing in Skills Scheme'). Both the 'Training Pays Scheme' and the 'Investing in Skills Scheme' are ESF-funded projects and they build on the achievements of previous similar ESF projects, with the novel feature of increasing the number of employees who are eligible.

Similarly to other PES, the Maltese PES also bases the offer of its training courses on information from a variety of sources. These are: findings of skills surveys and skills forecasts; monitoring the demand for different courses by (potential) trainees; and feedback from employers, as gathered by the Employer Relations Unit. More specifically, when offering courses, the findings of the National Employee Skills Survey are compared with the findings to the responses received from the Employer Relations Unit; and following this review, a plan of new courses has been drafted that will start being developed. Based on these findings, the courses on offer are moving away from more traditional vocational training, and an increasing weight is being placed on soft skills training.

In Germany, a training voucher (Bildungsprämie) was introduced for employees in 2008, in order to encourage them to participate in lifelong learning (this programme is coordinated by the Federal Ministry of Education and Research). This voucher was aimed at low- and medium-income people (above the age of 25) and covers 50% of training course costs (with a cap of EUR 500) for work-related courses, and eligible people can receive a voucher every two years. Potential participants have to visit a counselling centre in order to verify eligibility and to receive advice on the suitability of courses. Evidence (Görlitz and Tamm, 2016) on the first phase of the implementation of the training voucher (2008–2011) shows that recipients were able to upgrade to more demanding job tasks and reported a better match between their skills and responsibilities on the job. However, participating in voucher-financed training did not seem to increase earnings or lead to more stable employment in the short run.

5.3 Targeting of the up-skilling programme: how to avoid deadweight

An important issue with preventive up-skilling measures is that they can in principle lead to significant deadweight if targeting is not done properly: public

19 For more information about this approach, please consult the PES Practice on this scheme available here: http://ec.europa.eu/social/BlobServlet?docId=20007&langId=en

authorities might be footing the bill for training which companies might be willing to finance. This is all the more difficult, as the measures need to target people who are at risk of unemployment in the future.

The different measures in the Work and Study Programme in Estonia are relatively strictly targeted. First, the 'degree study allowance' is to support employed (and unemployed) individuals who either have no vocational degree or no professional degree (but have upper secondary education), or whose vocational skills have become obsolete. Second, employees who have low levels of income (lower than the average salary) can also apply for a training voucher. The eligibility is further restricted to those without a vocational or professional degree, to older employees or to employees with insufficient levels of Estonian language skills. Third, employers can also apply for training grants, which are available for those firms where the restructuring of operations or installing of new technologies warrants upgrading of skills.[20] In all of these measures, those employees who are at an increased risk of becoming unemployed are treated as a 'high-risk group' and thus are given preferential treatment.[21]

The targeting of up-skilling measures recently launched by the Maltese PES was initially designed to be relatively fine-tuned; however, due to the need to reach out to more employed jobseekers, the eligibility requirements were significantly loosened. As for allowances for participating in the Maltese PES' programmes, these are targeted at employees earning below the average wage, but there are no other restrictions. By contrast, originally the reimbursement scheme for participating in training programmes offered by private providers was to be fine-tuned, designed for those at risk of job-loss. This meant that it was designed to only include some priority groups from among employed trainees (besides unemployed people and inactive people): those working at micro and small enterprises, low-earners, and people employed in vulnerable sectors. However, due to a relatively low demand by employed people for this scheme, and in order to encourage participation, eligibility was broadened to all employees. The only requirement is tied to the level of courses attended: they cover relatively low levels of education (meaning from basic education through vocational courses up to a short-cycle tertiary equivalent). Similarly, all enterprises that meet the Investing in Skills eligibility criteria can receive a subsidy that reimburses training costs, wage costs and air travel. The Investing in Skills Scheme is also accepting NGOs and Social Partners as eligible employers. Financing is based on a first-come, first-served basis.

In Germany, a small-scale subsidy programme for supporting vocational training initiated by employers started in 2006. The WeGebAU programme targets employees who are particularly vulnerable to unemployment due to lack of or loss of skills. The main target group of this programme are the low skilled with no vocational qualifications who are working in SMEs. Subsidies are subject to an agreement between the employer, the worker and the local employment agency: the programme covers the full (direct) training costs, as well as up to 100% of wage costs (the employer is obliged to pay full wages for the duration of the training). The training course does not have to lead to a vocational qualification; for the low skilled, it can pertain to certain modules of a full vocational qualification. Based on early waves of programme participants, the training subsidy led to increased employment stability and slightly higher earnings for educated participants (Dauth, 2017), particularly for women and younger workers. The effects of the programme seem to be more pronounced for those above the age of 45 working in SMEs as well as those on a part-time or a fixed-term contract, and training courses of longer duration led to more beneficial outcomes.

The Belgian-Flemish PES does not use limiting eligibility requirements to target training for the employed; rather, different target groups are given different financial incentives. Targeting of training for employees in Belgium-Flanders in terms of the training vouchers clearly favours the lower skilled. While all employees can receive vouchers for the value of up to EUR 250 at a 50% discount, those with at most an upper secondary school education can receive vouchers for the value of up to EUR 500; those with at most a lower secondary school education get these for free. As for training initiated by employers, the Belgian-Flemish PES can offer substantial discounts on the training costs for a variety of reasons. In particular, employees threatened by collective dismissal or working at companies in financial difficulty can get full compensation. Furthermore, firms undergoing restructuring also receive a 50% discount on training costs.

20 Note that training grants are also available for those individuals who have recently been unemployed, or those who are recruited specifically with a training opportunity.

21 This was the object of internal research, as discussed in Section 4.1.

6. ENSURING CLIENTS' BUY-IN: FINANCIAL INCENTIVES AND/OR INFORMATION AND CO-OPERATION

A crucial point of the success of preventive measures is to ensure that those persons who actually need up-skilling take these measures up. This clearly hinges on providing the right level of financial incentives, which is a thorny issue, given that most acquired knowledge about financial incentives for active measures relies on measures for the unemployed. However, for other issues, such as the right promotion, information can also be crucial for the take-up of the measures, especially when launching the policy.

The measures implemented in Estonia within the Work and Study Programme were designed to give financial incentives for employees (and their employers) to participate in training (up-skilling) programmes. These financial incentives in the 'degree study allowance', which targets those with at least an upper secondary education, give access to an income of EUR 130 per month for employed individuals for up to a year.[22] Training programme vouchers – which are aimed at low earners – have a value of up to EUR 2 500 over a 3-year period.[23] Finally, employers' training grants normally cover 50 % of training costs (including training programme costs, travel costs, and wage costs evaluated at the minimum wage), up to EUR 1 250 per employee. However, training costs for at-risk groups (including those at risk of losing their employment) cover up to 80 % of costs (with an upper limit of EUR 2 000 per employee).

The package of preventive measures was discussed with the cooperation agreement partners of the Estonian PES in order to map their opinions and put them to use. In particular, meetings were held with representatives from the Estonian Trade Union Confederation and the Estonian Employers' Confederation to hear their expectations towards preventive measures. Through this process, a real dialogue with employers was able to be established in order to understand their needs and motivations.

Furthermore, awareness-raising campaigns for the new preventive measures were run to introduce or act as a reminder about the various possibilities provided by the Estonian PES for adults in order to raise/improve their skills level/profession. This meant starting from information sessions at job fairs to advertising campaigns (in both Estonian and Russian) using leaflets, bureaus of the Estonian PES, its website and social media. Similarly, short audio and video information spots were created for TV and radio, as well as special articles written for newspapers. Furthermore, direct email marketing for potential beneficiaries was used.

Financial incentives to attend up-skilling or training programmes in Malta

The measures enacted by the Maltese PES also give clear financial incentives for attending up-skilling or training programmes. The allowance for those low-wage earners participating in the Maltese PES' courses is relatively modest, at EUR 25/week, also keeping in mind that this is for participating in at least 4 hours of training per week.[24] The 'Training Pays Scheme' reimburses 75 % of all training costs (excluding VAT), and is capped at EUR 1 000.[25] The 'Investing in Skills' programme uses standard scale of unit costs (SSUCs) as a simplified cost option to encourage employers' participation, by decreasing the administrative burden for companies. Thus, it covers EUR 25/hour/trainee for training costs and EUR 4.90/hour/trainee for wage costs. Air travel is subsidised using the Erasmus + rates. The programme gives preferential treatment to smaller enterprises, as the reimbursement rate decreases with an increase in company size.[26]

22 This was based on a pilot supported by the European Globalisation Fund.

23 However, the average cost of programmes financed with training vouchers was EUR 730.

24 It needs to be noted that beneficiaries are also entitled to free transportation and may apply for a small childcare subsidy.

25 It needs to be noted that there is a similar programme, run by the Ministry of Education and Employment, which targets higher-level courses, from vocational training to university training, and reimburses training costs through an income tax credit. This programme, the 'Get Qualified' scheme, reimburses 70 % of training costs, and reimbursements are capped at different levels based on the level of education, with higher reimbursement caps for higher levels of education.

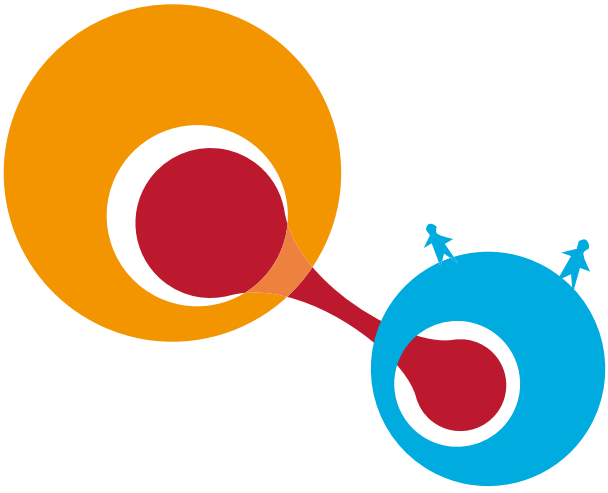
26 Specifically, it is 70 % for micro and small undertakings, 60 % for medium-sized undertakings, and 50 % for large undertakings.

Although the measures implemented by the Maltese PES were successful, the number of people benefitting from them was restricted. This can potentially be due to several reasons. First, given that there is a high labour shortage in Malta, the most ostensible reason is that employers are keen to have their employees working on the job rather than letting them go to training courses. Furthermore, due to this labour shortage, employees have an upper hand in terms of job-changing and thus up-skilling and training might be seen as less of a priority, even though measures are in place to promote the initiatives available.

The evidence on how far information and financial incentives can go in encouraging jobseekers to start and partially self-finance up-skilling courses at their own initiative is mixed for the Bildungsprämie programme in Germany. Görlitz and Tamm (2017) report on an experiment which provided a random sample of individuals (close to the time of introducing the training voucher) who were targeted with information about the existence and conditions of the programme. However, the intervention did not increase the take-up of the voucher, and this might have been due to three factors. First, for a large number of individuals, there seemed to be no unmet demand for up-skilling activities, as a large part of training in Germany is (partly) employer-financed.[27] Second, some people did not participate not due to financial constraints, but rather due to time constraints (travel time, caring for children, etc.). Finally, for those who did face financial constraints, the 50 % subsidy might not have been fully sufficient. Indeed, it seems that during the early phases of the implementation of the programme, individuals more likely to take up the voucher were those who had been involved in (other) training activities in the two years prior to the programme. Thus, it remains unclear to what extent deadweight was present, as 62 % of voucher recipients claim that they would have participated in training even in the absence of the programme; however, 77 % also claim that the voucher gave them motivation to participate in additional training.

The experience of the German PES points to the fact that information and counselling services for employers is also essential. This became clear recently, as companies are faced with declining numbers of skilled jobseekers, and thus they have to rethink their recruitment and training strategy. First, the counsellors from the employer's service regularly contact employers to discuss how far the employer is willing to consider applicants who do not meet all the selection criteria. Second, the German PES has developed 'qualification counselling', which is part of its labour market consultation services. This is a service targeted at SMEs, who do not have well-developed HR units. Specialised consulting staff support employers' planning processes and start with the identification of overlooked potentials among existing staff, especially among lower-educated and older workers. The overarching aim is the long-term strategic planning of further training and the development of the personnel needs of companies, as well as the short-term goal of filling job vacancies with less-qualified existing staff. While it is difficult to establish to what extent this new service contributes to the up-skilling of staff (and decreasing job turnover), survey evidence points to positive developments. First, the qualification counselling seems to have changed the way companies view employee skills, and it has contributed to promoting an active engagement on the employers' part in up-skilling activities. Second, the participating companies were satisfied with the professionalism and trustworthiness of the counsellors.

27 Indeed, Görlitz and Tamm (2016) using data from before the introduction of the Bildungsprämie found that up to 85 % of training received by employees is at least partly employer-financed.



The Qualification Support for Employees Programme in Austria (Qualifizierungsförderung für Beschäftigte)

This programme of the Austrian PES (AMS) aims to help businesses finance up-skilling training for lower-educated employees, as well as training that enables older employees to undertake less onerous tasks or to bring their professional knowledge up to date. This programme started in 2015 and finishes at the end of 2019; it grew out of a previous ESF-co-financed programme (between 2007 and 2013). The main target groups are those with no vocational training (who have only completed compulsory education); women who completed at most upper secondary (vocational) education; and employees above the age of 45 with at most a tertiary degree. Companies have to agree with employees about the type of training, and based on this they have to develop a training plan, while the AMS local offices approve the request. The courses are to be for non-company-specific knowledge, and can range from basic skills training (IT or German language skills) to more advanced courses. The programme funds 50 % of training costs (if the course lasts for at least 16 hours); as well as 50 % of the wage costs of participating workers starting from the 25th hour of courses (in other words, from the third day of work foregone); and the funding cannot exceed EUR 10 000 per person. Providing for wage costs has proven to be especially important for small firms and low-skilled workers, as lost time seems to be a major hurdle for participation. In the first 3 years of the programme, more than 48 000 people participated in training, from more than 6 600 companies. A large proportion (40 %) of training was of very short duration (3–4 days), while one-third of training sessions lasted for 2–4 weeks. The preliminary findings of an evaluation project reveal that the programme was successful in increasing participants' labour income (which grew by EUR 200 EUR per month) and stabilising their employment (as they were in employment for 7 days per year more), compared to similar non-participants. It seems that the impact was particularly pronounced for younger (below the age of 35) lower-skilled persons, who participated in short courses (for up to 2 weeks). For older, more skilled employees only longer training sessions seem effective. Researchers estimate that the deadweight effect of the programme was not pronounced: around 63 % to 79 % of training would not have taken place in absence of the subsidy.

It is worth noting that the ESF-co-financed Qualification Support for Employees Programme (Qualifizierungsförderung für Beschäftigte) ran between 2007 and 2013 in Austria. The programme's main target groups were workers above the age of 45, women who had completed secondary education at most, and those returning to employment. Just as in the current programme, companies had to agree with employees about the type of training, and based on this they had to develop a training plan, while the local Austrian PES offices approved the request. The courses were delivered on non-company-specific knowledge, and could include training at external training centres or training carried out within the company by an external trainer. The programme funded, in general, two-thirds of the costs of the training, but for women above the age of 45 as much as 75 % of the costs were covered, with a ceiling of EUR 10 000 per beneficiary. During the entire programme period almost 200 000 employees participated in the programme, with an average of almost 2 subsidised trainings per individual. More than 90 % of the participants were employed for more than 299 days during the year following the training. The Austrian federal budget contributed with EUR 284 million, while the ESF contribution was EUR 98 million over the period 2007–2013.

7. THE CONSEQUENCES OF WORKING WITH AT-RISK EMPLOYEES FOR PES

While all four PES we have studied are moving towards putting emphasis on the prevention of unemployment and are offering services to employed jobseekers, this has had a limited impact on PES' work organisation. The two main areas affected are the timing of service availability and the usage of multi-channel service strategies. The first change means that due to clients' work-place obligations, counselling services and training courses need to be offered outside of standard business hours. Thus PES offices have opening hours on some evenings; while training service providers have moved courses to Saturdays.

A more fundamental change has been to offer more services online: while working with employed job-seekers has not been the main catalyst of this change, services for these clients are certainly one of the main area which benefits. A prime example of this change is the Belgian-Flemish PES' new contact strategy: this means that a number of online services are to be offered primarily online, with the objective of making them available via a wider range of time schedules (for instance: e-coaching). This is also supported by offering telephone services in the evenings (when offices are closed). Offering more services online goes hand in hand with the necessity of more analysis of clients' online actions, in order to (i) offer more tailor-made solutions to clients, and (ii) to give PES counsellors more support (for instance by reporting a jobseeker's activities). Clearly, these developments necessitate a back office staffed by digital managers and data analysts.

The increased focus on employed jobseekers and preventive measures has so far not led to major changes in terms of human resources. The launch of the new preventive measures at the Estonian PES was accompanied by a small increase in employment counsellors, and employment coun-sellors received some additional training regarding the new measures. Similarly, while there are a number of new measures being launched at the Maltese PES, and there are new analyses being developed, the changes in organisational structure and human resources fit into the general restructur-ing of the Maltese PES.

8. THE TRANSFERABILITY OF PRACTICES AND KEY CONCLUSIONS

This section outlines what aspects of the current approaches taken by the four case study PES may be transferred to other PES contexts. It also consid-ers the main conclusions that can be gathered from the examples.

8.1 The transferability of practices

The four cases reviewed in this study suggest that the development of PES preventive measures is demand driven: if skills shortages are a growing concern, and especially if employers have some influence over the PES either through long-standing arrangements of cooperation or formal institutions (e.g. a Board representing social partners), PES must take measures to meet this challenge. This implies that the pressure to act is likely to vary across EU countries and some PES, and sharing the good practices of first-movers can be important in moti-vating and inspiring PES. This also means that due to a tightening of the labour market in some countries, additional resources can be devoted to designing measures that were traditionally not in the toolbox of PES, namely up-skilling pro-grammes for employed persons who are at risk of losing their jobs due to technological progress.

The four examples also suggest that existing PES capacities may limit the extent to which PES may

Table 8.1 Conditions of transferability

	CONDITIONS EASY TO ESTABLISH IN THE SHORT RUN	CONDITIONS THAT MAY REQUIRE SEVERAL YEARS TO ESTABLISH
Skills forecasting	Surveys and analytical skills	
Competence-based matching	Surveys and analytical skills, helpful if skills forecasting is available	Advanced IT system
Career counselling	Change management competencies	Staff capacity to match a broader customer agenda and/or elaborate online system Highly visible and well-regarded PES
Training	Competence-based matching	Good cooperation with employers Well-functioning market of training providers or internal supply Wide range of high-quality, modularised training courses

be able to implement one or several of the four measures. In particular, there is limited evidence that PES are currently acting on preventing job-losses from technological progress.[28] The table above presents the main conditions of transferability for each measure.

Some of the examples are relatively easy to transfer, e.g. *targeted skills forecasting* mainly requires the PES to develop and launch an employer survey and hire (or outsource) staff skilled in statistical analysis, as well as staff with a background in the analysis of vocational skills needs. Furthermore, if employer relations units do not exist or do not regularly consult employers about future skills needs, these need to be developed. These are relatively easy to establish in the short run (within a few years). More comprehensive skills intelligence frameworks, which combine broad data collection and systemic stakeholder feedback, will, however, take longer. Similarly, *competence-based matching* is relatively easy to introduce, though it does require a fairly advanced IT system and expertise.

By contrast, career counselling and training may be somewhat harder to transfer to other countries. *Career counselling* for at-risk employees works well if potential clients are aware of PES services. This requires the PES to be highly visible (not only to jobseekers) and have a good image, in order to be able to reach out to these new clients. However, not all PES in the EU meet this condition, and establishing this positive image is likely to take some time. The PES also needs to either increase staff capacity and train their staff or develop online services, both of which may take several years.

To offer effective *training for at-risk-employees*, PES need a sophisticated tool for competence-based matching, and a supportive institutional background. The matching tool enables the PES to correctly identify the skills to be trained, and such a tool can be developed within a few years. However, they also need to have well-established contacts and cooperation with employers' organisations and individual employers, which will enable them to correctly identify employees in need of training. Moreover, PES need to be able to offer a broad range of training courses that can be flexibly combined depending on participants' needs. The development of such courses either requires substantial investment by the PES or the PES should be able to buy them, which requires a well-functioning market of training providers. Where such a strong institutional background is not available, it may take several years to establish effective training and support services for this target group.

8.2 Key conclusions

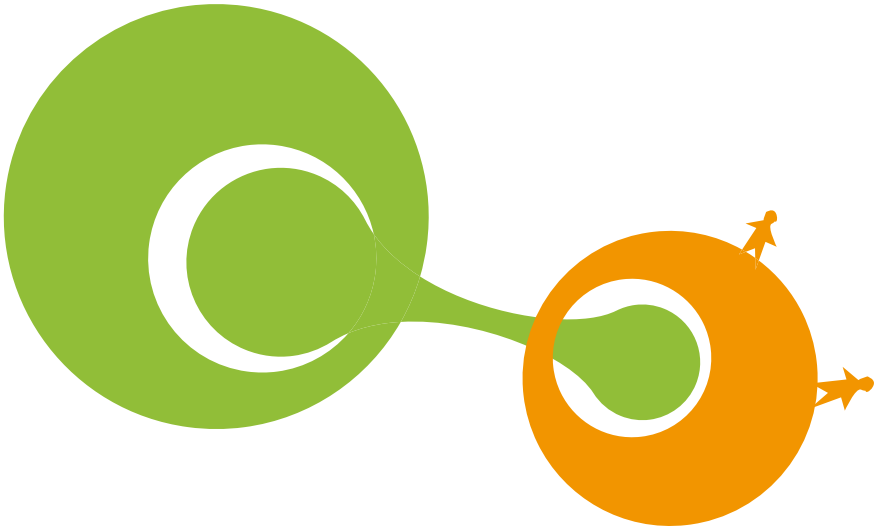
It seems that PES are only taking the first steps towards thinking about effective solutions to prevent unemployment due to robotisation and digitalisation, but a few instructive lessons can be drawn.

From the four PES examples studied, it is evident that comprehensive surveys of employers' skills needs

28 In particular, very few of the measures discussed were enacted in response to the threat of job losses due to technological progress.

and an in-depth analysis of likely transformations of the skills content of jobs are essential first steps towards designing effective services and measures for those at risk of losing their jobs due to automation. Further steps call for a more strategic approach to developing skills intelligence drawing upon wider sources and for customisation of information in a form appropriate to the needs and capacity of stakeholders and clients. While competence-based matching algorithms are in place in more advanced PES, it seems that currently PES seldom fully capitalise on the potential of data analysis. A more in-depth anatomy of actual transition patterns of jobseekers between different occupations/jobs to infer which are the most easily transferrable skills is a potential way forward. Career counselling to those who are about to lose their jobs is also widely used, and it is a first step towards finding the necessary up-skilling activities. However, there is little evidence on whether this can be a sufficient service on its own. In the four PES used as case studies, the approach of offering subsidised up-skilling programmes – either through vouchers to at-risk individuals or by subsidising company-initiated training – is put to increasing use, with promising, albeit sometimes mixed, effectiveness. Offering a skills planning service to help SMEs towards having skills development plans, in conjunction with offering training subsidies, can be a promising way forward.

Furthermore, the PES case studies explored in this paper confirmed the need for analysing the use of existing policy instruments prior to launching new training opportunities as one approach to addressing the rapid changing nature of the future of work. This is needed to (a) avoid dead-weight and (b) understand the reasons behind the potentially low use of existing up-skilling programmes by lower-skilled workers. The existing evidence suggests that finely tuned and generous financial incentives (and possibly in-kind incentives such as subsidised childcare) might be more effective than broadly targeted voucher programmes. Ex-ante analysis would be very useful to understand the role of information provision in increasing the take-up of up-skilling programmes.



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