

## Chapter 9

### Projected labour market imbalances in Europe: Policy challenges in meeting the Europe 2020 employment targets

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*This chapter investigates the extent to which the economies of EU member states are likely to encounter aggregate skill imbalances by the year 2020, and assesses the necessity of appropriate policies (e.g. activation, migration) for addressing such imbalances. The baseline projections of Cedefop's European skills forecasting model are used to examine the nature of anticipated discrepancies between the supply and demand for labour in EU member states. The chapter subsequently examines the implications for "sustainable" activity rates based on the counterfactual hypothesis that all EU countries will meet their headline EU 2020 employment targets. The results highlight that meeting the respective EU2020 employment targets is dependent on considerable activation efforts by several EU member states, which will have to outweigh existing policies. To meet employment targets with shrinking populations at natural rates of unemployment, European policy makers will have to rely on a menu of policy choices to increase activity rates by about 4.3 percentage points on average in the EU economy. This may entail the activation of a significant share of the currently inactive EU population, or a reliance on migration and other socio-demographic policies to ensure that the future supply of labour will be sufficient to meet skill needs.*

## 9.1. Introduction

After five years of anaemic economic recovery, following the financial crisis that shocked the global economy in 2008, the European Union is faced with historically high numbers of unemployed workers, declining employment rates and rising levels of poverty and social exclusion (European Commission, 2014). In the period between 2008 and 2012, the EU28 employment rate for people of working age (20-64 age group) dropped by 1.8 percentage points (from 70.3% in 2008 to 68.5% in 2012) and total employment (15+) fell by 5.4 million jobs, wiping out to a considerable extent the gains that were made in the first half of the decade. This rising tide of unemployment predominantly affected younger workers and individuals possessing a lower level of skills. The aftermath of the crisis saw widening imbalances in the demand and supply for people with different levels of educational attainment, leading to concerns about rising skill mismatches in European economies (European Commission, 2012a). Masked behind this overall negative outlook are marked divergences between the individual member states, with southern countries (e.g. Greece, Spain, Portugal, Cyprus<sup>2,3</sup>) suffering greatly as a result of pronounced macroeconomic imbalances in the pre-crisis era.

Against this backdrop of weakening labour market performance and social conditions, the attainment of the Europe 2020 headline employment target of 75% (for those aged 20-64) has become more difficult. For this reason, the European Commission recently recommended a series of policy measures to EU member states for returning back to positive employment growth rates, the so-called Employment Package (European Commission, 2012b). Nevertheless, the uncertain economic environment poses great challenges to both European and national policy makers who, faced with additional structural changes in their economies including adverse demographic trends, subdued productivity growth, increased global competition and weak aggregate demand, are confronted with the difficult task of ensuring that Europe does not get entangled into a jobless recovery.

The aim of this chapter is to investigate the extent to which the European economy, and those of member states, is likely to encounter aggregate imbalances and shortages of skills in the run-up to 2020. To do so the baseline projections of the Cedefop pan-European skill forecasting model are utilised to examine the nature of potential discrepancies between the supply and demand for labour of different skill levels in EU member states. After outlining the projections of a baseline scenario that relies on a set of plausible assumptions regarding Europe's anticipated employment growth, the chapter examines different counterfactual hypotheses based on the assumption that all European countries will meet their pre-specified EU2020 employment targets. The results illustrate that about 16 million new jobs would have to be created by 2020 in the European Union so that the 75% headline target is reached. To meet employment targets with shrinking populations, European policy makers would have to rely on a menu of choices to increase activity rates by about 4.3 percentage points to sustain such high employment rates at non-accelerating inflation rates of unemployment. These choices may include the activation of a significant share of the inactive European population of working age, or to rely on migration and demographic policies that will ensure that the future supply of labour in Europe will be sufficient to meet higher skill needs.

Section 9.2 of the chapter discusses the current state of play regarding the gaps that national governments are facing in meeting the Europe 2020 employment target. Section 9.3 assesses the extent to which European and national policy makers will have to invest in activation and/or migration policies should they wish to attain the Europe 2020

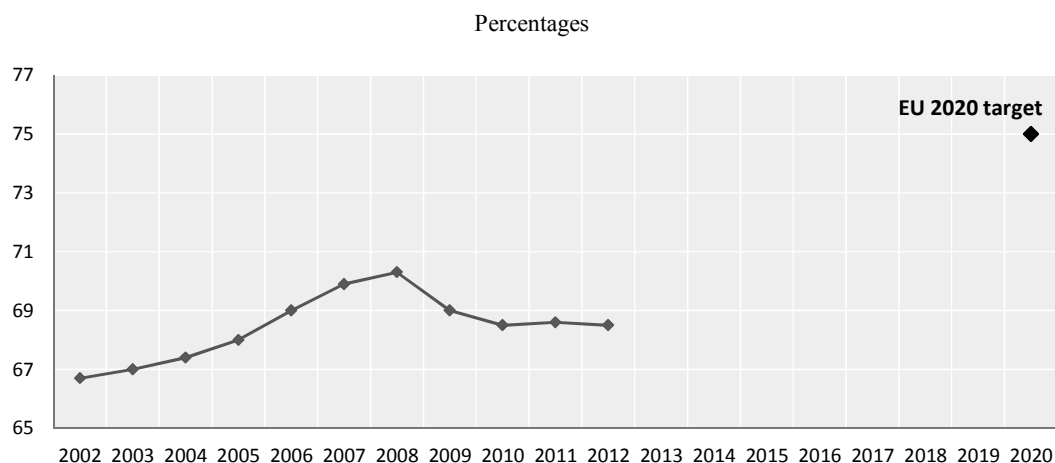
employment goal under full employment labour market conditions. Section 9.4 engages in hypothetical simulations of anticipated labour market imbalances in European countries by the year 2020, identifying the extent to which different EU member states will be faced with activation needs due to a shrinking active workforce. Finally, Section 9.5 concludes.

## 9.2. Employment rate gaps in EU member states

The attainment of an employment rate of 75% (of those of working age) constitutes one of the five headline targets of the Europe 2020 growth plan, an overarching strategy agreed for the whole of the European Union in 2010. This EU level target is translated into different national pre-specified targets for the employment rate, the latter taking into account particular national specificities and circumstances, ranging from a low of 59% for Croatia up to 80% for Denmark, Netherlands and Sweden.

In the years prior to the global financial crisis of 2008, major progress was made at both the EU and national level in terms of raising the proportion of working-age adults who were in employment. Nevertheless, a significant part of this progress has been lost as a result of the marked decline in employment experienced in most EU member states. As shown in Figure 9.1, the decline in the EU27 headline target between 2008 and 2012 implies that Europe needs to recover about 6.5 percentage points in its employment rate in the space of seven years if it is to reach the EU2020 target. This constitutes a challenging task considering that the EU employment rate rose by 3.7 percentage points in the pre-crisis period (2000-08), under relatively favourable economic and credit market conditions. Furthermore, the wedge between current and national employment rate targets increased in ten member states, decreased in 15 and remained unchanged in two (European Commission, 2014). In countries such as Greece, Spain, Bulgaria and Hungary, experiencing employment rate gaps of between 13-15%, a considerable amount of jobs need be created if they are to move closer to meeting their respective national employment rate targets by the end of the decade. By contrast, countries such as Germany, Sweden, Malta, Austria, the Czech Republic, the United Kingdom and the Baltic states are already close to attaining their individual targets.

**Figure 9.1. Employment rate and EU2020 target, EU27**



Source: Eurostat.

### 9.3. Meeting the EU2020 employment target

The evolution of future labour market outcomes in market economies is fundamentally unknown and any attempt to predict its path is characterised by a considerable degree of uncertainty. Forces related to globalisation, technological progress, demographic changes (including migration flows) and changes in work organisation (including the substitution of non-routine tasks by automation) will shape the future landscape of employment. New industries and jobs related to the gradual shift to low carbon sustainable economies and different socioeconomic realities are likely to emerge and other established occupations and sectors will be replaced or rendered obsolete (Cedefop, 2013a). Even if the numbers of available active workers, determined by demographic and socioeconomic factors, were to be perfectly compatible with the available numbers of job openings, it is well known that a considerable degree of labour market mismatch and other qualitative skill mismatches in the economy will still prevail (Sattinger, 2013; European Commission, 2012a).

Nevertheless, there is a high likelihood that some of the underlying structural trends affecting the European labour markets in previous years will persist in the future, including the shift towards a service-oriented economy, ageing workforces and the process of educational upgrading (Cedefop, 2013b). It has been well documented that due to the gradual decline in the European population in future decades, a shrinking working-age population is likely to exert considerable strain on the age dependency ratio and on economic performance, including a slower, maybe even negative, employment growth over the next years in some countries. As discussed by Peschner and Fotakis (2013), the demographic dividend that Europe enjoyed in the last 40 years has been exhausted and Europe has entered onto a path of higher demographic dependency from 2012 onwards.

#### *The baseline scenario of the Cedefop model*

The Cedefop pan-European skill supply and skill demand forecasts are developed using a multi-modular macroeconomic model that produces regular and comparable projections of employment and of the active population for 33 countries (EU28 + Norway, Switzerland, Iceland, Turkey and the former Yugoslav Republic of Macedonia) on a bi-annual basis using harmonised data.<sup>4</sup> The model is based on a long time-series of macro-economic data spanning back to the 1970s to produce country-specific estimates of labour demand and labour supply. Assumptions regarding GDP and productivity growth rates, investment and other macroeconomic aggregates for the European economies are made in accordance with those of the European Commission's Directorate General for Economic and Financial Affairs (DG ECFIN).<sup>5</sup>

Historical and anticipated patterns of labour demand are approximated by the time trend of employment, which is disaggregated by 41 economic sectors (compatible with NACE rev. 2) (Cedefop, 2012). Within two separate modules, occupational and education qualification distributions within sectors are then exploited to break down the industrial level of employment into predictions of labour demand by 27 occupational groups (compatible with the ISCO 08 classification) and three broad levels of educational attainment (low, medium and high according to the ISCED classification). Replacement demand by occupation and qualification level, namely the number of job openings that will arise at the end of the decade due to the need to replace the workforce that will retire or leave the labour market, is an integral component of the model and is generated using a pseudo-cohort methodology. Together, the level of expansion and replacement demand

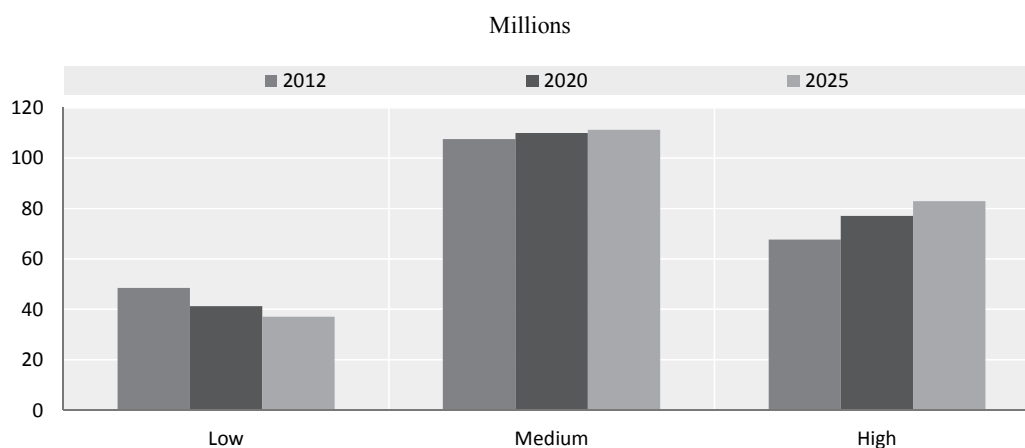
provides an estimate of the total number of job openings by skill level (as approximated by occupational groups and education qualifications).

The model also provides medium-term projections of overall labour and skill supply broken down by five-year age bands, gender and 3 educational qualification levels, derived on the basis of a historical analysis of demographic and labour supply trends in European countries. The population projections are compatible with the respective Eurostat EUROPOP2010 projections, whilst the assumed activity rates of different socioeconomic groups determining the population of working age are also based on pre-existing trends and reasonable assumptions of growth rates based on existing national policies. Moreover, an analysis of EU-LFS micro data is used to predict (using logit modelling) the probabilities of the labour force having different levels of educational attainment.

Together these country-specific estimates provide projections of trends that are anticipated to prevail in the next decade. A dedicated network of national experts (the so-called *Skillsnet*) scrutinises the national findings and highlights potential anomalies in the projected trends. The latest forecast results extend up to the year 2025 and are available online via Cedefop's web portal.

Figure 9.2 illustrates the anticipated skill composition of employment of the EU28 economy between 2012 and 2025, under a baseline set of assumptions (see Box 9.1). The model projects that the share of jobs employing higher-educated labour is likely to increase in the next decade, while the share of demand for lower-skilled workers will continue to decrease. On the basis of the model it is also expected that, overall, Europe will be characterised by sluggish employment growth, with about 2.8 million new jobs created in the space of the next seven years. This corresponds to an increase of about 1.3% in employment, enough to increase the number of people of working age (20-64) in the European Union that are employed from about 209 million workers in 2012 to approximately 212 million by 2020.<sup>6</sup>

**Figure 9.2. Projected employment trends by level of educational attainment, EU28, 2012-25**



*Note:* Baseline scenario. A low education level corresponds to ISCED 0-2, medium to ISCED 3-4 and high to ISCED 5-6.

*Source:* Cedefop country workbooks (see Annex 9.A1).

### Box 9.1. Baseline assumptions of the Cedefop forecast model

The baseline scenario assumes a modest economic recovery while in the short-term trends are in line with the macroeconomic forecasts of the European Commission's Directorate General for Economic and Financial Affairs (DG ECFIN). The baseline scenario assumes that there will be a slow increase in overall economic confidence and a rise of investment, consumer spending and exports. Inflation stays in the target range and interest rates remain low. Higher tax revenues help governments to reduce debt levels. In such an economic environment an annual average GDP growth rate of 2.0% will be the norm in the time period 2013-20, while GDP growth will be 1.8% in the period 2020-25. The overall response of the labour market is positive reaching pre-crisis levels of employment (i.e. those experienced in 2008) by the year 2023. The labour supply trends (economic active population) will reflect the Eurostat EUROPOP2010 projections. Economic activity rates reflect all currently known national policies. All assumptions and results are validated by country experts to ensure their plausibility at the national level.

Table 9.1 displays the key labour market characteristics of the current baseline scenario. It is apparent that unless the current slow rate of employment growth is accelerated via the adoption of appropriate job friendly policy initiatives, the EU employment rate will only exceed the value it had before the 2008 economic crisis after the year 2020. Furthermore, Europe's employment rate will be considerably below the Europe 2020 headline target even in the year 2025.

**Table 9.1. Projected labour market indicators of the working-age population (20-64) in the EU28, 2012-25**

Percentages

	2012	2020	2025
Activity rate	76.0	77.6	78.4
Employment rate	68.5	69.6	71.2
Unemployment rate	10.2	10.3	9.1
Inactivity rate	24.0	22.4	21.6

Note: Baseline scenario.

Source: Cedefop country workbooks (see Annex 9.A1).

### *Meeting the Europe 2020 target without activation – a “naïve” scenario*

Taking into account the adverse demographic trends as implied by the Eurostat EuroPOP2010 projections, the European Commission (2014) infers that the EU27 labour market will have to create about 16 million jobs between 2012 and 2020 in order to meet the 75% headline target. This corresponds to an annual average growth rate of employment equal to 0.90%, with nearly 3% employment growth needed per year in countries such as Greece and Spain.<sup>7</sup>

In order to achieve the aforementioned scenario, taking into account the upper ceiling imposed by the shrinking working-age population, policy makers would need to take measures to expand the European labour force. The inescapable need to expand the active workforce becomes evident if one examines the consequences for the EU economy if it is to accomplish a 75% employment rate under its current activity rate (i.e. 76% in 2013) or, in fact, its anticipated activity rate in 2020 (77.6% as inferred by the baseline scenario of Cedefop's model). As shown by equation (1) below, which applies the tight link that exists by definition between the activity, employment and unemployment rates within any economy, meeting the 75% employment target without a corresponding increase in

Europe's activity rate would result in very low unemployment rates. These rates would range between 1.3% and 3.3%, depending on whether the current or expected baseline activity rate is assumed:

$$u_{2020} = 1 - \frac{E_{2020}}{LF_{2020}} = 1 - \frac{e_{2020} * POP_{2020}}{a_{2020} * POP_{2020}} = 1 - \frac{e_{2020}}{a_{2020}} = 1 - \frac{75}{77.6} = 3.3\% \quad (1)$$

where  $u$  = unemployment rate,  $E$  = employment,  $LF$  = labour force,  $Pop$  = working-age population (20-64),  $e$  = employment rate and  $a$  = activity rate. Nevertheless, such low unemployment rates are likely to be unsustainable or infeasible. A certain level of frictional unemployment and labour market mismatches will always exist in the labour market, while the economy will be confronted with wage and inflationary pressures as it reaches its activity limits.

From equation (1) it is thus evident that a necessary (but not sufficient) condition for the European economy to attain its EU2020 employment headline target, in light of relentless demographic pressures, is to expand the continent's active workforce. Even under "normal" (baseline) assumptions, which take into account existing national practices and policies that have been adopted to raise current activity rates, it is apparent that the shrinking pie of available active workers will act as a constraint on the ability of the European economy to sustain a 75% employment rate. Alternative policies to expand the active workforce are therefore needed, which may include the encouragement of labour market participation among Europe's existing inactive population of working age (in particular younger people, women, older workers and migrants), investment in further education and training, immigration or other (longer-term) policies to stem the demographic decline.

### ***Meeting the Europe 2020 target: Simulating sustainable scenarios***

Any increase in a country's employment rate is unlikely to be generated in a vacuum. As expected by economic theory, rising employment is likely to be an outcome of higher GDP, investment and productivity growth. This will, in turn, have different implications for the wage rate depending on the extent of labour market flexibility and the nature of collective wage bargaining, as well as the assumed skill mix of the employed population. Changes in the wage rate will subsequently affect reservation wages and the observed activity rates of different subgroups of the population.

Modelling the above processes requires a full general equilibrium framework that allows for the incorporation of different behavioural assumptions regarding the interaction between key economic variables and the examination of the response of the endogenous variables of the model to alternative policy or economic shocks. While such an exercise is beyond the scope of this chapter, different possible scenarios are examined below to identify "*sustainable activity rates*" for the European economy. The latter are defined as those activity rates that prevail under the assumption that the EU2020 employment rate target of 75% is met whilst respecting the fact that the European unemployment rate cannot fall below historically low levels (e.g. as in the year 2008) or levels associated with non-accelerating inflation rates.<sup>8</sup>

Table 9.2 outlines the corresponding activity rates that are compatible with a 75% European employment rate and alternative assumptions made for unemployment in the EU27 economic area, in accordance with equation (1). It is clear that if Europe wishes to return back to the very low levels of unemployment that preceded the 2008 recession by

2020, namely a level of about 6.6% (Scenario 2 in bold), by concurrently raising its employment rate to 75%, an increase of about 4.3% in the activity rate will be necessary (i.e. the difference between the current value of 76.0% and the required level of 80.3%). What this implies is that even if the European economy manages to create jobs for the entire pool of individuals that became unemployed between 2008 and 2012 (about 8.2 million workers), there will still be a need to bring an additional 12% of the anticipated inactive population of working age (about 8.3 million workers) into the labour force, to accommodate the 16 million jobs created as a result of meeting the 75% employment rate target.

Furthermore, it is apparent from Table 9.2 that failure to reduce the unemployment rate below levels that were historically compatible with subdued inflationary pressures, implies a greater pressure to expand the activity pool. Considering the much lower activity rates of low- and medium-educated workers relative to those with high skills, policy makers will need to activate a sizeable 30-40% of the inactive population of lower-skilled workers if they wish to accomplish a 75% employment rate whilst tolerating an unemployment rate in excess of 10%.<sup>9</sup> But with activation policies to increase the labour force attachment of lower-skilled inactive individuals posing a relatively high fiscal cost to national budgets, policy makers in the European economy may have to resort to alternative measures to expand their active workforces, including migration policies.

**Table 9.2. Simulated activity rates and need for activation under the assumption that the Europe 2020 75% employment rate target is met, EU27, 2020**

Percentages

Scenario (1)	Unemployment rate (2)	Activity rate (3)	Additional need for activation (total pool of inactive) (4)	Additional need for activation (pool of low and medium- educated inactive) (5)
1	5.0	78.9	6.0	7.0
<b>2</b>	<b>6.6</b>	<b>80.3</b>	<b>12.0</b>	<b>14.0</b>
3	8.0	81.5	18.0	21.0
4	10.0	83.3	26.0	30.0
5	12.0	85.2	34.0	40.0

*Note:* The additional need for activation in column 4 refers to the extra share of workers required to be activated from the total projected inactive population in 2020 (Cedefop baseline scenario), to be consistent with the implied activity rate in column 3. Column 5 indicates the share of low- and medium-skilled inactive workers that need to be activated by 2020, corresponding to the respective activity rate in column 3.

*Source:* Cedefop's own calculations based on application of Equation (1).

#### 9.4. Labour imbalances and the need for activation in EU member states

Considering the current economic conditions and high levels of unemployment, discussing policies necessary to achieve the EU2020 employment rate target may appear in some countries to be an abstraction of reality. But the aggregate EU activity and employment rates mask significant differences between member states and implicitly assume perfect mobility of workers across national borders. In fact, some EU countries are already quite close to achieving their employment goals and will most likely reach their national employment target by 2020 (if not earlier). In these economies the ceiling imposed by their currently high active workforces is already binding.



The implications of achieving the EU2020 national employment rate targets and the potential impact on the respective labour markets of EU member states are depicted in Table 9.3 below. Following a similar line of reasoning as for the total EU economy, “sustainable activity rates” have been derived (applying equation 1). This is done under the hypothetical scenario that all countries meet their respective national employment targets at the same time that their unemployment rates return by 2020 to the lowest level attained prior to the economic crisis (i.e. during the period 2004-08).

As is evident in Table 9.3 and Figure 9.3, the feasibility of reaching the national employment rate targets by the year 2020 varies significantly across different countries. Based on current Eurostat data, only Malta has already met its pre-specified target by 2012. A small difference of less than 2 percentage points exists between the current employment rate and the 2020 national target in five countries (Austria, Germany, Luxembourg, Sweden and the United Kingdom), while in four member states there is a very large discrepancy of more than 10 percentage points (Bulgaria, Spain, Greece and Hungary).

Figure 9.3 also reveals that only nine EU member states [Estonia, Ireland, Croatia, Cyprus (see notes 2 and 3), Latvia, Lithuania, Malta, Sweden and the United Kingdom] have the capacity to reach their national employment targets by bringing their unemployment rates back to pre-crisis levels until 2020, without having to expand their active workforces further than present levels. It needs to be pointed out, though, that only two of these countries (Estonia, Sweden) have set national targets that exceed the EU headline target. For the other countries in this group the pressure to expand their available labour forces will surface if their national employment rate is set above the EU’s 75% benchmark. Labour supply constraints are, by contrast, already binding for all remaining member states, as it is apparent that even if they fully exploit their reserves of non-frictional unemployed labour, they will still need to increase their active workforces further to attain their national employment targets. Such activation needs range from between 1-3% for a group of countries that are already quite close to meeting their EU2020 national employment targets (Germany, Austria, Luxembourg, Netherlands, Czech Republic, Denmark, Finland), to about 3-6% for those closer to the average EU situation (e.g. France, Italy, Poland, Slovenia, Slovakia, Romania, Belgium). For Portugal, Greece and Spain the activation needs are relatively restrained due to the significantly large reserves of unemployed labour available. Hungary and Bulgaria are instead confronted with a twin challenge of engaging in substantial job creation in the face of significant labour supply bottlenecks.

Under the baseline scenario of Cedefop’s forecasting model, EU countries will continue to increase their activity rates until the end of the decade and to implement a set of appropriate national policies towards achieving this goal. Furthermore, as discussed above, many EU economies will have to expand their activity rates further if they wish to meet their respective EU2020 employment target in a sustainable manner. Figure 9.4 therefore breaks down the total change needed for each EU country to attain its “sustainable activity rate” (i.e.  $a^* - a$ ) during the period 2012-20 into two components, namely i) the change that is projected by the baseline scenario (dark grey bars) and ii) the remaining change that is required so that each country can have exactly its “sustainable activity rate” by the year 2020 (light grey bars).

**Table 9.3. Current and “sustainable” activity rates compatible with EU2020 national employment targets, EU member states, 2012 and 2020**

Percentages

	2012			2020		
	e	u	a	e*	u*	a*
EU28	68.4	10.2	76.1	75	6.7	80.4
EU27	68.5	10.1	76.2	75	6.7	80.4
Belgium	67.2	7.4	72.5	73.2	6.8	78.5
Bulgaria	63	12	71.6	76	5.4	80.3
Czech Republic	71.5	6.8	76.7	75	4.3	78.4
Denmark	75.4	7	81.1	80	3	82.5
Germany	76.7	5.5	81.1	77	7.5	83.2
Estonia	72.1	10.1	80.1	76	4.5	79.6
Ireland	63.7	14.4	74.4	69	4.1	71.9
Greece	55.3	24.1	72.8	70	7.6	75.8
Spain	59.3	24.5	78.6	74	7.8	80.3
France	69.3	9.5	76.6	75	7.1	80.7
Croatia	55.4	15.3	65.4	59	8	64.1
Italy	61	10.4	68	67	5.8	71.1
Cyprus <sup>1,2</sup>	70.2	11.8	79.6	75	3.7	77.9
Latvia	68.1	14.9	80	73	5.8	77.5
Lithuania	68.5	13.5	79.1	72.8	4.3	76.1
Luxembourg	71.4	5	75.2	73	3.8	75.9
Hungary	62.1	10.8	69.6	75	5.7	79.5
Malta	63.1	5.5	66.8	62.9	4.9	66.1
Netherlands	77.2	4.7	81.1	80	2.4	82
Austria	75.6	4.1	78.8	77	3.5	79.8
Poland	64.7	10	71.9	71	7	76.3
Portugal	66.5	15.9	79	75	6.4	80.1
Romania	63.8	7	68.6	70	5.6	74.2
Slovenia	68.3	8.9	74.9	75	4.3	78.4
Slovak Republic	65.1	13.6	75.3	72	9.2	79.3
Finland	74	7	79.5	78	5.6	82.6
Sweden	79.4	7.1	85.5	80	5.1	84.3
United Kingdom <sup>3</sup>	74.2	6.9	79.7	75	4	78.1

Note:

e\* = national EU2020 target on employment rate of population of working age (20-64 years).

u\* = simulated unemployment rate defined as the lowest rate in the pre-crisis period (2004-08).

a\*= sustainable activity rate compatible with e\* and u\* (after application of equation 1).

1. Note by Turkey: The information in this chapter with reference to « Cyprus » relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

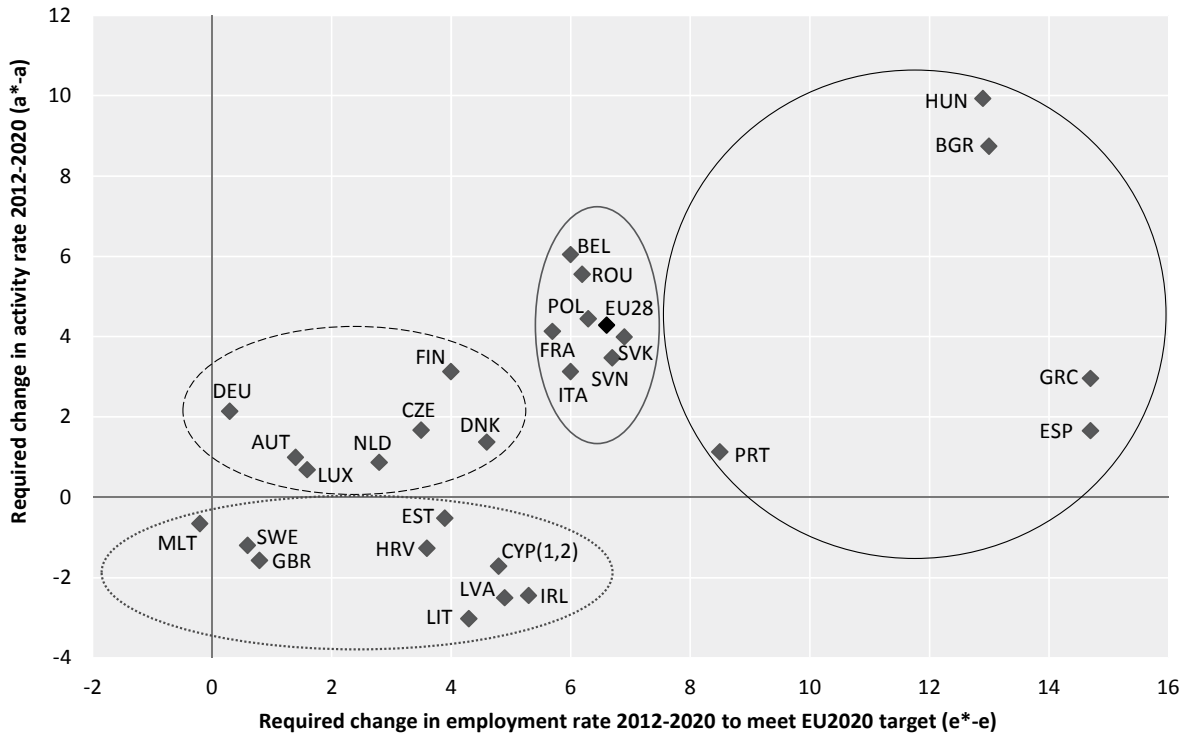
2. Note by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this chapter relates to the area under the effective control of the Government of the Republic of Cyprus.

3. The EU2020 employment target for the United Kingdom is not officially set. For the purpose of this exercise the EU headline employment target is assumed.

Source: 2012 data based on Eurostat; 2020 data based on own calculations.

A positive difference between the baseline and the EU2020 target scenario indicates that for some countries (e.g. Hungary, Belgium, Bulgaria, Italy, Slovenia, Romania) there is likely to be an anticipated shortfall in current efforts to increase activity rates. Therefore there is an immediate need for further activation efforts to take place over currently applied policies, aimed at expanding the activity rate to  $a^*$  and preventing potential bottlenecks from materialising. In contrast, there are some member states (marked with \*) where the expected growth in activity rates under the baseline scenario is already enough to realise their “sustainable activity rate”.<sup>10</sup>

**Figure 9.3. Required changes in activity and employment rates in EU member states to meet the EU2020 national employment targets, 2012-20**

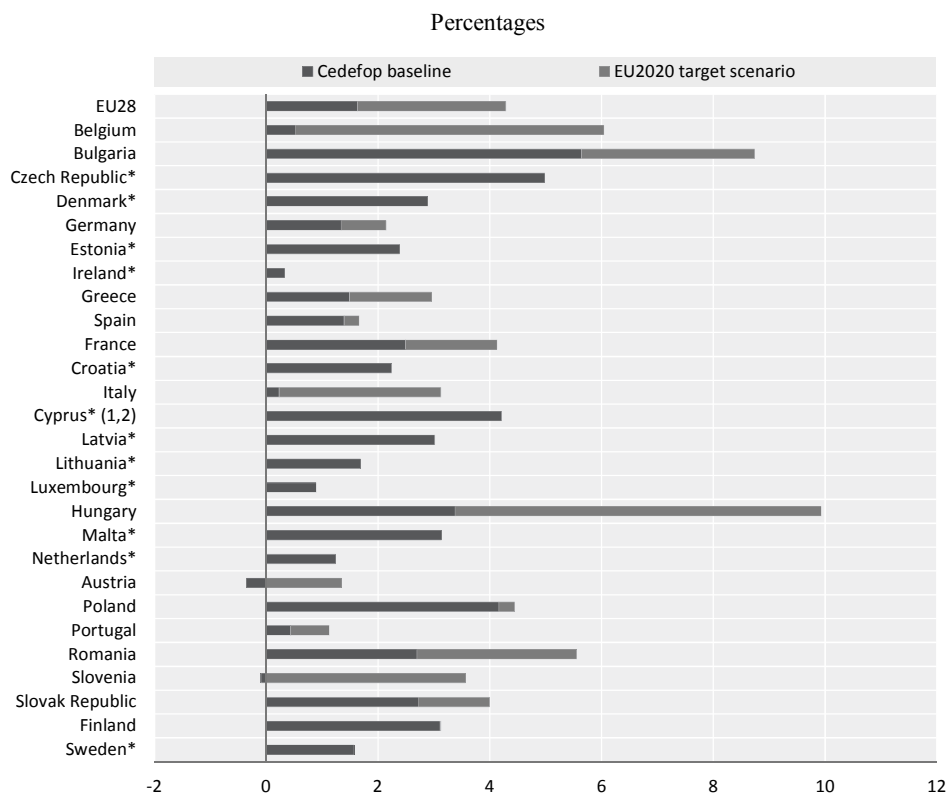


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Source: 2012 data based on Eurostat; 2020 data based on own calculations.

**Figure 9.4. Projected growth of activity rates in EU member states, 2012-20: Cedefop baseline scenario and meeting the EU2020 national employment target scenario**



*Note:* \* indicates countries where the sustainable activity rate ( $a^*$ ) will be achieved (or exceeded) on the basis of currently applied policies (as taken into account by the Cedefop baseline scenario).

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*Source:* Cedefop calculations (see Annex 9.A1).

## 9.5. Conclusion

This chapter has analysed the impact on the European labour market of reaching the EU2020 employment rate headline target, with emphasis on the implications for labour supply shortages or surpluses. By examining alternative hypothetical scenarios that allow for different values of the unemployment rate, it is shown that meeting the employment target is dependent on considerable activation efforts by several EU member states, which will have to outweigh existing practices and policies. The magnitude of the population that needs to be activated in the European economy is significant. For example, if Europe were to accept an unemployment rate that exceeds 10% (i.e. a level close to what may be considered Europe’s current structural unemployment rate), more than a quarter of the inactive population will have to be brought into the labour market by 2020 to achieve a 75% employment rate.

The nature of such activation will depend on the capacity for bringing different groups of the inactive population into the labour market, considering that activity rates vary markedly between individuals of different gender, age and levels of educational attainment. It is well understood in this respect that EU member states should direct their efforts towards increasing the relatively low activity rates of females, young and older individuals as well as those of lower educational level. However, the additional activation required will also be determined by the need to meet the wide range of anticipated skill needs in the European labour market, which will include jobs at both the higher- and the lower- end of the spectrum of skill requirements (Cedefop, 2013b).

While activation policies and better education and training are key ingredients for attaining this goal, the high fiscal cost imposed on debt-laden economies implies that other solutions will inevitably have to be explored. This is particularly the case considering the limits of stimulating the non-active domestic population, which is characterised to a certain proportion by individuals that cannot be brought into the job market due to severe health incapacities or other personal constraints. A reliance on higher levels of immigration may thus provide an additional option in the arsenal of policy makers for meeting Europe's diverse skill needs in the face of a shrinking workforce.

## Notes

1. Vladimir Kvetan and Konstantinos Pouliakas undertook the data analysis and authored the chapter. The advice and support of Alena Zukersteinova, Antonio Ranieri, Giovanni Russo, Nicholas Sofroniou and Ioannis Katsikis is gratefully acknowledged.
2. Footnote by Turkey: The information in this chapter with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.
3. Footnote by all the European Union Member States of the OECD and the European Union: The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this chapter relates to the area under the effective control of the Government of the Republic of Cyprus.”
4. See the annex for a fuller description of the model. The Cedefop model constitutes a powerful tool of labour market intelligence and its findings are publicly available through a web-interface maintained by Cedefop: [www.cedefop.europa.eu/EN/about-cedefop/projects/forecasting-skill-demand-and-supply/skills-forecasts.aspx](http://www.cedefop.europa.eu/EN/about-cedefop/projects/forecasting-skill-demand-and-supply/skills-forecasts.aspx)
5. For some European countries, particularly those currently under heavy fiscal consolidation programmes, these forecasts may be considered optimistic.
6. The model projects that employment will increase by a further 0.9% between 2020 and 2025, adding about another 2 million jobs to the aggregate EU28 employment pool.
7. In contrast, about 13 million jobs (0.75% percentage points annual growth in employment) are expected to be created between 2012 and 2020 if the national EU2020 employment targets are attained (74% EU average).
8. For the remainder of the chapter, we refer to these as “sustainable activity rates”.
9. The activity rates of higher educated people are anticipated to be close to a 90% by 2020, in contrast to the much lower rates of 63% and 76% projected for the low- and medium-educated individuals.
10. Of course, national authorities in these countries may wish to expand their active workforce further for other reasons, including the adverse age dependency ratio which will put a greater strain on their social security systems. They may also wish to consider setting more ambitious employment targets.

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## *Annex 9.A1*

### *The Cedefop pan-European forecasting model of skill supply and skill demand*

The modelling framework used to produce Cedefop's future skill supply and demand projections for the European economy is relatively complex.<sup>1</sup> It is based on several interconnected modules comprising of different labour market elements (see Figure 9.A1.1). This allows for the refinement of different modelling approaches used for projecting occupations, qualification structures and replacement demand. It also allows for improvement or replacement of data for particular countries or sectors when there are specific concerns about data quality and their robustness. Each module is associated with its specific database. This framework has been designed in order to promote further development, customisation and addition of new elements to the overall modelling exercise.

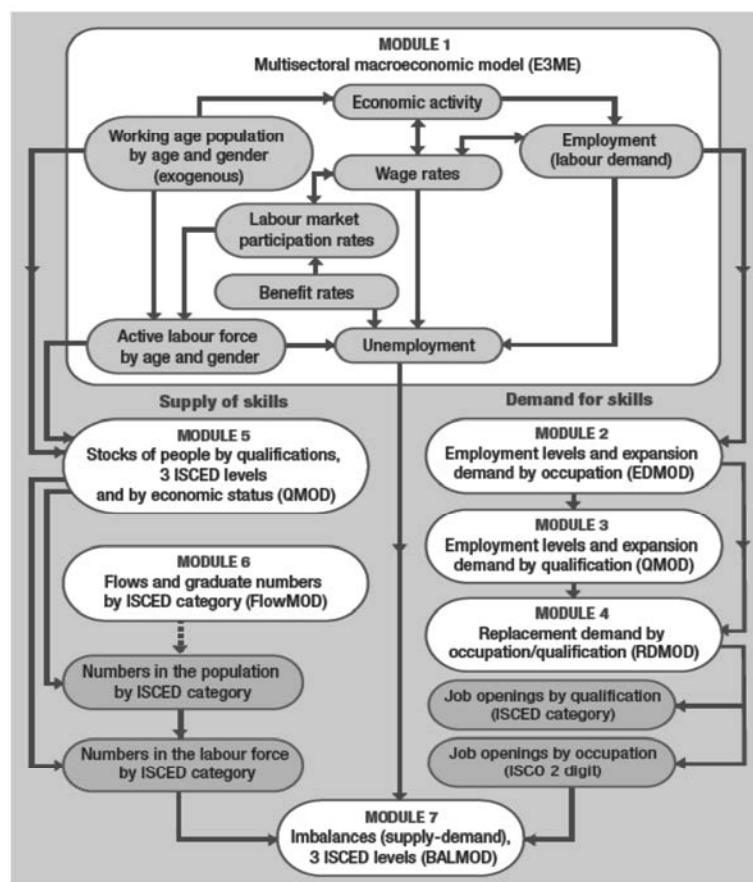
The information used to generate the labour demand and supply forecasts are based on official data sources. The database draws primarily on Eurostat sources. In particular it draws on Eurostat demographic data, national accounts (NA), the labour force survey (LFS) and additional data on flows of those acquiring and attaining qualifications. The LFS data, in particular, is subject to considerable scrutiny and analysis to avoid discontinuities and other problems. An important task in this respect is also the customisation of the LFS data in order to obtain detailed employment trends by occupations and qualification as well as for different labour supply estimates. Employment data are provided by national accounts, which are used for the overall modelling of macroeconomic and structural trends. Current changes of key classifications (i.e. the introduction of NACE rev. 2 and ISCO 08) are taken into account in the modelling framework.

The demand side involves four main elements (modules). The underlying macroeconomic module (E3ME model) produces a set of multi-sectoral macroeconomic forecasts.<sup>2</sup> This model delivers a set of consistent sectoral projections, which are transparent in terms of the assumptions made about the main external influences on the various countries (including technological change and the impact of global competition). This model combines the features of an annual medium-term sectoral model, estimated by formal econometric methods, with the some Input-Output modelling elements. It can be used for dynamic policy simulations and for forecasting and projecting macroeconomic variables over the medium and long term.

An occupational model (EDMOD) focuses on producing the estimates of expansion demand (employment growth) within sectors adopting common classifications and data sources. The occupational model (EDMOD) is based on European LFS data. The main advantage of the EU-LFS is that data collection is conducted on a rather frequent basis adopting standardised sets of questions and systems of classification. While there are still some differences across countries, the EU-LFS provides a broadly consistent set of data which can be used for producing occupational employment projections within the industries identified in macroeconomic models such as E3ME.



Figure 9.A1.1. Conceptual framework of modelling the demand for and supply of skills



Source: Cedefop (2012), “Skills Supply and Demand in Europe: Methodological Framework”, *Cedefop Research Paper*, No. 25, Publications Office of the European Union, Luxembourg.

The qualifications module (QUALMOD), also using EU-LFS data as the main source of information, focuses on qualification intensities within occupations. The qualifications model (QUALMOD) translates occupational employment projections into anticipated demand for three measures of skills, defined by the three broad levels of formal qualifications consistent with the ISCED classification.<sup>3</sup>

The replacement demand module (RDMOD) has been built to reflect the crucial importance of considering not only changing occupational employment levels but also the need to replace those leaving the workforce because of retirement, net migration and occupational mobility. Estimating replacement demand is not straightforward and is quite sensitive to the data sources used. Information on age and gender structure is required because many labour market flows, especially retirements and occupational mobility, are age and gender specific. Age structures also vary significantly by occupation. While older-aged individuals tend to leave the labour market due to retirement, younger people change occupations more frequently, form families or migrate within regions or countries.

The supply side focuses on producing medium-term projections of skill supply, as measured by the highest qualification attained (consistent with the levels as defined in the QUALMOD module) defined by five-year age bands and gender. The models on the

supply side produce consistent pan-European skills supply projections, using existing data (skills measured by qualifications) which are compatible with the projections of skills demand (focusing on qualifications). Ideally, the modelling and forecasting of the supply of qualifications requires a detailed and comprehensive stock-flow model, with behavioural links which can be used to predict the distribution of people in the total population and labour force by qualification.

The main values of labour supply are modelled within an augmented E3ME model as a function of economic activity, real wage rates, unemployment rates and benefit rates. At present, model parameters are estimated for labour market participation in each country by gender and separately for different age groups. This is of key importance for modelling educational participation and attainment since these are known to be age specific. This expanded model framework is then used to create a detailed set of baseline projections for labour supply, disaggregated by country, age group and gender and covering a 10-15 year period. This forms a key input to the analysis of the supply of qualifications and skills and provides the link between economic activity and labour market supply.

The main motivation for the development of skill demand and supply forecasts is to identify potential labour market imbalances and skill mismatches. The final reconciliation and balancing of the supply and demand projections is undertaken by the module BALMOD. The aim of this module is to reconcile the skill demand and skill supply projections, focussing on qualifications. However, comparing current demand and supply projections is problematic for both practical and theoretical reasons. Unless the two sets of results are based on common data sets and are carried out simultaneously, they cannot be directly compared. There are also various other conceptual and methodological issues regarding imbalances that need to be considered. Using a RAS procedure, BALMOD distributes the available supply of people with qualifications to the jobs on offer, making certain assumptions about the patterns of unemployment rates for the three qualification categories (high, medium and low qualified).

The results produced by the Cedefop skill forecast model and key exogenous variables are the subject of continuous dialogue with experts from individual countries who have better insight of labour market trends and data sources in their own countries. The use of such a network of national experts (the so-called *Skillsnet* network) increases efficiency and transparency and ensures the robustness of the national empirical results.

## Notes

1. The modeling framework as such has been designed and developed in cooperation with the Institute of Employment Research, University of Warwick and is described in detail in Cedefop (2012).
2. The E3ME model is developed by Cambridge econometrics. More information on this model is available in Cedefop 2012, or at the following link: [www.camecon.com/EnergyEnvironment/EnergyEnvironmentEurope/ModellingCapability/E3ME.aspx](http://www.camecon.com/EnergyEnvironment/EnergyEnvironmentEurope/ModellingCapability/E3ME.aspx).
3. Low qualification = ISCED 1 and 2; Medium qualification = ISCED 3 and 4; High qualification = ISCED 5 and 6.





**From:**  
**Matching Economic Migration with Labour Market Needs**

**Access the complete publication at:**  
<https://doi.org/10.1787/9789264216501-en>

**Please cite this chapter as:**

Descy, Pascaline (2014), "Projected labour market imbalances in Europe: Policy challenges in meeting the Europe 2020 employment targets", in OECD/European Union, *Matching Economic Migration with Labour Market Needs*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264216501-12-en>

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