

Global Agenda Council on Employment

Matching Skills and Labour Market Needs Building Social Partnerships for Better Skills and Better Jobs

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Executive Summary

Main Findings

Skills are a critical asset for individuals, businesses and societies. The importance of skills is even more pronounced in a dynamic, globalized world. Building basic skills early on, by broadening and improving the quality of early childhood, is essential. But it is also crucial to ensure that skills taught at school are relevant for the working world; that they are maintained and further improved during working life; and that they are recognized and used by employers once people are in the labour market.

Matching skills and jobs has become a high-priority policy concern. Skills mismatches occur when workers have either fewer or more skills than jobs require. Some mismatch is inevitable, as the labour market involves complex decisions by employers and workers and depends on many external factors. But high and persistent skills mismatch is costly for employers, workers and society at large.

Skills mismatch has become more prominent in the global economic crisis. However, it is primarily a structural issue and as such existed prior to the recent global economic slowdown. For the same reason, contrary to what some commentators believe, current record-high unemployment rates cannot be attributed to skills mismatch. Indeed, there is no evidence that skill levels have collapsed during the crisis.

Many employers report difficulties in finding suitably skilled workers. Although part of these difficulties are related to skill gaps and deficits in specific sectors, occupations and regions, they are mostly explained by factors other than skills, such as uncompetitive wages, unattractive working conditions, poor recruitment policies and/or mismatch between the location of skills and jobs. As a result, many shortages could be addressed by changes in training and recruitment practices, as well as by facilitating labour mobility.

A more worrying phenomenon is sizeable qualification mismatch. Affecting workers, firms and the overall economy, qualification mismatch occurs when a worker's qualification level is higher or lower than that required by the job. Although the match between what people can actually do and the content of their jobs may improve over time, qualification mismatch can be persistent and leave an adverse or "scarring" effect on an individual's career. In addition, unused skills will atrophy, resulting in a partial loss of the (initial) investment in them. Even when adjustment takes place, it may be costly and prevent the adoption of new technologies.

Policy Recommendations

Stemming the rise in structural unemployment, and in some types of skills mismatch resulting from the economic crisis, requires immediate action, on top of a long-term comprehensive strategy. Due to the prolonged recession, many unemployed people are facing few job opportunities and are more likely to accept employment that is not well matched to their skills.

Job creation is key to tackling high and increasingly persistent unemployment and underemployment in many countries. However, promoting jobs without paying due attention to their quality and to the skills required may only buy time and ultimately prolong the jobs crisis. Public employment services have an important role in ensuring that the return to job growth does not come at the expense of lower-quality skill matches. Activation strategies should not only focus on the immediate benefit of filling a job vacancy, but also consider the long-term consequences of training and placement decisions on individuals' employability and adaptability.

Adopting a "matching skills" approach during the crisis means providing the right skills needed in the labour market, while generating the necessary economic dynamism to generate new jobs. Apprenticeships and the provision of workplace training can help both young people and the unemployed to build links with the labour market and gain useful work-related skills. Knowledge clusters, in which companies adopt innovative product market strategies and interact with educational institutions, can foster the creation of skill-intensive jobs and a better match with workforce skills.

Labour market policies should focus on building the human capital of the low-skilled unemployed. For this, a shift is required from the "work-first" approach, often used in activation strategies, to a "learn-first" process primarily through workplace learning, emphasizing the retraining or skills upgrading of job seekers with poor skills and low qualifications. In the current context of weak labour demand in a number of countries, this could potentially improve the match of job seekers' skills with those skills likely required by jobs created once the recovery strengthens.

Reducing skills mismatch with lasting effect and helping economies make the most of their workforce skills require collaborative effort from all stakeholders. First, action is needed to reduce the gap between knowledge generated in the educational system and the skills demanded by employers. Second, continuing intervention is necessary during the employment life cycle, targeting continuous skill development and use.

Improving educational-system responsiveness to labour market needs, and ensuring that students complete their schooling with skills needed to find work, require collaboration between employers and public authorities. People with low basic skills, constituting a high proportion of the population in some countries, remains a serious problem as they do not have the minimum skills required by the labour market. In developing and emerging economies, financial barriers play a key role in explaining school dropout rates. Governments should support student participation in education at least through upper-secondary schooling, for example by introducing schemes with financial incentives to attend school. Actions on a national and regional level are also needed to avoid creating isolated policies and to ensure a greater synergy between economic growth and innovation plans on the one hand, and education and labour market policies on the other.

High quality career guidance helps inform educational and career choices that are more in line with available and foreseen labour market opportunities. Rapid transformation characterizes many sectors, making it increasingly important to prepare career guidance workers and counsellors to understand labour market information and job demands. This should be part of the policy agenda for responsive education and training.

The notion that employees new to the workplace will have all the job skills required over the course of their careers is unrealistic. Employers need to have stronger involvement in and ownership of skills, given the importance of helping workers develop and maintain their skills by fully utilising them. Moreover, employers must offer attractive working conditions and learning opportunities, and ensure that their recruitment strategies efficiently attract and select talent. Large companies can promote continuing training by engaging their suppliers in joint training initiatives, leading to potential positive spillover effects on the value chain's overall competitiveness.

Through social dialogue, unions can promote high quality jobs and stable employment relationships, as well as help employers and workers recognize the importance of continuous skills development. Union support is crucial in developing qualifications and curricula relevant to the labour market, and in expanding internship and apprenticeship schemes for youth and the unemployed to learn on the job.

Governments should provide financial incentives to support employer-provided training, particularly for occupations in shortage or for workers that otherwise would not benefit from training. In addition, governments should promote participation in the workforce of groups with high inactivity rates, such as women and older workers. Finally, a well-designed and well-managed migration policy is also important in tackling skill shortages.

1. Skills Mismatch – An Issue of Worldwide Concern

Recent years have seen policy-makers and social partners across the world become increasingly concerned with the match between their workforces' skills and their labour markets' needs. Skills mismatch, the gap between the skills required on the job and those possessed by individuals, raises the question of the ability of societies to capitalize on their workforces. Skills are also a critical asset for individual workers and firms in a rapidly changing and globalized world. When individuals have substantially more skills than required for their jobs, those individuals, as well as enterprises and economies, are prevented from reaping benefits of their skills investment such as higher wages, productivity growth and innovation. In some developing and emerging countries, where volatile economic growth is accompanied by a poorly educated workforce, skills shortages and an underskilled workforce tend to compromise economic development. In contrast, for many advanced economies and some developing countries, significant investments in education that are not accompanied by job growth foster high rates of graduate unemployment and mismatches in qualifications.

Different types of skills mismatch coexist in modern labour markets

In market economies, product markets influence labour demand, and skill requirements are driven by employer choices in designing jobs (e.g. which tasks are delegated, which can be substituted by technology, which rely on non-routine tasks). Job candidates and potential employees also come to the labour market with varying knowledge, competencies and abilities that can be broadly defined as "skills", or the outcome of individuals' choices of education, training and of their work experience, combined with innate abilities and preferences.

The process of matching diversely skilled job seekers with available vacancies is not automatic. Imbalances between the supply and demand for people with different skills exist in all economies and are sometimes inevitable. Part of any observed skills mismatch is the consequence of individuals' initial educational and occupational choices, and of typically imperfect information about opportunities in the labour market. In addition, labour markets are dynamic and characterized by information asymmetries. As a result, different types of skills mismatches coexist, including skill shortages, qualification mismatches and skill gaps (Table 1).

Table 1: Forms of Skills Mismatch

Sources: Cedefop, 2010; OECD, 2011

Skill shortage	Demand for a particular type of skill exceeds the supply of people with that skill at equilibrium rates of pay.
Qualification mismatch	The level of qualification and/or the field of qualification is different from that required to perform the job adequately.
Over-(Under-) qualification/education	The level of qualification/education is higher (lower) than required to perform the job adequately.
Skill gap	The type or level of skills is different from that required to perform the job adequately.
Over-(Under-) skilling	The level of skill is higher (lower) than required to adequately perform the job.

Skills mismatch has significant economic and social cost

For individuals, overskilling or overqualification means unrealized expectations, lower returns on investment in education, lower wages and lower job satisfaction. For firms, it actually may reduce productivity and can increase the staff turnover rate. At the macroeconomic level, this contributes to structural unemployment and reduces growth in gross domestic product (GDP) through workforce underutilization and a reduction in productivity. But in addition to efficiency losses, these mismatches entail significant equity costs, as young people, migrants and those working in part-time and fixed-term jobs are more affected by skills mismatch.

Labour market frictions and employer practices can underlie recruitment difficulties

Despite the large increase in joblessness brought about in many countries by the Great Recession, employers continue to have difficulty finding the right talent. But for today's 45 million unemployed workers in advanced countries and more than 200 million jobless individuals around the world, lack of suitable job opportunities is the main concern. Employers often attribute their difficulties in recruiting to a lack of appropriately qualified candidates. However, many reported shortages arise due to the inability or unwillingness of firms to offer competitive pay and attractive working conditions, to poor recruitment and training policies, and/or to geographical barriers. As a result, many of the identified shortages could be addressed by facilitating labour mobility, promoting better recruitment and human resource management practices or supporting small and medium-sized firms in identifying needed skills and providing training.

Skills mismatch increasingly affects individuals throughout their lifetime

Skills mismatch affects individuals at different stages of their working lives. In increasingly dynamic job markets, people are affected not only when first leaving school and entering the workforce, but also every time they change jobs or re-enter the labour market after long spells of unemployment or inactivity. Skills mismatch is also a dynamic phenomenon affecting employees within their jobs and across their entire working careers, particularly if they fail to upgrade their skills and face skill obsolescence. Continuous adaptation of workers' skills to changing job demands depends on opportunities to learn on the job and

to receive continual training at work. Skill development and mismatch must therefore be considered over an individual's life cycle – namely, basic skills being developed at school, complemented by the accumulation of work-related (practical and generic) skills and accompanied by retraining and new-skill acquisition in line with changing technologies.

Some forms of skills mismatch have increased during the crisis

The global financial and economic crisis led to widespread job destruction, alarmingly high unemployment rates and underemployment in most countries. Current job seekers face few job opportunities and are more likely to accept part-time employment and work not well matched to their skills. Such jobs tend to provide limited opportunities for skill development and lead to scarring effects on individuals' careers. While job creation is necessary to tackle high and increasingly persistent unemployment, promoting jobs without paying due attention to their quality and to the skills required may only buy time and ultimately prolong the jobs crisis.

Skill matching requires a collaborative long-term strategy

Effectively reducing skills mismatch requires creation of a comprehensive long-term strategy, one involving public-private partnerships among governments, employers and unions to continuously develop and improve the use of skills. Bringing education and the working world closer together is necessary for success. A coordinated strategy is required that builds solid skills through high quality education while involving all relevant stakeholders in the skill-matching process throughout an individual's life. Other than learning on the job, work-based and job-specific skills are difficult to acquire. Preparing young people to successfully enter the labour market therefore requires cooperation between public and private sectors, so that education can respond to labour market needs and provisions are made for opportunities to learn in the workplace. Guiding students in choosing their fields of study, promoting their transition from school to work and maintaining and improving skills throughout their working lives will ensure that the full potential of those skills are exploited and the needs of enterprises are effectively met.

2. Taking Stock of the Skills Mismatch

2.1 Imbalances between skill demand and skill supply in the economy

While tertiary qualifications are in high demand in advanced economies, they coexist with numerous low-skilled jobs

In most countries of the Organisation for Economic Co-operation and Development (OECD), a higher-education degree is the qualification level most frequently required in jobs today (Figure 1).¹ The composition of jobs in advanced countries has also consistently shifted over the past decade towards the employment of more highly qualified people at the expense of those low-qualified.² While part of this

trend is due to rising job-skill requirements, it has been made possible by the greater supply of people with higher qualifications coming into the labour market.

In some countries, however, job distribution by educational requirements is highly polarized, with growing employment shares of both high- and low-qualified workers and a decline in the demand for those medium-qualified. In Spain and England/Northern Ireland (UK), for instance, many jobs with low educational requirements exist along with a significant demand for highly educated workers.³ In contrast, in other countries (e.g. Austria, Germany, Italy, Poland, the Czech and Slovak Republics), jobs with medium-level educational requirements are the most prevalent.

Comparing job requirements to the qualifications of the workforce, it is apparent that important imbalances exist in dynamic labour markets. In several countries, the share of the labour force with tertiary qualifications exceeds the share of jobs requiring tertiary degrees, which can lead to higher levels of graduate unemployment or overqualification. While this tends to occur in countries with a large share of the workforce holding post-secondary qualifications, countries with a relatively small share of tertiary-educated adults in the labour force (e.g. France, Italy) tend to have skill imbalances in the form of shortages. Finally, imbalances also exist at the low end of the skills spectrum. In particular, some countries still have a production structure requiring a relatively large share of workers with low qualifications, while a substantial part of the labour force possesses higher qualifications (e.g. France). Thus, shortages of workers for lower-skilled jobs ("labour shortages") are also prominent in these economies. Moreover, employer studies report widespread complaints about difficulties finding workers for unskilled jobs (e.g. labourers), when "skill" shortages are not the explanation.

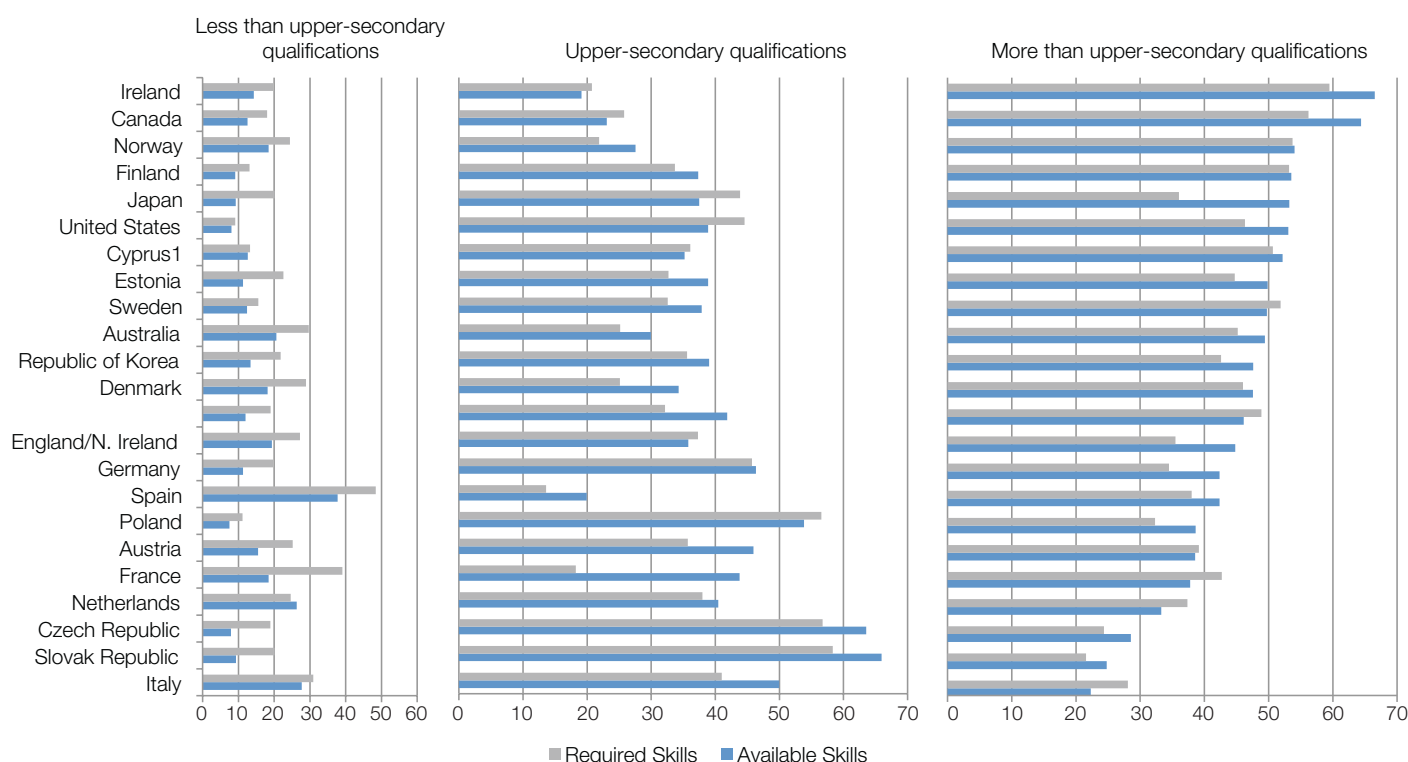
The imbalances shown in Figure 1 mask other common types of mismatches in labour markets, such as a discrepancy between the different types of workforce qualifications (fields of study) and the specific needs of particular sectors and occupations within economies. For example, despite the apparent oversupply of higher-qualified graduates in advanced economies, shortages of professionals in the healthcare (e.g. medical doctors, nurses, midwives), finance (e.g. business professionals) and information and communications technology (ICT) (e.g. software and applications developers) sectors, as well as in occupations requiring specific vocational skills, most notably engineering, are reported in several countries.⁴

Significant labour market imbalances are expected to persist in advanced economies in the coming decades. In particular, shortages for workers with medium and low qualifications are anticipated, not least because of the severe demographic pressures caused by the ageing of working populations. The pan-European projection model of skill supply and demand,⁵ for example, illustrates that at current employment growth rates, job creation for high-skilled occupations is likely to fall behind the supply of people with higher qualifications. In contrast, the total demand for intermediary vocational skills, which are subject to high replacement needs due to the withdrawal of older workers from the labour force, may remain unsatisfied.

Figure 1: Comparing Available and Required Skills in OECD Economies

Note: Available skills are reflected by the share of the labour force at each level of educational attainment; required skills are reflected by the share of workers reporting each qualification level as necessary to get their own job.

Source: OECD, 2013. Survey of Adult Skills (Programme for the International Assessment of Adult Competencies [PIAAC]), www.oecd.org/site/piaac



Imbalances are due to low basic skills in many developing and low-income countries

While imbalances in the form of overqualification are prominent in advanced countries, underqualification is an issue in low-income countries. Low educational attainment in these economies results in poor literacy and numeracy, low productivity growth and low potential for economic diversification. This lack of basic schooling is the major reason for skill shortages and skill gaps in the workforce;⁶ however, based on current trends, the goal of universal primary education will be missed by a wide margin. The gross enrolment rate in formal secondary schooling – the most effective path for young people to develop the foundational skills needed for work and life – was just 52% in low-income countries in 2010. Moreover, in the same year, 775 million adults could not read or write; half of them were in South and West Asia, and over one-fifth in sub-Saharan Africa.⁷

Furthermore, in the developing economies of South Asia and Africa, considerable imbalances exist between the demand for and supply of people holding medium-level and vocational qualifications. According to recent estimates, a global shortage of 45 million workers qualified to work in labour-intensive manufacturing and services is predicted in developing economies by 2020.⁸

Higher unemployment rates among the better educated also exist in some developing countries. In North Africa (e.g. Algeria, Egypt), the unemployment rate for people with

tertiary-level degrees tends to be higher than among those with primary or secondary education. Such a distorted trend suggests structural labour-market problems, lower returns on skill investments and loss of productive employment. High unemployment among better educated workers is partially caused, for example, by lack of private-sector jobs and the large size of the informal economy. Educational pathways that lead to employment in the public sector are seen as more attractive and pose another challenge: in some cases, family income allows graduates to queue for better jobs (typically in the public sector) rather than accept private-sector employment that is often perceived to be of lower quality.

2.2 The difficulties employers face in finding talent

Employers continue to be concerned with skill deficits despite high unemployment in many countries

Around the world, many employers complain about their inability to fill job vacancies. In Europe, roughly 4 out of 10 establishments report difficulties in finding workers with the required skills.⁹ In another regular survey by the consultancy Manpower Group, recruitment bottlenecks ranged from 3% in Ireland and Spain to 85% in Japan in 2013 (Figure 2). No clear differences exist between advanced and developing countries. Only about 6% of South African employers reported difficulties in filling jobs, compared to around 30% in Peru, Colombia, Guatemala and the People's Republic of China, approximately 40% in Panama, Mexico, Costa Rica and Argentina, about 60% in India and nearly 70% in Brazil.

In most countries, reported recruitment difficulties have declined from 2007 to 2013. The global financial crisis led to a sharp rise in unemployment and hence a larger pool of candidates per vacancy; this is clearly the case in Ireland, Spain and the United Kingdom (UK), where the reported decline has been particularly steep. Some countries only marginally affected by the crisis, such as Australia, have also seen a decline in their recruitment difficulties. However, employers in France, Greece and Italy reported recruitment difficulties in 2013, despite historically high unemployment rates.

Some assert that the seemingly high number of employers experiencing such difficulties is due to young people and workers ill-prepared for work. Across countries participating in the survey, an average 34% of employers cite a lack of technical competencies, while 19% believe that candidates (also) lack workplace competencies (i.e. “soft skills”). A similar magnitude of skill deficits is identified in a recent European Barometer survey of companies that are “active recruiters”.¹⁰ About 33% of the surveyed employers identified the primary challenge they face in filling vacancies as the “shortage of applicants with the right skills and capabilities.”¹¹ In some emerging or developing countries, about one-third of employers consider an inadequately educated workforce to be a “very severe” or “major” obstacle for their firm, with some countries (e.g. Belarus,

Kazakhstan, Russian Federation, Romania, Baltic States) being particularly affected by skill deficits.¹² Skill gaps usually reported by employers around the globe include a lack of generic or soft skills, namely team work, interpersonal skills, leadership, knowledge of foreign languages, readiness to learn, problem solving and ICT skills.¹³

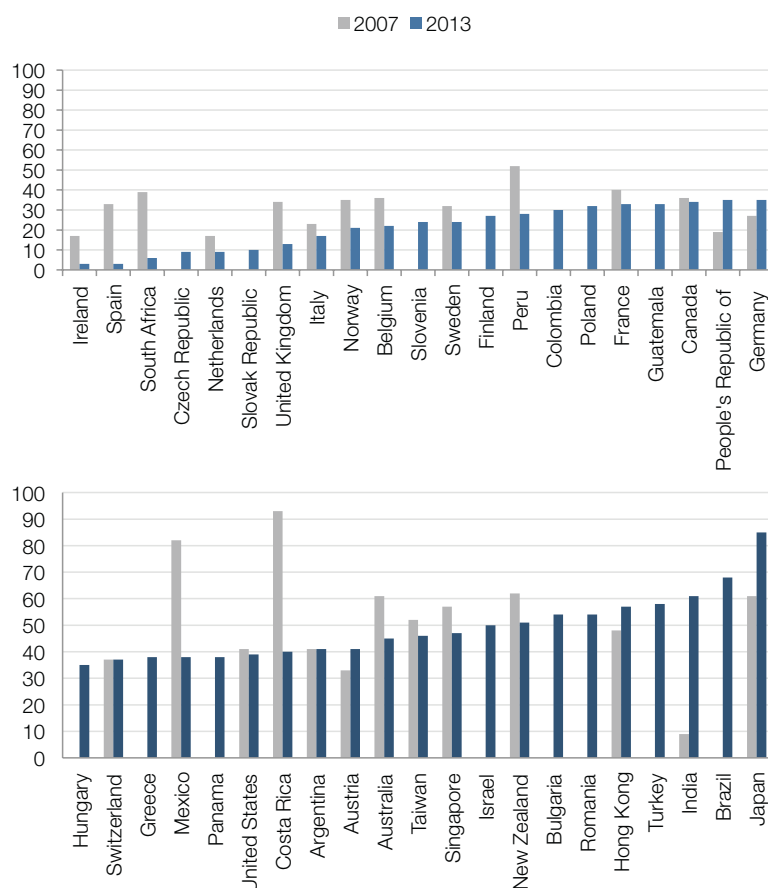
However, human resource practices may be inefficient

For specific sectors, occupations and regions, and for companies at the forefront of innovative product market strategies, rapid technological change, coupled with slowly adapting educational and training systems, may result in actual skill shortages.¹⁴ However, most surveys do not define what constitutes a difficulty in finding appropriate candidates and thus tend to confound the lack of skills in a country’s workforce with other factors, such as recruitment strategies, poor working conditions and barriers to geographical mobility. Moreover, they do not specify whether employer experiences are typical of those associated with filling any vacancy, whether the perceived difficulty results from unreasonable expectations, or whether employers’ recruitment practices and wage offerings are the underlying problem.

Inefficient recruitment strategies have been highlighted as a reason for the difficulties companies face when hiring. Some firms, particularly small and medium-sized establishments with fewer resources for recruitment and training, find it harder to attract and hire talent.¹⁵ Cappelli (2012) argues that, in a context of weak aggregate demand, firms’

Figure 2: Share of Employers Having Difficulty Filling Job Vacancies

Source: Manpower Group, 2013, www.manpowergroup.com



recruitment intensity has been low, and inadequate human-resource practices have led to the imposition of exacting hiring criteria. Faced with an oversupply of highly-qualified job candidates, employers prefer to wait for the perfect applicant rather than provide good working conditions and the pay required to attract talent.

More flexible recruitment processes would help to overcome recruiting difficulties, for example by hiring applicants who do not possess all the required skills but show potential for learning. However, only 7% of employers in the Manpower Group survey say that they are willing to redefine qualifying criteria in the face of recruitment difficulties. Furthermore, only about 13% of employers indicate that they recruit from talent pools not previously used to address recruitment difficulties. Commonly pursued and untapped talent pools are candidates from outside the local region (5%), candidates from outside the country (4%) and young people/youth (4%). Yet, only 2% of employers say they would pursue hiring women, and a similar percentage of employers would look to hire older workers. Both of these results are presumably due to gender stereotyping and discrimination.

Although a sizeable 24% of employers in the survey complain about lack of work experience among young applicants, firms fail to engage in on-the-job or dual training programmes that would actually help to improve youth job-readiness. While most educational systems struggle to find work placements for students due to firms' reluctance to create work-based learning opportunities, only about a fifth of employers recognize the importance of training and respond to recruitment difficulties by providing existing staff with additional training.

Shortages often reflect poor job conditions

Only 6% of survey respondents report that they enhance job benefits to attract applicants for hard-to-fill vacancies, and only 5% report that they increase starting salaries. The inability to offer a competitive starting salary is also cited by about a quarter of employers in the 2010 European Barometer survey, mainly in some less productive economies (e.g. Bulgaria, Greece, Spain, Latvia, Hungary, Poland, Romania). Another 11% of recruiters of higher-education graduates mention that limited resources inhibit their ability to adequately market their graduate vacancies. Together, the share of employers acknowledging that inflexible wages (sometimes due to credit constraints or rigid wage-setting institutions) inhibit their ability to attract talent is therefore similar in size to those who put the blame for hiring difficulties on skill shortages.

Unattractive working conditions play an important role in explaining the difficulties employers face in recruiting appropriately skilled workers. Firms that rely on temporary or casual staff (e.g. temporary agency or fixed-term contracts), that require their employees to work outside normal working hours and that do not have work councils or apprenticeship training programmes, have been found to be less likely to attract skilled labour.¹⁶

Similarly, when asked to rank the most serious obstacles to the effective operation of their businesses, employers note that skill deficiencies are of lesser concern. In 2009, only 9% of employers in Eastern Europe and Central Asia considered an inadequately educated workforce to be the most serious obstacle to operating their establishments. Nevertheless, it did constitute the primary barrier for over 20% of companies in Estonia and Romania. Other factors, such as tax rates, inadequate access to credit, political instability and competition from the informal economy, were seen as the more important obstacles. European manufacturing enterprises also consider that insufficient product demand, rather than labour shortages, is the most important factor limiting their production.¹⁷ While employers may report difficulty in hiring, some do not see it rising to a level that would create a problem for their businesses.

2.3 Qualification mismatch and underutilization of skills

Qualification mismatches are pervasive and persistent

Qualification mismatch is pervasive in modern job markets and affects one-third to one-half of the employed population.¹⁸ About 21% of workers in OECD countries report that they have higher qualifications than those required for their jobs, and 13% are underqualified (Figure 3). Several developing countries also have high rates of overqualified youth (e.g. 30% in Peru, 21% in Armenia). However, given low educational-attainment rates among working youth, less-developed economies tend to have a significant share of underqualified workers, reaching levels as high as 82% in Malawi, 56% in Cambodia and 55% in Togo.¹⁹

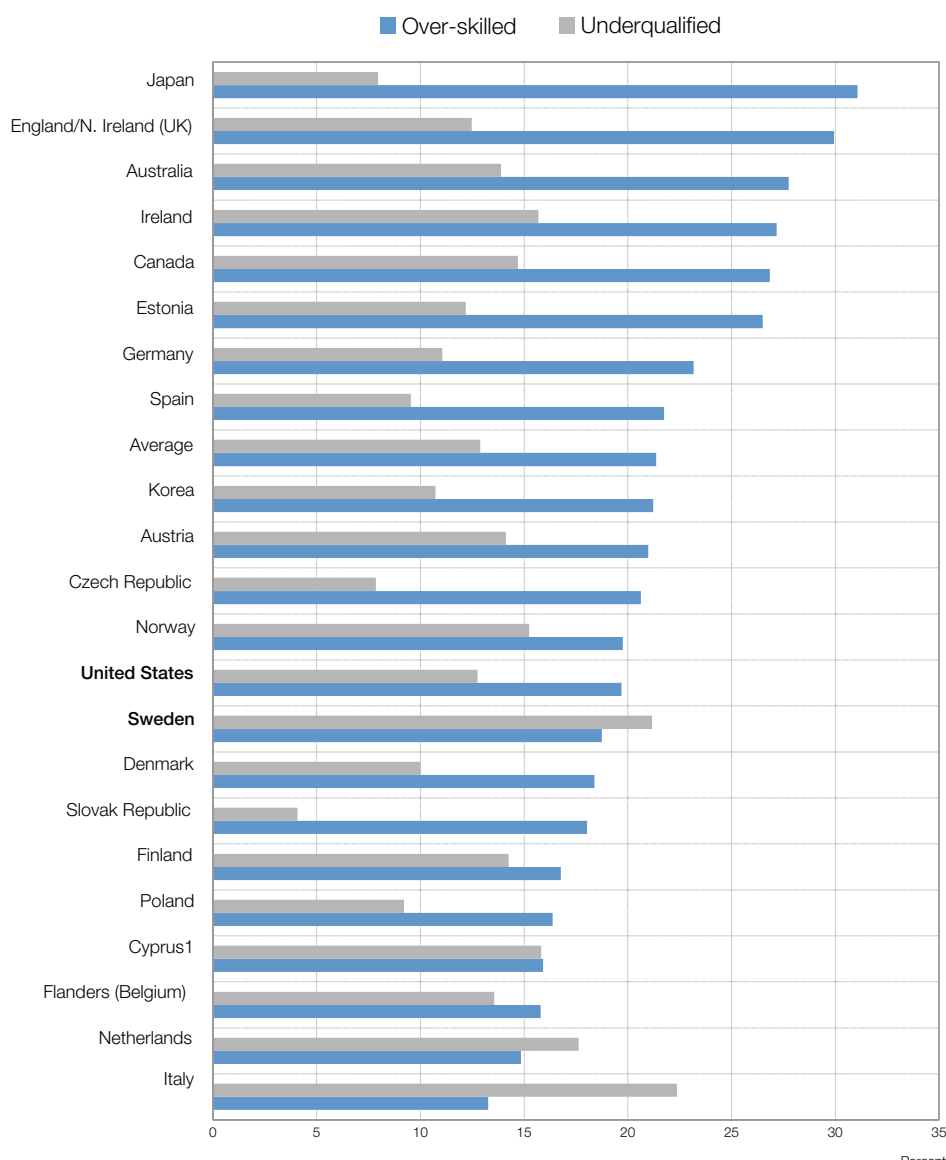
In many advanced countries, qualification mismatch (particularly overqualification) has steadily increased in recent years, while underqualification has fallen as those older and less qualified gradually withdraw from the labour market. The average rate of overqualification in Europe has risen by about 5 percentage points from 2004 to 2010. About 1.5 percentage points of this total occurred during the economic recession (2008-2010), presumably because individuals, faced with stronger job competition, more readily accepted jobs that did not match their qualifications and skills.²⁰ Overqualification is also often associated with field-of-study mismatch, when people accept jobs with lower qualifications than they actually possess, but in an area in which they have little or no expertise. Quintini (2011) finds that, in advanced countries, as much as 40% of the overqualified are working in areas outside their expertise.

It is often said that overqualification can reflect people's educational choices and be linked to the pursuit of work experience and upward career mobility. However, studies show that overqualification can lead to a lasting, "scarring" effect on those concerned. Workers entering the labour market during weak aggregate demand suffer from persistent and long-term adverse effects on their work prospects, including a higher likelihood of continued overqualification.²¹ Affecting mostly younger workers and migrants, overqualification also points to discrimination towards certain groups or to segmented labour markets. According to the recent OECD Survey of Adult Skills,

Figure 3: Incidence of Over- and Underqualification

Note: The graph shows the share of workers who are over- and underqualified, and is computed by comparing each worker's highest educational attainment to the educational attainment that the worker deems necessary to get his or her own job.

Source: OECD, 2013. Survey of Adult Skills (PIAAC) www.oecd.org/site/piaac



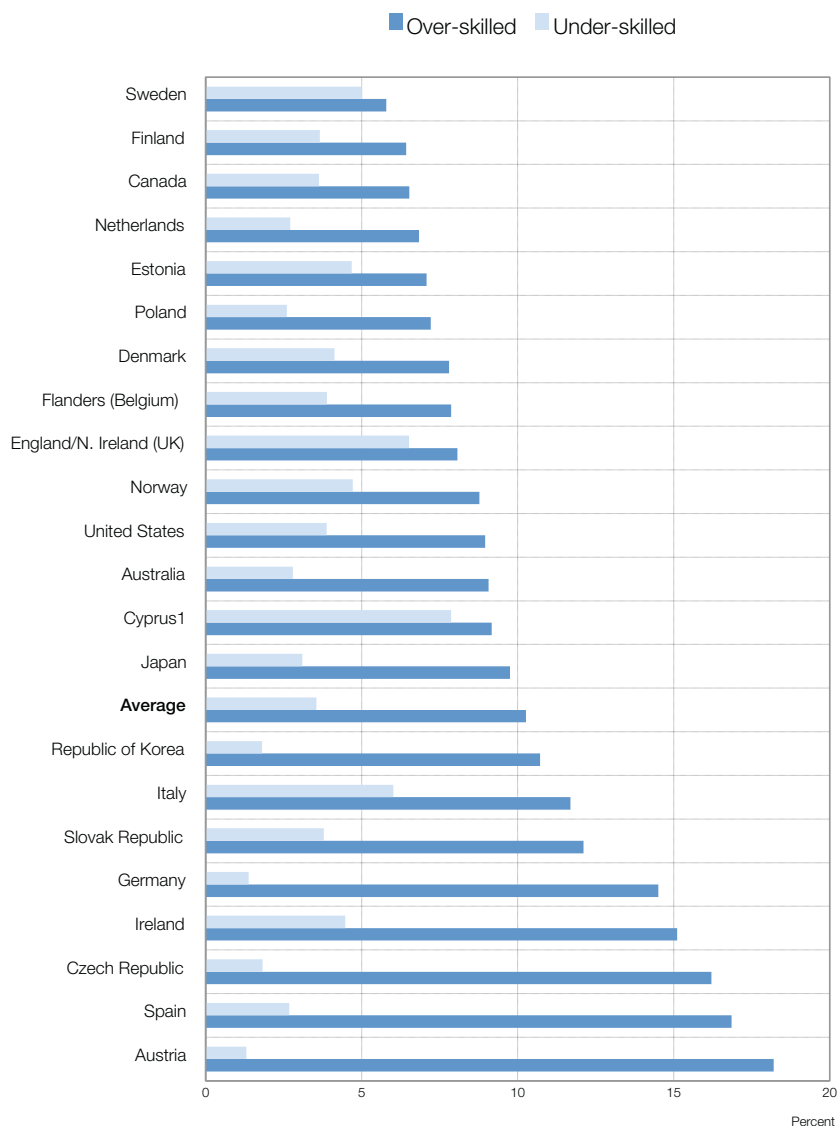
qualification mismatch is particularly common among foreign-born workers and those employed in smaller-sized establishments, in part-time jobs or on fixed-term contracts. Of course, some instances of qualification mismatch may occur when workers have lower skills than would be expected at their level, due to either poor performance in initial education or to depreciation of their skills over time. In contrast, underqualified workers often have the skills required at work but not the qualifications to show for them, as typically occurs among older workers. As a consequence, qualification mismatches only imprecisely reflect the link between workers' skills and job skill requirements. Nevertheless, qualification mismatches are a reflection of a misalignment between people's educational choices and labour market needs. Large discrepancies should therefore trigger policy interventions aimed at reinforcing communication flows between education and training, and the labour market.

Overqualified workers earn less than well-matched workers with the same qualification and proficiency levels, which in turn may point to potential adverse effects on productivity. On average across countries, the wage penalty associated with overqualification is about 13%, and is largest – at or exceeding 18% – in Estonia, Republic of Korea, Poland and the United States (US). By contrast, underqualified workers earn about 9% more than their colleagues who are well-matched in the same job.²² However, contrary to overqualification, underqualification is more prominent in the older segment and depends on the share of lower-educated workers in an economy; this suggests that many underqualified workers may have the skills required for work but not the qualifications to show for those skills.

While workers with a given level of qualification would be better off if they worked in matched jobs, qualifications and skills in excess of those required at work are still valued in the labour market. On average, a tertiary graduate holding a job that requires only an upper-secondary qualification earns

Figure 4: Incidence of Mismatch in Workers' Literacy Skills

Note: The incidence of skill gaps is calculated by comparing workers' literacy proficiency with the level of literacy proficiency required by their jobs. Overskilled workers have a higher proficiency level than the highest proficiency of workers who self-report that they are well matched to their jobs. Underskilled workers have proficiency level that is lower than the minimum proficiency of workers who self-report that they are well matched to their jobs. Source: OECD, 2013. Survey of Adult Skills (PIAAC) www.oecd.org/site/piaac



less than in a job requiring a tertiary qualification, but more than an upper-secondary graduate in a job requiring upper-secondary qualifications. The Survey of Adult Skills suggests that this premium is about 4%.

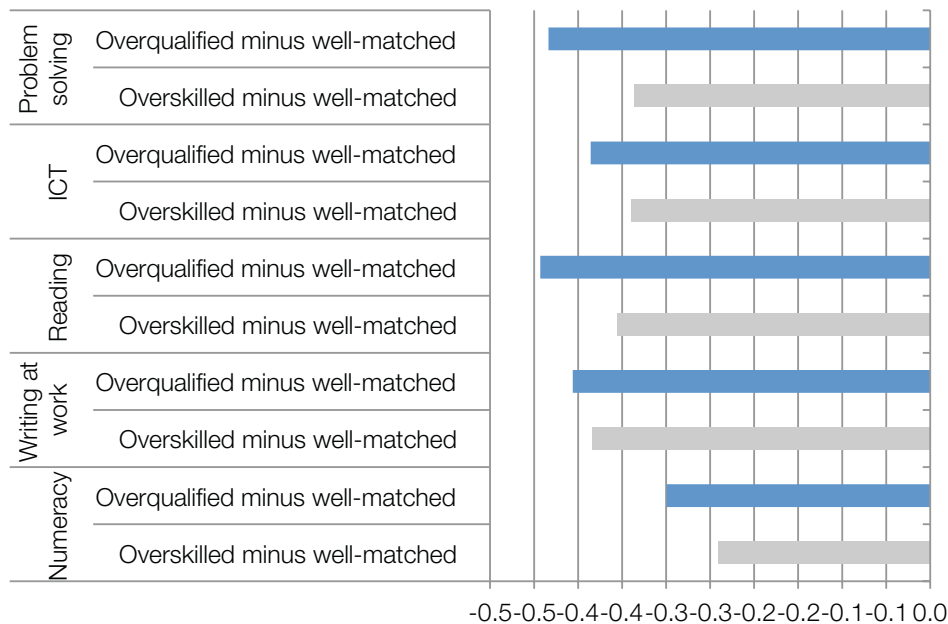
Skills are underutilized in the workplace

Using an objective measurement of worker foundation skills and of job requirements in advanced labour markets, the Survey of Adult Skills shows that skills mismatches in the workplace are also pervasive, affecting just over one in seven workers (Figure 4). Furthermore, when asked to subjectively assess the relevance of their skills in relation to their job demands, about 33% of European employees believed that they possessed skills in excess of their job duties (overskilled), while 13% felt that they were in need of further training to cope with their jobs (underskilled).

The Survey of Adult Skills confirms further that both overqualification and overskilling are associated with a significant underuse and “waste” of human capital and skills, including numeracy, literacy, ICT and problem solving at work (Figure 5). On a five-point scale, ranging from no use to daily use, overskilled workers tend to use their writing and reading skills about 0.4 points less than their well-matched, equally proficient counterparts. A similar figure is found for overqualified workers, confirming that mismatched workers generally underperform in terms of skills use compared to individuals in matched jobs.

Figure 5: Underuse of Skills Associated with Skills and Qualification Gaps (Average of 22 Countries)

Note: Skills use is measured on a scale ranging from 1 (never used) to 5 (used daily). The values reported correspond to the point difference in skills use between the overskilled/qualified and their well-matched counterparts, controlling for skills proficiency.
Source: OECD, 2013. Survey of Adult Skills (PIAAC) www.oecd.org/site/piaac



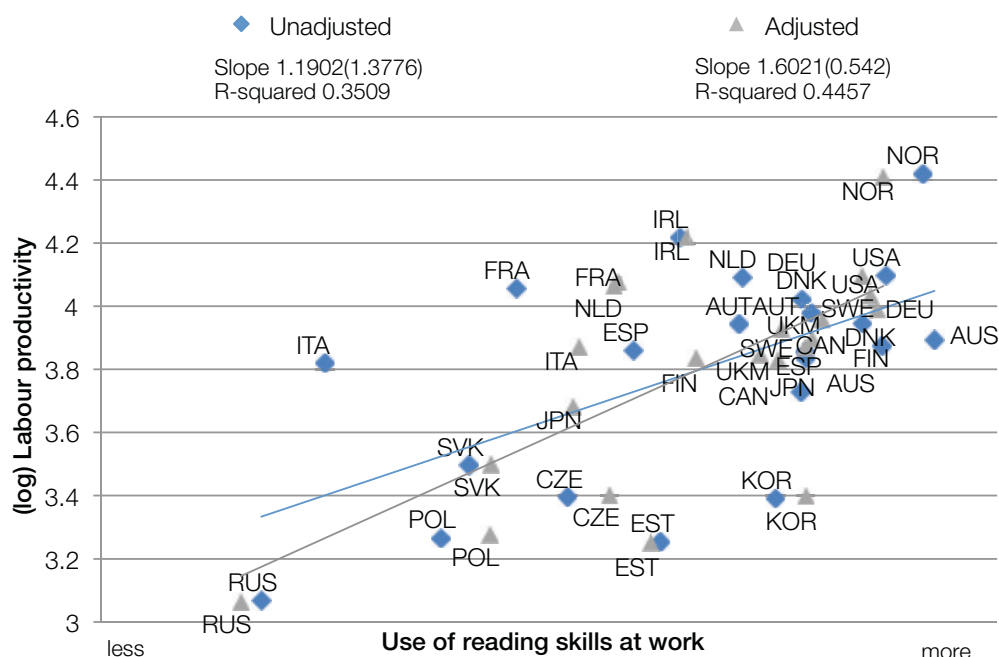
Underutilization of skills implies lower labour productivity

The underutilization of available skills has important implications for aggregate labour productivity. The OECD (2013) shows that use of skills, more than actual skills proficiency, determines a country’s labour productivity (Figure 6). Nevertheless, employers in many countries are not making the most of their workers’ information-processing skills, such as reading, numeracy, ICT and problem solving. For example, the use of reading and numeracy at work is rather low in Japan, which ranks highest among countries for adult proficiency in literacy and numeracy. On the other hand, employers in the UK and US use their workers’ skills rather efficiently, despite their adult populations having below-average proficiency in literacy and numeracy. Both countries have significantly higher labour productivity than Japan.

Figure 6: Labour Productivity and the Use of Reading Skills at Work

Note: Lines are the best linear predictions of the relationship between the use of reading skills at work and labour productivity, adjusted or unadjusted by proficiency level in literacy and numeracy. Standard errors appear in parentheses.

Sources: OECD, 2013. Survey of Adult Skills (PIAAC) www.oecd.org/site/piaac; OECD.Stat for data on GDP per hours worked



3. Policies and Practices to Address the Skills Mismatch

The available evidence illustrates that when considered together, qualifications and skill gaps, as well as indicators of the underutilization of work skills, imply a collective waste of talent and resources with potentially significant economic and social implications. A better management of skills and human resources can lead to economic benefits, as well as benefits in workers' well-being. Reducing the skills mismatch includes the adoption of better hiring practices, job design and training provisions, on top of public actions and mechanisms to improve the responsiveness of education and training in partnership with governments, employers and unions. Better labour market information is also needed to reduce skills mismatches, to guide student learning and career choices and to support geographical and occupational worker mobility. In addition, opportunities to learn on the job and to receive continuing training at work are necessary for workers to constantly adapt their skills and meet changing job demands. A comprehensive strategy to reduce the skills mismatch in the medium and long term therefore requires the involvement and commitment of all key stakeholders. However, immediate actions to tackle the negative effects of the global economic crisis need to complement any focus on strategy.

3.1 Addressing the negative effects of the global economic crisis

Apprenticeships for all

Weak labour markets and demand have resulted in a serious jobs crisis in a number of countries, primarily affecting young people. Particularly high youth unemployment and increasing rates of overqualification among those who find a

job indicate that young people have serious difficulties when entering the labour market. As enterprises find it difficult to retain their current workforce and few new jobs are created, it becomes exceptionally difficult for those with no prior work experience to successfully enter the job market. It is also necessary to maintain and increase the job readiness of the unemployed and to generate economic dynamism for driving new job creation.

Employers commonly report a lack of practical experience among school graduates. But job-specific and work-based skills are difficult to learn other than on the job. Apprenticeships and the provision of training in the workplace can help both young people and the unemployed to maintain the link with the labour market and to gain useful work-relevant skills. In 2013, the Forum's Global Agenda Council on Employment called for measures to promote job creation and increase the number of apprenticeships and training programmes for young people. A number of recent policy initiatives have also been developed to introduce or scale up apprenticeship programmes (Box 1).

Offering a wider range of apprenticeships and training opportunities can be a helpful short-term response with beneficial medium-term consequences.²³ Young people and the unemployed become active in the labour market and acquire useful skills to find suitable work when the economy recovers. In addition, apprenticeships are attractive to young people as they combine training with earnings ("learn as you earn"), access to social protection and labour rights, and a higher likelihood of post-training employment. Nevertheless, a particular challenge in developing countries is the large number of youth within the informal sector. For them, schemes to recognize prior learning, combined with targeted training, can be a stepwise approach to gain employment in the formal sector.

Recent research demonstrates that apprenticeship schemes in countries with strong dual education systems, combining work-based learning with theoretical learning in schools, can help to better meet the skill needs of companies and improve the employment picture for young people. Hands-on work experience helps to avoid skill gaps and to provide training relevant to labour market demand. Quality apprenticeships enable employers to offer innovative training that responds to their immediate needs and is associated with higher productivity, better opportunities for sustained employment, better working conditions and higher skill transfer within and across sectors.²⁴

Box 1: Recent Initiatives to Promote Apprenticeships The European Alliance for Apprenticeships

Apprenticeships combine vocational education and training in both a school and a company, leading to a recognized qualification. Apprenticeships and work-based learning appear to ease the transition from education and training to work. Boosting the quality and supply of apprenticeships is one of the European Union's (EU) policy initiatives to address the unprecedented levels of youth unemployment.

The newly-instituted European Alliance for Apprenticeships aims to increase the quality and supply of apprenticeships across Europe and to change mindsets towards this type of learning. To achieve this goal, the Alliance brings together public authorities, business and social partners, vocational education and training (VET) providers, youth representatives and other key actors such as chambers of commerce to coordinate and scale up different initiatives for successful apprenticeship-type schemes. Other key stakeholders with concrete contributions to the Alliance are the European Social Partners (European Trade Union Confederation – ETUC-, BusinessEurope, European Association of Crafts and Small and Medium-Size Enterprises- UEAPME-, European Centre of Employers and Enterprises- CEEP-), Eurochambres, individual businesses and the European Round Table of Industrialists. The European Centre for the Development of Vocational Training (Cedefop) will provide administrative, monitoring and analytical support, while the European Training Foundation (ETF) will promote the principles of the Alliance in partner countries. Through the European Council Conclusions of January 2012, member states have already committed to increase “substantially the number of apprenticeships and traineeships to ensure that they represent real opportunities for young people.”²⁵

The G20 commitments on apprenticeships

At their meeting in Guadalajara, Mexico in May 2012, the G20 Ministers of Labour and Employment made a strong commitment to intensify efforts at tackling youth unemployment and underemployment. Drawing from the work of the G20 Task Force on Employment, they committed in particular to:

- promote, and when necessary strengthen, quality apprenticeship systems that ensure a high level of instruction and adequate remuneration, and avoid taking advantage of lower salaries
- consider programmes that have proven effective in allowing a successful school-to-work transition
- promote internships, on-the-job training, apprenticeships and professional experience

- foster sharing of experience in the design and implementation of apprenticeship programmes, and explore ways to identify common principles across the G20 by facilitating a dialogue among its social partners who have shown a shared sense of the importance of apprenticeships
- continue to cooperate with other ministries and stakeholders, where appropriate, to provide career guidance, education and to ease skills acquisition with a strong focus on developing work experience and promoting decent work.

Labour-business cooperation at the G20 level to scale up quality apprenticeships

The G20 process resulted in closer cooperation between business, represented within the Business 20 (B20), and the labour movement (Labour 20 [L20]), as social-partner consultations helped to focus on common priority areas, including the need to increase infrastructure investment, invest in skills and reduce informal work.

During 2013, the B20 and L20 reached a common understanding in support of Quality Apprenticeship Systems and presented this at the first joint meeting of G20 Labour and Finance Ministers in Moscow in July 2013.

L20-B20 representatives drew up a set of principles to support quality apprenticeships based on the study of a range of successful national experiences. The criteria concluded that successful apprenticeships should correspond to the needs of the workplace, and have their own contractual arrangements to protect apprentices. They must be workplace-centred, since a significant part of the training should be conducted in companies to support a smooth transition from training to work. This should be combined with high quality vocational schools, including highly qualified and motivated teachers supported by the latest technology and learning tools. These systems should also be open to adults intent on changing careers, and reflect gender equity objectives.

The L20-B20 understanding affirms the commitment of workers and business to collaborate alongside governments in implementing apprenticeship systems that reflect these jointly held objectives, and to promote youth employment, entrepreneurship and innovation.

The Global Apprenticeships Network

The Global Apprenticeships Network (GAN) is a business-driven alliance with the overarching goal of encouraging and linking business initiatives on skills and employment opportunities for youth, notably apprenticeships. GAN is a network where private-sector companies, business federations and associations come together to share good practices, and to advocate and commit to action for apprenticeships for youth employability and skills development. The initiative will be driven by business leaders who will use this global platform to promote apprenticeship and internship programmes worldwide. It will also serve, in their respective countries, as a contribution towards addressing the youth unemployment crisis and skills mismatch problems, while at the same time strengthening their companies' competitive strategies through investment in their workforces.

Adopting a “matching skills” approach for tackling unemployment and underemployment

Skills are a critical factor of success for job seekers. The global economic crisis has exacerbated the risk that a growing number of people, particularly youth and low-educated individuals, are becoming disconnected from the labour market. Declining aggregate demand has reduced job seekers' prospects, resulting in increasing long-term unemployment. At the same time, the so-called negative 'halos' of unemployment have increased; namely, individuals who have accepted part-time work arrangements despite wishing to work more hours, and discouraged workers (i.e. inactive workers willing and available to work, but not actively seeking employment). For marginalized workers, shielding and developing their employability and skills, which tend to atrophy the longer they are not stably employed, is important in preventing a rise in structural unemployment. Tackling unemployment during the crisis requires a “matching skills” approach – providing the right skills required to fill available vacancies while simultaneously generating the necessary economic activity that will drive job creation. Active labour market policies and public employment services (PES) are crucial to supporting such an approach and containing the risk of structural unemployment. PES act as “honest brokers” or labour market mediators in strengthening the efficiency of the matching process. They help job seekers to return to work as quickly as possible, and employers to fill job openings (e.g. job-search assistance, employment subsidies). They also assume a supportive and remedial role by developing and steering training and work-experience programmes to prevent the skills of the unemployed from becoming obsolete or depreciated as a result of prolonged joblessness.

PES play a key role in ensuring that the much-needed return to employment growth does not come at the expense of lower-quality skill matches, which will ultimately compromise or prolong the job crisis in coming years. The traditional focus of activation strategies on the immediate benefit of filling a job vacancy should be replaced by a career-transition approach, which considers the long-term consequences of training and placement decisions on an individual's employability and adaptability.

To take up this approach, active labour market policies should reinforce the importance of skills and skills profiling in their matching activities. PES should invest in incorporating individual action plans or employability development plans based on skills assessment tools that portray job seekers' complete skill sets, including non-formal learning. In addition, it is crucial for them to invest further in working closely with employers to ensure that individuals' skill profiles are matched to open vacancies. PES are generally at the crossroads of monitoring the labour market situation, using up-to-date local and sector labour market intelligence. They can thus develop public-private partnerships to ensure the timeliness and relevance of appropriate activation measures as well as education and training offers.

Box 2: The Ten Youth Programme

Driving job creation requires social and environmental solutions that are sustainable and adaptable to different sectors. One such solution is Ten Youth, which encourages employers to train, hire and mentor 10 young people between the ages of 18 and 24. The Ten Youth programme arose from collaboration between the World Economic Forum's Global Agenda Council on Emerging Multinationals and Global Agenda Council on Youth Unemployment. The concept is intuitive but powerful: in each of the major cities where they have operations, leading and emerging multinational companies commit to hire, train and nurture 10 unemployed young people.

Eligible Ten Youth candidates are first-time job seekers and demonstrably reliable, hard-working, adaptive and self-motivated. Companies commit to hiring the young people as full-time employees in career-track positions, providing them with three to six months of training and at least two years of formal mentoring.

The young people are to be employed in areas where they can gain valuable work skills and build long-term careers. The goal is for them to continue their careers in the same companies – the programme has set a target of at least 80% retention after two years – but even if they leave for another firm, they will depart with marketable business competence that enhances their career prospects elsewhere.

The Ten Youth initiative is an opportunity for multinational corporations to use their vast capabilities and resources to meet the global challenge of youth unemployment. The programme will help participating enterprises acquire loyal and productive young employees at a fair wage, develop a non-traditional approach to recruitment and improve their capacity to systematically mentor and train talent.

3.2 Improving the quality of education and training and its responsiveness to labour market needs

A comprehensive strategy to reduce skills mismatches requires first that the quality of education is secured and participation raised, up until the end of the secondary level and especially in developing economies. Second, it demands a diversification approach to providing education, recognizing that both medium skills (provided through technical and vocational education) and high skills (provided through tertiary education) are required in the labour market and for economic growth. And third, it implies improving the relevance of education and training for the labour market through strengthened channels of communication between education and workplace actors, as well as public-private partnerships.

Raising the quality of education – basic skills for all

In some developing and emerging countries, raising the quality of and increasing participation in education continues to be a key challenge. Indeed, while primary education in most emerging countries is generally available in every local community, secondary education may require travelling or moving to bigger towns, making attendance more difficult for children from disadvantaged households in rural areas and for girls who are expected to spend time working or helping with household duties. The lack of role models for girls and entrenched social roles hamper reducing the gender gap in education. Furthermore, the language of instruction may be a key barrier to educational attainment among some ethnic groups (e.g. in India). To encourage educational enrolment of children from disadvantaged socio-economic backgrounds, governments could help with policies that encourage school attendance, for example using conditional cash transfer (CCT) schemes (Box 3). Many of these programmes have proved successful at improving school enrolment and attendance, as well as child nutrition and health.

Box 3: Conditional Cash Transfers (CCTs) Can Boost Investment in Human Capital

CCT programmes started to emerge in the late 1990s in countries such as Argentina, Brazil and Mexico. Today, they represent an important component of social protection in many developing and emerging economies. In certain cases, such as *Bolsa Familia* in Brazil and *Oportunidades* in Mexico, they cover a significant portion of the total population. CCTs have multiple objectives; they provide income support to poor families in the short term, and also aim to increase school enrolment, attendance and performance as well as to improve the health of children and pregnant women. As such, they promote investment in human capital among future labour market entrants.

Positive effects on child nutrition, health, school attendance and enrolment have been well established for various CCT programmes in different countries. Evidence from Mexico, Brazil and South Africa suggests that CCT receipt reduces child labour, possibly because it reduces the opportunity cost of having children attend school rather than work. However, the long-term impact of any improved educational outcomes at a young age also remains an open question, as beneficiaries of the first wave of CCT programmes are only now beginning to enter the labour market.

CCTs can also help in adjusting to temporary shocks. For example, the existing CCT schemes have made it easier for many developing and emerging economies to respond to increased needs stemming from the recent global economic and financial crisis and/or to face the consequences of natural disasters. In particular, through the conditionalities they impose, CCTs can mitigate the long-term effects of economic and natural shocks on school attendance and on children's health status. In case of temporary shocks, such programmes also allow for additional transfers to those already receiving benefits.

Closer integration of education and work

Addressing the structural and persistent skills mismatch requires strengthening the channels of communication between education and work. Different stakeholders in the education-to-work process generally fail to engage in deep-rooted and ongoing collaboration to communicate skill needs, develop curricula and share the delivery of education and training in schools and at the workplace. A recent international survey of the school-to-work transition has shown that employers, education providers and young students often live in parallel universes and are not engaged with each other.²⁶

The success of dual training systems in easing transitions from school to work, and reducing youth exposure to unemployment, has been widely acknowledged recently.²⁷ In addition to providing work-based learning and apprenticeships, dual training systems feature cooperation among public authorities, employers and unions to govern education and training, and the integration of theory and practice through cooperation between schools and employers in skills development (Box 4). Cooperation of all relevant stakeholders in managing education and training systems, along with the continuous adaptation of curricula, contributes to a greater and more rapid responsiveness to changing skill demands. It also supports the development of high quality technical and vocational qualification at the intermediary and tertiary levels (complementing higher academic education), which is necessary to meet the current and future labour market needs for skilled manual and skilled non-manual workers, as well as technicians and other professionals.

Box 4: Joint Management of the Dual System in Germany

Social partners in Germany are closely engaged in the development and updating of training plans for each qualification that can be obtained through apprenticeships and/or vocational training. Such training plans, formally issued by the Ministry of Economic Affairs and Technology, regulate the duration of the apprenticeship, describe the profile of the profession and set out final exam requirements. Apprenticeship salaries are determined through collective wage negotiations. The economic chambers are responsible for providing advisory services to participating companies and supervising company-based training. They also register apprenticeship contracts; assess the suitability of training firms and monitor their training; assess the aptitude of VET trainers; provide advice to training firms and apprentices; and organize and carry out final exams.

Responsibility for funding vocational schools lies with the Länder (states), mainly for teachers' salaries, and local authorities for equipment and infrastructure, while companies bear the costs of workplace training. In some sectors, all companies pay contributions to a general fund that covers the apprenticeship costs of the institutions, while in other sectors each company bears its own costs.

The 2004 Training Pact concluded between the central social partners and the German government committed employers to offer sufficient apprenticeship slots to meet demand over the following three years. This included 60,000 new training positions and 30,000 new training firms on average per year, as well as an additional 40,000 positions annually for company-based introductory training.

Comparisons across countries show that those that have expanded skill supply “blindly”, i.e. without basing education and training provision on the skills required in the labour market and/or without cooperating with employers, suffer from higher youth unemployment rates and qualification mismatch. Improving the responsiveness of skills provision to the needs of the economy requires the commitment of employers to steer education and training design and to provide structured opportunities for learning in the workplace, in cooperation with schools or training centres. A policy of systematic cooperation also helps employers. Firms benefit from a better match of young workers’ qualifications and skills to their needs, the productive capacity of trainees and apprentices, and a more effective recruitment process.

Furthermore, the importance of skills governance structures at the local level is increasingly acknowledged (Box 5). The matching process between skilled labour and company demands occurs in practical terms in regions and localities, where the consequences of a mismatch are felt most acutely. Networks of key actors capable of identifying regional supply and demand for skills should thus be developed, while the traditional role of regional labour market observatories should be revised to include skills anticipation activities and to develop closer information transmission channels with regional PES.

Box 5: Skills-Based Economic Development Strategies

Although vocational education and training may play a prominent role in local economic development, the reality is that these initiatives are often highly localized and discrete in nature. Moreover, they often depend strongly on various externally-funded project sources, and are therefore hard to scale and mainstream. As to labour market policies, or the question of addressing current mismatches, VET systems tend to play a much clearer and recognized role when partnerships are established at a system or institutional level with social partners, employers or employee organizations. Cluster case studies from the EU suggest that primarily vocational university colleges, polytechnics and the German and Austrian *Fachhochschulen* have managed to position themselves as drivers of and partners in cluster-based strategies.

A US-based study conducted by the Rockefeller Institute in 2010 (Shaffer 2010) points to a shift in local economic-development models becoming more skills-based, although this is not a uniform picture across the US. The emerging perspective for local economic development has many similarities to the underlying ideas of smart specialization. Local economic-development resources are prioritized for businesses with more ambitious outlooks and with potential to create jobs through bottom-up and involving processes.

Knowledge is perceived to be the key asset in economic development. The community college system in states such as North Carolina, Louisiana and Georgia plays a key role in partnership with economic development agencies in identifying companies with growth potential, and attracting such companies through targeted workforce-development measures, for example with non-credit courses. Ensuring that a skilled workforce is available from day one, when a company is expanding its business or relocating, may become a competitive parameter replacing traditional economic incentives such as inexpensive land, tax deductions and infrastructure. Many examples from the US, Denmark, Canada and Australia show how VET institutions regroup and partner with a network of companies, initially going beyond a skills and training agenda. Exposure to more advanced technologies that can improve value added of products and streamline production processes means that the demand for more advanced skills, as well as their more efficient deployment, becomes part of a competitiveness agenda.

The comprehensive Australian skills ecosystem initiative has informed policy efforts to align vocational education and training policies with local economic development and innovation measures. The concept of skills ecosystems was gradually developed to ensure a more integrated and dynamic approach to supply and demand. Demand-side factors in a VET excellence context are mostly understood as developing more responsive educational systems and obtaining a deeper and long-term perspective on labour market dynamics. Experiences and approaches from Australia, however, show that a more nuanced picture may be needed to fully capture and implement balanced supply- and demand-side policies. The background for developing the ecosystem approach was growing evidence of significant skill wastage, while employers continued to highlight skill shortages. A central premise of the skills ecosystem approach is that expanding and improving the quality of the supply of qualified people is only a partial solution for the needs of Australian industry. The traditional VET focus on training is complemented by a broader focus on the other drivers of business productivity and growth, contributing to a healthy ecosystem in which skills are effectively developed and used. Development of such enablers may include use of advanced technology, the service-delivery model, how work is organized and managed, and job design.

The US job growth accelerator initiative also takes this broader perspective on supply- and demand-side policies. In contrast to the policy discourse about the growing importance of education training, corporate strategies on investment in workforce development and the use of skills show quite different levels of commitment when it comes to both workforce training and work-based learning engagement for young students. Policies and institutional strategies that do not take this into account may therefore fail.

Informing and guiding individual choices

Part of a package of measures to improve the responsiveness of skills provision and reduce skills mismatches includes providing high quality career guidance counselling to young people and their families (Box 6). This counselling uses labour market intelligence and evidence of the returns on investment in education by field of study.²⁸ Better and well-informed career guidance and counselling is necessary so that individuals make well-informed choices for their education and career paths. Unfortunately, current guidance provision is often limited and of poor quality.²⁹ First, staff providing career guidance are sometimes inadequately prepared for dealing with labour market issues. If not teachers, they are often trained in psychological counselling and, while this background may be appropriate for supporting students at risk of dropping out of school, it does not equip them to deliver sound advice on jobs and career prospects. Second, most counsellors are based in education and have primarily an education background. As a result, they lack direct knowledge of work environments and tend to be biased towards general and tertiary (university) education. Third, relevant labour market information, essential to providing good-quality guidance, is not always available.

Box 6: Career Guidance Services in New Zealand

The main provider of career guidance services in New Zealand is Career Services (CS), a body independent from the education system. CS provides services directly to students to help them make informed work and training choices, including the provision of labour market information (e.g. job profiles and industry outlooks) as well as tertiary and trade training information. In addition to providing information and advice, CS also develops guidance modules for schools; notably, the Creating Pathways and Building Lives (CPaBL) programme assists schools in developing effective career advice.

The quality of career guidance is supported by wide-ranging information on career paths and training opportunities. The New Zealand Qualification Authority provides information about qualifications and the quality of learning institutions. The New Zealand Register of Quality Assured Qualifications supplies a comprehensive list of all the country's quality-assured qualifications. In addition, most tertiary educational institutions conduct surveys of graduates to inform the Register of their programmes.

The Department of Labour collects and analyses information about the skills needed in the labour market and how the tertiary educational system interacts with this market. Merging this information with that from other sources, the Tertiary Education Commission, which supervises the New Zealand tertiary educational system, produces annual "portraits" of the country's tertiary education and training, including indicators of possible under- and oversupply in provision.

3.3 Attracting and developing skills over the working life

Skills development takes place over the life cycle, and the skills mismatch is influenced by human resource strategies as well as the manner in which skills are used and updated within the workplace. Tackling skill shortages and promoting worker reallocation in the face of sectoral shifts implies labour mobility and active labour market policies, including continuing training. The continuous adaptation of workforce skills to changing demands depends on workers' opportunities to learn on the job and to receive continuing training at work. An ageing population makes it even more important to adopt a life-cycle approach to learning in order to maintain and upgrade the skills of an older workforce. Thus, a number of policies to address the development, activation and use of skills in the labour market are needed to complement initial education and training provision.

The role of employers

A stronger involvement and ownership by employers in skills development and utilization is crucial to tackling skills mismatches (Box 7). Recruitment and training practices, and attractive working conditions together with workplace and job design, are at the core of a more productive use of skills. This requires that employers consider skills and human capital as a critical asset in their business strategy, which is to a large extent conditional to the adoption of high quality product market strategies.

Box 7: Employers Taking Ownership of Skills

In the UK, the Employer Ownership of Skills Pilot (EOP) is a competitive fund open to employers to invest in their current and future workforce in England. The government invested in projects in which employers are also prepared to commit their own funds in order to make better use of combined resources. The policy goal is to develop a training system that is fully focused on customers – businesses and employees – thus aligning skills potential with growth investment. The project is co-financed by public and private actors; it is funded by the Department for Business, Innovation and Skills and the Department for Education to route public investment directly to employers so they can design and deliver more flexible training packages. Employers are expected to provide co-funding, and indeed, in 2012, 36 different organizations proposing 124 projects matched the public funds. The EOP involves a collaborative approach, with successful bidders working alongside further education colleges, national skills academies, private training providers, trade unions and many others.

Broadening the talent pool and improving recruitment practices

Recruitment strategies and practices constitute an integral component of the matching process and the reduction of skills shortages. Firms will therefore have to adopt a new mindset to successfully compete for talent in the market. Screening candidates for their positive workplace attitude and work ethics, rather than for their possessing credentials that match a job description, is associated with greater hiring rates of suitable workers and with positive productivity outcomes for firms.³⁰

In addition, pockets of heavily underutilized skills exist in many countries. For example, only about 63% of women in Japan – where a high share of employers report recruitment difficulties – participate in its labour force, while the OECD’s Survey of Adult Skills confirms that Japanese women have extremely high proficiency in both literacy and numeracy. Similarly, older workers in many countries have difficulties finding a new job despite being well skilled. To fill vacancies, employers should consider broadening the talent pool from which they commonly hire to include women and older workers, avoiding gender stereotyping and age discrimination.

Improving the quality and stability of jobs to develop on-the-job learning

Skills shortages and mismatches tend to be associated with poor working conditions, low pay, jobs involving routine tasks and higher levels of job insecurity. A widening gap between the quality of jobs offered and the demands and aspirations of an increasingly better-educated workforce could be a potential and important source of firms’ inability to attract suitably skilled workers, as well as the high rates of skill underutilization in the workplace. Intensifying in-company training efforts and offering greater wage and job security through more stable contractual arrangements may thus provide an incentive to employers and employees to share in the costs of skills development.

While employer-provided training is important and should be further developed, ensuring that workers’ skills remain up to date does not necessarily depend on firms undertaking distinct and costly training activities. Learning on the job is one of the most successful mechanisms and a key factor to support employees’ adaptation to new processes, technologies or products. Successful policies to mitigate the skills mismatch are therefore closely dependent on the development of more innovative learning organizations, where learning and skills development are integrated into daily operations. Furthermore, firms making better use of overskilled workers’ potential is conditional for the provision of good-quality and challenging employment, which entails rewarding job tasks, work autonomy and opportunities for career advancement.

The role of unions and employee representatives

Social dialogue between employee representatives and employers is essential for agreeing on the optimal business skills policy. Collective bargaining should focus on the improvement of the work organization, job design and ensuring that learning opportunities exist at the workplace. Unions can participate in the formulation of training policies and the planning and implementation of training (often through their own training centres), and negotiate preferential rights for access to training and wage benefits related to training. Identifying good practice and supporting workplace learning is an essential function of trade union representatives, where possible in partnership with employers.

Unions can also play a key role in developing a lifelong learning culture in the workplace, in identifying skills shortages or surpluses within companies, and in helping employees develop transferable skills to increase employability and readiness to progress within the job market. Most importantly, unions should build confidence among workers that learning is an opportunity and not a threat – in particular for those workers who have had a negative experience in formal education. Unions should also work together with employers’ associations at the national level to help in developing and implementing quality apprenticeships. They should cooperate with governments and employers to ensure that all workers, whether full-time, part-time or currently not in the labour market, have access to workplace learning and the financial support needed to participate in such programmes.

The role of governments

Sharing the cost of training and skills development

Governments can support employers’ skills strategies with financial incentives that promote cost sharing (e.g. collective training funds), reduce the relative financial burden of training (e.g. tax incentives) or address the fear of poaching (e.g. payback clauses). They can also assist by developing institutional structures, such as sector or regional skill councils or employers’ networks, that promote employer investment in continuing and on-the-job training. Governments may increase incentives to participate in the labour force for groups typically underrepresented in the labour market, such as women, older workers and the low-skilled. Interventions can include policies that help reconcile work and family life, as well as financial incentives for second earners and workers near retirement age. In addition, financial incentives targeted at individuals (e.g. training vouchers or individual learning accounts) have proved to promote targeted learning investments and can improve equity in access to learning, particularly for the low-skilled.

Box 8: Adult Training Programmes in Mexico and China

In Mexico, the Secretariat of Labour and Social Welfare (STPS) offers the Scholarships for Training Programme (BÉCATE) to job seekers who need to gain or improve their qualifications or work skills through training. BÉCATE is a flexible programme that allows each company to tailor the training to its job-specific needs. The National Employment Service recruits the most appropriate participants for each training course in order to ensure the best possible outcome for the company and job seekers. BÉCATE also provides a stipend of one to three times the minimum wage for up to three months, depending on the number of training days attended by beneficiaries. The support includes accident insurance, transportation aid, training materials and instructors. Training can take place both on and off the job.

In China, skilled workers’ schools, involving comprehensive vocational training, offer long- and short-term training courses. By the end of 2008 there were about 3,075 skilled workers’ schools nationwide (including 50 technician

schools and 485 senior skilled workers' schools), with nearly 400 million registered students. After studying and practical training, nearly 95% of students find jobs.

Supporting labour mobility and migration

Fostering mobility within occupations, sectors and/or regions on the basis of sound labour market intelligence can contribute to the overall health of a labour market, as it enables new productive matches to take place between individuals' skills and jobs. Tackling known skill gaps and supporting sector reallocation, especially for occupations and sectors where sizeable skills shortages exist, can be aided by public authorities and public employment services. These in turn can tailor their career counselling and training offers for adults and the unemployed in support of productive skill realignment. Recognizing and validating prior experience and skills, also for migrant workers, can make crucial contributions to this process.

Governments can use migration of both low- and high-skilled workers to tackle the risk of labour and skill shortages. Many national policy initiatives and strategies are already implemented in advanced countries; their purpose is to attract (highly) qualified third-country nationals to mitigate skills shortages, including fast-tracking of work permit applications, employer sponsorship, favourable conditions for family reunification, and taxation and social insurance benefits.³¹ Nevertheless, in many cases the human capital potential of migrants tends to be underutilized due to segmented labour markets and poor recognition of credentials.³² Job mobility and migration can address shortages, but at the same time can also be conducive to other forms of mismatch.

To ensure that the benefits of labour market mobility are maximized, governments need to develop international registries of open jobs, which allow individuals to identify suitable positions and to design qualification frameworks that ensure the recognition and comparability of qualifications across sectors and borders. But since the promotion of labour market mobility can entail important psychological and financial costs for those individuals concerned, supportive policies need to be designed. Accommodating housing-market policies and relocation subsidies, greater flexibility of work arrangements, family support (in the form of subsidized childcare and schooling) and better transportability of social security entitlements should also be considered as integral policy measures to support labour mobility.

4. Conclusions

The Great Recession has drawn policy attention, even more than in the past, to the effectiveness of the match between skills and labour market needs. The skills mismatch entails a significant aggregate loss in human capital investment and productivity, and important economic and well-being costs for individuals and enterprises concerned. Furthermore, important equity considerations justify policy intervention, given that vulnerable groups of the population (e.g. young, older, unemployed and migrants) bear a disproportionate share of the skills mismatch.

The economic crisis has caused a large increase in unemployment and underemployment in many advanced, emerging and developing countries. Yet, many employers still report difficulties in finding the required talent. Although employers tend to attribute these perceived shortages to skill deficits among job applicants, they are often explained by other factors, such as geographical mismatch between skill supply and demand, poor working conditions and inefficient or stringent human-resource practices. In the short term, a key driver of skills mismatch is the limited job opportunities available in many (especially advanced) economies, which are pushing many individuals to accept mismatched and lower-quality jobs. With weak demand, employers may become more particular when recruiting, as they can afford to wait for the perfect candidate or hire overskilled workers. At the same time, firms facing difficult economic conditions may be required to reduce training and recruitment expenditures, which can exacerbate skills shortages and mismatch within the workplace. Underutilizing the skills of mismatched workers is an important policy concern, as it entails scarring effects on their future careers and may contribute to depreciation of their unused skills.

A diverse set of long-term policies and priorities are needed across different countries in the fight against skills mismatch. In developing and emerging countries, continued investment in basic skills is a prerequisite for tackling widespread underqualification and skill shortages inhibiting economic development, whereas in advanced economies, the improvement of the quality and responsiveness of education and training provision is paramount. However, overall skills development and matching policies should be seen as an integral part of a broader set of actions that include employment, industrial, investment, innovation and environmental policies.

Ensuring the continued development and adaptation of individuals' skills over their lifetimes has become increasingly important; this places a greater burden on stakeholders who previously were only marginally involved in the education and training process. A shared understanding and commitment on behalf of all relevant stakeholders – education providers, firms, trade unions, public employment services and governments – is therefore a necessary ingredient for reducing skills mismatch by reinforcing links between educational systems and labour markets.

Bibliography

- Autor, D., Katz, L.F., Kearney, M.S. (2006). "The Polarization of the U.S. Labor Market", *American Economic Review*, Vol. 96, No. 2:189-194.
- Backes-Gellner, U., Tuor, S.N. (2010). "Avoiding labour shortages by employer signalling: On the importance of good work climate and labor relations", *Industrial and Labor Relations Review*, Vol. 63, No. 2.
- Baert, S., Cokkx, B., Verhaest, D. (2012). "Overeducation at the start of the career: Stepping stone or trap?", IZA Discussion Paper No. 6562.
- Cappelli, P. (2012). *Why Good People Can't Get Jobs: The Skills Gap and What Companies Can Do About It*, Philadelphia: Wharton Digital Press.
- Caroll, D. and Tani, M. (2013). "Job search as a determinant of graduate overeducation: Evidence from Australia", IZA Discussion Paper No. 7202.
- Cedefop (2010). *The skill matching challenge – Analysing skill mismatch and policy implications*, Luxembourg: Publications Office of the European Union.
- Cedefop (2011). *Migrants, minorities, mismatch? Skill mismatch among migrants and ethnic minorities in Europe* (Cedefop Research Paper No. 16), Luxembourg: Publications Office of the European Union.
- Cedefop (2012a). *Future skills supply and demand in Europe: Forecast 2012* (Cedefop Research Paper No. 21), Luxembourg: Publications Office of the European Union.
- Cedefop (2012b). "The Skill Mismatch Challenge in Europe", *Employment and Social Developments in Europe 2012*, European Commission, Luxembourg: Publications Office of the European Union.
- Cedefop (2012c). *From education to working life: the labour market-outcomes of VET* (Cedefop Reference Series No. 3063), Luxembourg: Publications Office of the European Union.
- Cedefop (2013). *Benefits of VET in Europe for people, organisations and countries*, Luxembourg: Publications Office of the European Union.
- Conference Board, US (2006). *Are They Really Ready To Work: Employers' Perspectives on the Basic Knowledge and Applied Skills of New Entrants to the 21st Century U.S. Workforce*.
- Davis, S.J., Faberman, R.J., Haltiwanger, J.C. (2012). "Recruiting intensity during and after the Great Recession: National and industry evidence", *American Economic Review: Papers and Proceedings*, Vol. 102, No. 3: 584-588.
- Eichhorst, W., Rodriguez-Planas, N., Schmidl, R., Zimmermann, K. (2013). "A Roadmap to Vocational Education and Training Systems around the World", Background paper to the *2013 World Development Report*, available at: www.worldbank.org/wdr2013 and as IZA Discussion Paper No. 6890.
- European Commission (2010a). *Labour Market and Wage Developments in 2009*, Luxembourg: Publications Office of the European Union.
- European Commission (2010b). *Employer's perception of graduate employability*, Eurobarometer survey, November 2010, available at: http://ec.europa.eu/public_opinion/flash/fl_304_en.pdf.
- European Commission (2012a). *European Vacancy and Recruitment Report 2012*, Luxembourg: Publications Office of the European Union.
- European Commission (2012b). *Labour Market Developments in Europe 2012*, Luxembourg: Publications Office of the European Union.
- Healy, J.G., Mavromaras, K., Sloane, P.J. (2012). *Skill shortages: prevalence, causes, remedies and consequences for Australian businesses*. Canberra: NCVER.

Huang, F., Cappelli, P. (2010). "Applicant screening and performance-related outcomes", *American Economic Review: Papers and Proceedings* 100, May: 214–218.

Inter-American Development Bank (2012). "Disconnected: Skills, Education and Employment in Latin America", IDB Education.

International Labour Organization (ILO) (2012). *Global Employment Trends for Youth 2012*.

International Labour Organization-National Employment Agency of Cambodia (2013). *Skill Shortages and Skill Gaps in the Cambodian Labour Market: Evidence from the Employer Skill Needs Survey*, 1 December.

International Organization for Migration (IOM) (2012). *Labour Shortages and Migration Policy*, Brussels, Belgium.

Kampelmann, S., Rycx, F. (2012). "The impact of educational mismatch on firm productivity: Evidence from linked panel data", *Economics of Education Review*, Elsevier, Vol. 31, No. 6: 918-931.

Leuven, E., Oosterbeek, H. (2011). "Overeducation and Mismatch in the Labor Market", IZA Discussion Paper No. 5523 (to appear in the *Handbook of the Economics of Labor*).

Liu, K., Salvanes, K.J., Sorensen, E.O. (2012). "Good skills in bad times: Cyclical skill mismatch and the long-term effects of graduating in a recession", IZA Discussion Paper No. 6820.

Manpower Group (2013). *Talent shortage survey: Research results*, available at: www.manpower.co.uk.

Mavromaras, K., Sloane, P., Wei, Z. (2013). "The scarring effects of unemployment, low pay and skills under-utilisation in Australia compared", IZA Discussion Paper No. 7440.

McGuinness, S. (2006). "Overeducation in the Labour Market", *Journal of Economic Surveys*, Vol. 20, No. 3: 387-418.

McKinsey Global Institute (2012). *The world at work: Jobs, pay and skills for 4.5 billion people*, available at: www.mckinsey.com/mgi.

McKinsey (2012). *Education to Employment: Designing a system that works*, available at: mckinseysociety.com/education-to-employment.

Oreopoulos, P., von Wachter, T., Heisz, A. (2012). "The Short- and Long-Term Career Effects of Graduating in a Recession", *American Economic Journal: Applied Economics*, Vol. 4, No. 1: 1–29.

Organisation for Economic Co-operation and Development (OECD) (2004). *Career Guidance and Public Policy: Bridging the Gap*, Paris: OECD Publishing.

Organisation for Economic Co-operation and Development (OECD) (2010). *Learning for Jobs: Synthesis Report of the OECD Review of Vocational Education and Training*, Paris: OECD Publishing.

Organisation for Economic Co-operation and Development (OECD) (2011). "Right for the Job: Over-qualified or Under-Skilled?" *OECD Employment Outlook*, Paris: OECD Publishing: 191-233.

Organisation for Economic Co-operation and Development (OECD) (2012). *Better Skills, Better Jobs, Better Lives: A Strategic Approach to Skills Policies*, Paris: OECD Publishing, available at: <http://dx.doi.org/10.1787/9789264177338-en>.

Organisation for Economic Co-operation and Development (OECD) (2013). *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, Paris: OECD Publishing, available at: <http://dx.doi.org/10.1787/9789264204256-en>.

Quintini, G. (2011). "Over-Qualified or Under-Skilled: A Review of Existing Literature", *OECD Social, Employment and Migration Working Papers*, No. 121, Paris: OECD Publishing, available at: <http://dx.doi.org/10.1787/5kg58j9d7b6d-en>.

Sloane, P.J., Battu, H., Seaman, P.T. (1999). "Overeducation, undereducation and the British labour market", *Applied Economics*, Vol. 31, No. 11: 1437-1453.

Steedman, H. (2012). *Overview of apprenticeship systems and issues – ILO contribution to the G20 Task Force on Employment*, Skills and Employability Department, International Labour Organization.

UK Commission for Employment and Skills (UKCES) (2012). *Employer's Skills Survey 2011: UK Results*, Evidence Report 45.

United Nations Educational, Scientific and Cultural Organization (UNESCO) (2012). *Youth and skills: Putting education to work*, Paris: UNESCO Publishing.

Wilson, R.A., Homenidou, K. (2012). "Working Futures 2010-2020", *UK Commission for Employment and Skills*, Evidence Report 41.

World Economic Forum (2013). *Jobs for Growth and Growth for Jobs*, Paper prepared by the Global Agenda Council on Employment.

Endnotes

1. The OECD's new Survey of Adult Skills, covering 24 countries and regions, allows for a comparison between the available stock of skills and the different levels of skills required in labour markets. The survey asked employees aged 16 to 65 about the qualifications needed by job applicants today to get their own job, thus shedding light on job qualification requirements. Comparing these requirements with the qualifications possessed by the labour force – the employed and the unemployed – gives a picture of the present incidence of skill imbalances in participating countries.
2. Cedefop, 2012a.
3. Autor et al, 2006; Wilson and Homenidou, 2012.
4. EU Commission, 2012a.
5. <http://www.cedefop.europa.eu/EN/about-cedefop/projects/forecasting-skill-demand-and-supply/skills-forecasts.aspx>.
6. ILO-NEA, 2013.
7. While the number of primary-school-age children out of school has fallen by an impressive 45 million since 2000, progress has stalled in recent years (UNESCO, 2012).
8. McKinsey Global Institute, 2012.
9. Based on data from the third wave of the European Company Survey, carried out in spring 2013 by the European Foundation for Improvement of Living and Working Conditions.
10. In 2010, the European Barometer survey "*Employer's perception of graduate employability*" surveyed 7,036 companies that had recruited higher-education graduates in the past five years and/or were planning to recruit such graduates in the next five years in 31 countries (EU28 plus Turkey, Norway and Iceland).
11. Skill deficits as a primary challenge are prevalent in Turkey (55.7%), Austria (50.5%), Norway (50%), Germany (44%) and Slovenia (43.1%), while they are less of a constraint in Hungary (15.3%), Romania (13.4%), Slovakia (19.7%) and Iceland (15%). Skill shortages were also mentioned by 14% of EU employers as their secondary challenge (EU Commission, 2010).
12. The figures are based on the Business Environment and Enterprise Performance Survey (BEEPS), a joint initiative of the European Bank for Reconstruction and Development and the World Bank. In the fourth round of the BEEPS in 2008-2009, the survey covered approximately 11,800 enterprises in 29 countries of Eastern Europe and Central Asia. The survey examines the quality of the business environment as determined by a wide range of interactions between firms and the state.
13. Conference Board, 2006; Inter-American Development Bank, 2012.
14. For example, IT specialists in the dotcom bubble of the late 1990s; petroleum engineers given the recent boom in oil and shale gas exploration. See also Healy et al., 2012.
15. UKCES, 2012.
16. Backes-Gellner and Tuor, 2010; Cedefop, 2012b.
17. See EU Commission's EUROIND database: http://epp.eurostat.ec.europa.eu/portal/page/portal/euroindicators/business_consumer_surveys/database.
18. McGuinness, 2006; Cedefop, 2010; Leuven and Oosterbeek, 2011.
19. These figures are based on the ILO's School to Work Transitions Surveys: http://www.ilo.org/employment/areas/WCMS_140862/lang--en/index.htm.
20. Cedefop, 2012b; ILO, 2012.

21. Sloane et al., 1999; Baert et al., 2012; Mavromaras et al., 2013; Liu et al., 2012; Oreopoulos et al., 2012.
22. OECD, 2013.
23. World Economic Forum, 2013.
24. Steedman, 2012; Cedefop, 2012c, 2013.
25. European Council 2012 http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/127599.pdf
26. According to the survey, about 42% of employers and 42% of students believe that graduates are readily prepared for the job market, while at the same time 72% of education providers are under the impression that graduates are well equipped to enter the job market. See McKinsey, 2012b.
27. Eichhorst et al., 2013.
28. For instance, Australian bachelor-degree graduates that made use of their universities' career offices had a reduced probability of overqualification (between 3% and 8%) compared to those graduates that relied on job advertisements or job searching through networking (Caroll and Tani, 2013).
29. OECD, 2004 and 2010.
30. Huang and Cappelli, 2010.
31. International Organization for Migration, 2012.
32. Cedefop, 2011.



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