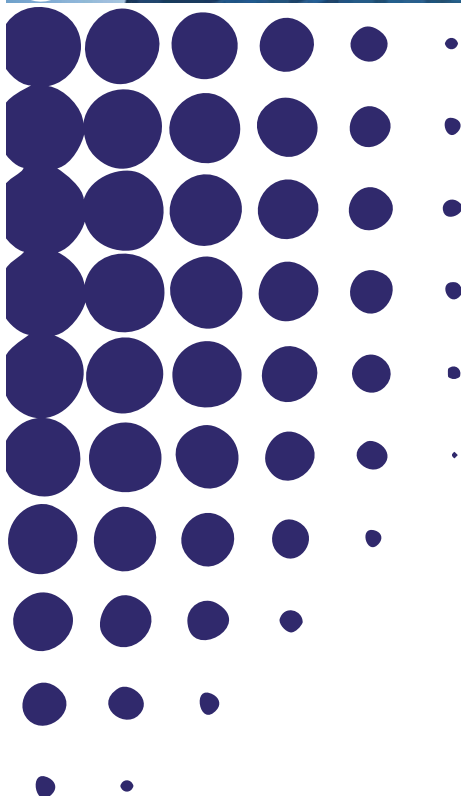# WP5/20 SEARCH WORKING PAPER

Skill Mismatch, Education Systems, and Labour Markets in EU Neighbourhood Policy Countries

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Skill Mismatch, Education Systems, and Labour Markets in EU Neighbourhood Policy Countries

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Abstract

According to models of endogenous growth, the skill levels of the workforce are an important driver of economic development. This paper investigates the ability of educational systems in the European Neighbourhood Policy (ENP) region to provide a skilled workforce that is well matched to the changing needs of the labour market. Different patterns of skill mismatch can be expected in transition countries and emerging market countries. We identify an inverted-U pattern of mismatch across education groups with especially severe mismatch among secondary educated, especially those who graduate from vocational schools where curricula are inappropriate to the labour market needs and funding for new equipment is relatively constrained. In the emerging market economies we find some evidence that a quite different pattern of mismatch is present, with the highest rate of mismatch among highly educated university graduates, especially male graduates. This is partly due to different patterns of structural change and partly associated with demographic factors. Countries with high population growth rates may experience over-supply of educated school leavers; countries with falling populations may experience under-supply of both skilled and unskilled workers. There is also evidence of gender-biased mismatch in the emerging market economies of the ENP region. Among the main challenges to the development of effective skill matching systems and corresponding policy design in transition countries and emerging economies in the ENP countries are weak capacities of government institutions including the employment services, underfunding of state provided training services, slow reforms of the education systems and low level of in-house training by employers. There are also significant information gaps in many of the ENP countries, while there is also a greater need for information due to market uncertainty; yet at the same time there is a lack of administrative capacity for skills analysis, forecasting and anticipation.

1 INTRODUCTION

Skill mismatches and skill shortages have become a priority concern for policy makers in many countries, especially since the onset of the global economic crisis and its intensification through the crisis in the eurozone. Endogenous growth models emphasise that human capital is a key resources for growth (Romer, 1994). The efficiency with which human resources are developed in the education system and used on the labour market must therefore be a priority for policy makers. The process of matching skilled workers to the demands of employers is central to this concern. Yet, currently there is much evidence to suggest that mismatch in the European Neighbourhood Policy (ENP) countries is too high. This issue has two dimensions: the education and training system and the institutions of the labour market. Skill mismatch has an adverse effect on the efficiency of labour markets raising unemployment above the levels that could potentially be achieved given the level of aggregate demand. Efficient matching would reduce frictional and structural unemployment and ensure that vacancies are matched to workers with appropriate qualifications and skills (Petrolongo and Pissarides, 2001).

Most transition countries experienced volatile labour markets for many years. Although unemployment rates were on a falling trend up to 2008, long-term unemployment was persistently high in many countries leading to a corresponding obsolescence of skills among a large section of the workforce. After almost a decade of sustained economic growth, the global economic crisis brought about an abrupt reversal of fortunes and unemployment began to increase in most countries of the region (ETF, 2011). Long-term unemployment is a serious problem in transition economies, especially affecting older workers with obsolete skills. Youth unemployment is generally high (Kolev & Saget, 2005) especially in countries with a rapidly growing population. On the demand side of the labour market, many old large scale industries declined or closed down, while most new jobs emerged in the service industries among which a range of new skills are needed (Bartlett, 2007). Regional mismatch also emerged as a specific problem due to the collapse of industries in peripheral areas and mono-industrial towns (Bornhorst & Commander, 2006; Newell & Pastore, 2006).

The paper explores the nature of skills mismatch in transition and developing countries of the ENP region. It identifies some of the features of transition and development that might lead to differences in the nature of skills mismatches compared to the developed economies. It argues that policy reforms are needed in the education systems and the labour market in ENP countries in order to improve matching effectiveness by making better use of the skills that are available. It also argues for the provision of improved information about the direction of skills needs in the future for individual job seekers, employees, employers, careers guidance professionals and public and private employment agencies.

The paper is organised as follows. Section 2 discusses the vocational education systems and enrolment patterns in five countries. Three of these are transition countries, of which two are members of the Eastern Partnership region (Moldova and Ukraine) and one in the Western Balkans region that is now an EU member state (Croatia). The other two countries are characterised as emerging market economies, of which one is an EU candidate country (Turkey) and the other an ENP country (Egypt). Croatia, Egypt and Turkey are also members of the Union for the Mediterranean (UfM), which promotes economic integration and democratic reform across 16 neighbours to the EU's south, in North Africa, and the Middle East. Section 3 summarises the findings of previous empirical research on skills mismatch in transition economies, while section 4 discusses the issue of skill mismatch in emerging economies. Section 5 sets out the findings from a comparative empirical analysis of mismatch in the five countries included in the study based upon a data set compiled from national Labour Force Surveys. Section 6 provides a summary of the empirical research findings, and Section 7 sets out some policy conclusions.
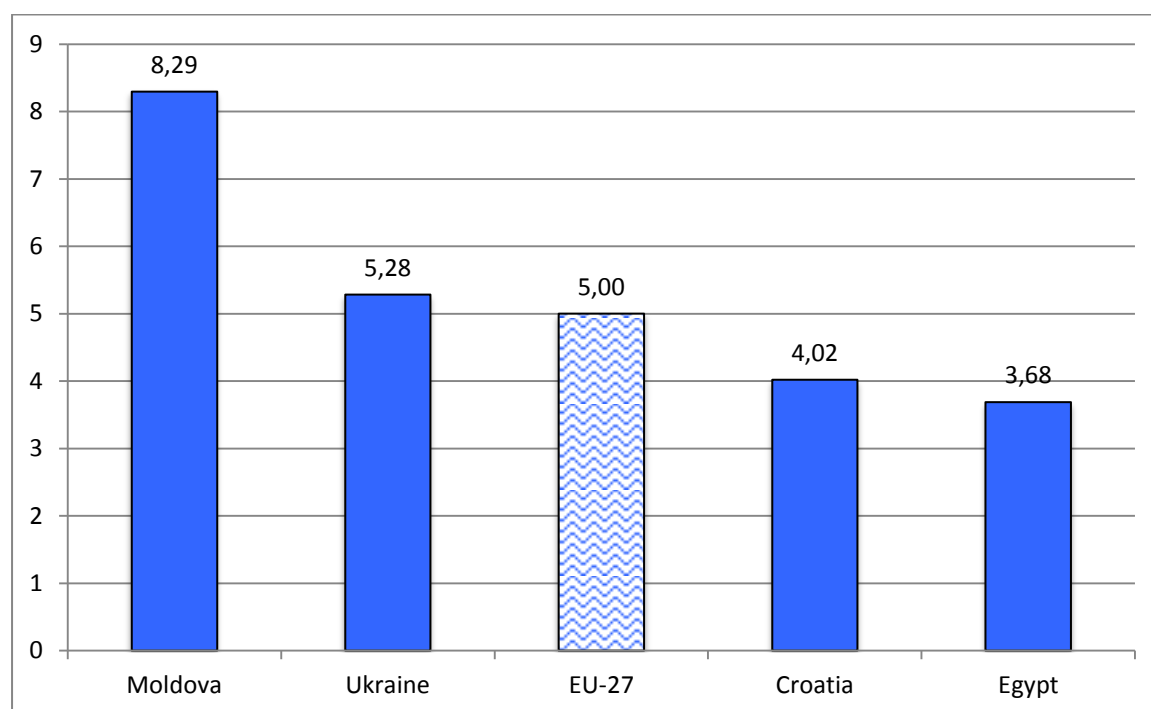
2 EDUCATION SYSTEMS

It is sometimes argued that education and human capital were positive legacies of communism. Using data on educational inputs and outcomes from 1960 to 1989, Beirne and Campos (2007) show that official human capital stock figures were 'overestimated' during the communist period. Returns to schooling increased as transition progressed, suggesting that improvements have been made in the education systems and that the skills of

graduates from the education systems have correspondingly become more valuable to employers.

As shown in Figure 4, the share of public expenditure on education is lower in the Croatia and Egypt than in the EU-27, while being similar to the EU average in Ukraine and much higher in Moldova, although there are doubts about the quality and effectiveness of education expenditure in those countries. Low expenditure on education in Croatia and Egypt reinforces the difficulty of the school system in seeking to improve the supply of skilled workers in the region.

Figure 1: Public expenditure on education (% GDP 2007)

Source: UNEASO Institute for Statistics (UIS) online data and Eurostat (2010) Pocketbook on candidate and potential candidate countries: 2010 edition; Table 2.5

Education systems in many transition countries are characterised by poor quality and irrelevance of much education provision in the region (Sondergaard and Murthi, 2010). It is increasingly recognised that curricula inherited from the previous communist system were unsuited to the development of a service-oriented post-Fordist market economy and have not been upgraded sufficiently to reflect the new occupations that have emerged in the

service sectors and in high technology industries. Skills that are taught in vocational education institutions tend to be too specialised in obsolete occupations. Education methods often out-dated and depend on rote learning rather than problem solving. There is generally a deficit of education in transferable skills (so-called 'soft skills').

Skills produced by the education system are often no longer demanded in the labour market. A recent study of the development of skills mismatches in the transition countries of Eastern Europe and Central Asia found that "even when people hold the correct qualification for an occupation they may not necessarily have the skills needed to effectively perform the job and satisfy employer expectations. Rapid technological and economic change makes difficult to predict what types of skills will be needed in the near and more distant future and what kinds of new jobs will appear" (ETF 2011: 229). Moreover, because of structural change, it seems that skill mismatch is a more permanent phenomenon in transition countries than in the developed economies resulting in high levels of long-term unemployment, and that skills mismatch increases with the age of workers, rather than falling as it does in the developed economies.

The upgrading of the education system is not simply a problem of low administrative capacity but also of the political economy of the (lack of) incentives for change embodied in the political and economic systems in the transition countries. The main factors involved are reform resistance by teachers' unions; corruption in state system which reduces education quality; the growth of private tertiary education with little quality control; and the lack of incentives for entry of private vocational training providers to provide life-long learning opportunities.

2.1   EDUCATION SYSTEMS AND SECONDARY SCHOOL ENROLLMENT

This section provides an overview of the upper secondary (post-compulsory) education systems in the five countries included in this study. They show some similarities in approach to this stage of the education process with most countries having selective systems that require a general secondary education to progress to university, while secondary vocational

education with some exceptions leads straight into the world of work. There is substantial evidence that selective systems lead to the perpetuation of social inequalities, although the evidence is mixed and controversial. However, the general trend is for the general (grammer or gymnasia schools) to serve the children of upper and middle class parents, while the children of working class or more disadvantaged children are channelled into vocational and technical schools. It is expected that the general schools are better resourced and attract the better teachers, leading to a process of inter-general perpetuation of social disadvantage (OECD 2007). Consequently, initial gaps in student performance may widen in tracked systems, increasing inequality in educational outcomes. The extent to which selection promotes differentiation in school experience and resources for skill formation differs between countries according to the specifics of the education system design.

In Croatia, upper secondary education lasts for four years in grammar schools (gymnasia), four years in vocational-technical schools that provide access to university, and three years in vocational schools (industrial and craft schools) that prepare students for work. The latter is the largest segment of the upper secondary education system. From 2010, secondary school students have taken a national *Matura* exam that provides a filter for admission to university. According to UIS (2011) there are 679 secondary schools in Croatia, including 174 gymnasia, 159 technical vocational schools and 199 industrial and craft schools in addition there are 47 art schools.

In Moldova, students sit a graduation exam at the end of lower secondary education. Successful students go on to upper secondary education in general secondary schools or in lyceums. Upper secondary education lasts two years (grade 10 to 11) and leads to the *Atestat de maturitate*. The lyceum programme leads to a baccalaureate after three years of study. Technical and vocational secondary education is provided in trade and vocational schools. Vocational education lasts from six to eighteen months and leads to a certificate. Industrial trade schools are available for grade 11 students who do not want to continue their studies.

In Ukraine, after finishing compulsory education, graduates may continue their education at high or senior secondary schools (including gymnasia and lyceums) or at vocational schools and professional trade schools. About 55% of students continue their studies at senior secondary schools, 22% enter trade schools and 14% enter technical-vocational schools (UIS, 2011). General senior secondary education traditionally covered grades 10 and 11, but since a new framework of reforms began in 2001, this was extended to three years in 2012/13. At the end of senior secondary school, students sit the state examination in five subjects to gain a certificate of completion of general secondary education. Students who study at technical-vocational schools have three to four years of education. The structure of the education system in Ukraine is shown in Figure X.

From 1996 and 2000 the number of vocational schools was reduced from 1,177 to 989 due to the decreasing demand for many occupations, and the number of students fell from 552,000 to 527,000. According to UIS (2011), the decentralisation and democratisation of the administration of the education system provided an opportunity to introduce new forms of vocational and professional training, such as professional school-state-farms, educational-production complexes within the structure of professional schools and production units, including small businesses managed by students.

In Turkey, compulsory education continues until the age of 14, after which non-compulsory secondary education is provided in general high schools, Anatolian schools (seen as elite schools providing education in arts and humanities in a foreign language), science high schools and several different types of vocational and technical schools leading to a qualification as a specialised worker or technician. Since 2005/6 secondary schools offer a four or five year programme to graduates from the primary education system. On graduation students receive a high school diploma (general, technical or vocational), which provides access to higher education exams. Apprenticeship training, lasting between two to four years, is offered to students who do not go to secondary schools. In 2010/11 there were 9,281 secondary schools in Turkey, of which 4,102 provided general education

(including 774 private schools), 5,179 provided vocational and technical education (including 24 private schools).

In Egypt, general and technical secondary education lasts for three. Vocational education is provided in both three and five year programmes. Technical education leads to a middle-level technician qualification, while a five-year programme leads to a high level technical qualification. Religious schools place more emphasis on Islamic studies. Intermediate technical institutes offer two-year post-secondary programmes leading to a diploma. Higher education is available to all students who gain a general secondary certificate, or a technical diploma with high scores.

Figure 2: Enrolment in upper secondary education, Egypt, Turkey & Ukraine (numbers)
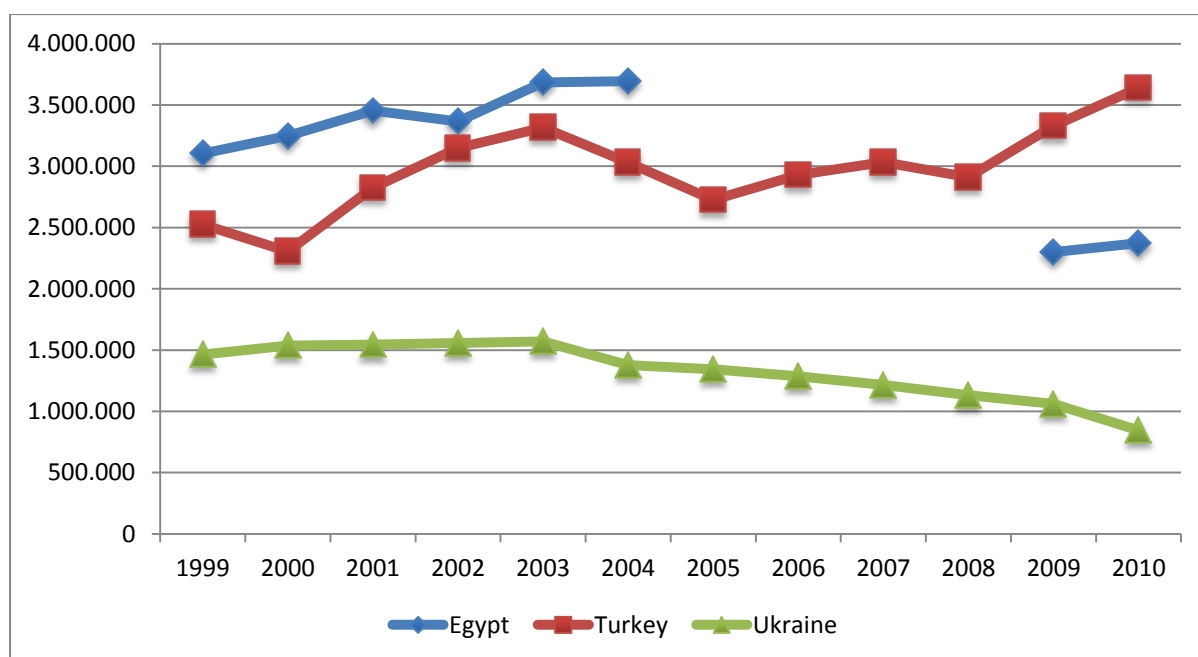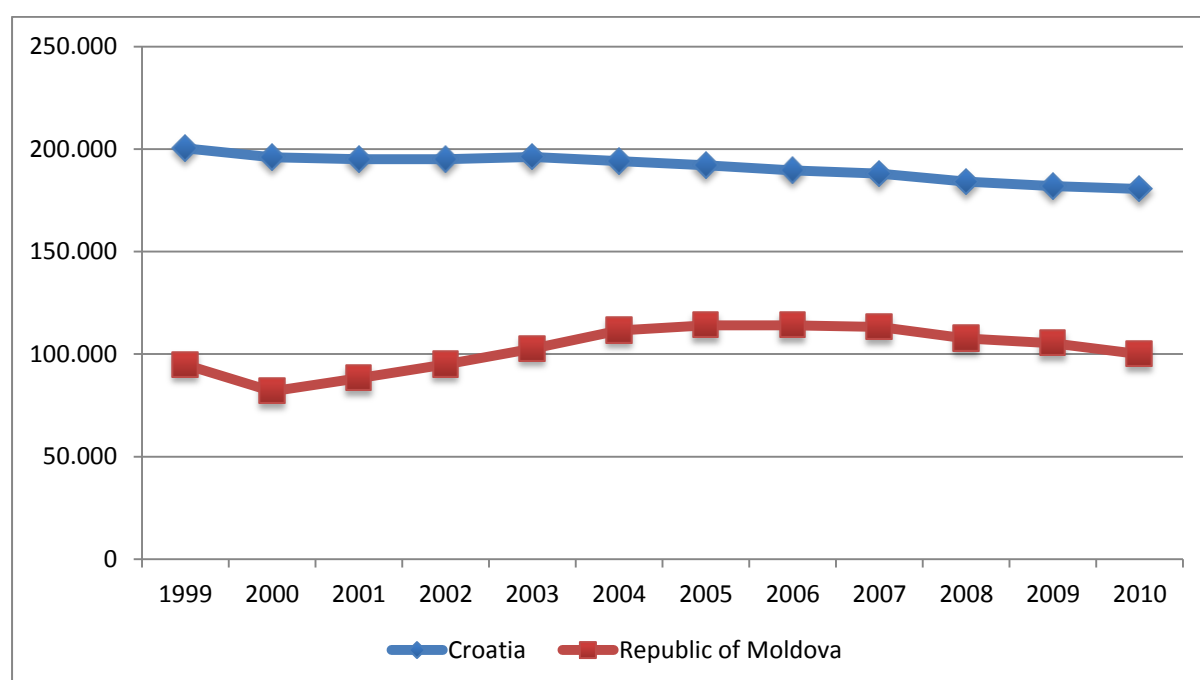

Source: UNESCO Institute for Statistics (UIS) online database

The number of students enrolling in upper secondary education has been increasing in Turkey (see Figure 2), but has been falling in Ukraine due to demographic change (over the last ten years, Turkey's population has been growing at a rate of 1.3% p.a., while Ukraine's

population has been falling at a rate of -0.5% p.a.[1]). A similar picture can be seen in Croatia where secondary enrollment has also been falling (see Figure 4). In Moldova the enrollment in secondary edcuation increased in the mid-2000s but has since fallen back to the level of 1999. (The populations of these two countries have been on a downsard trend falling at a rate of -0.12% per annum in the case of Croatia and -0.17% in the case of Moldova). The data for Egypt is less clear as there is a structural break in the data in the middle of the period, while over the whole period population was increasing at a rate of 1.67% p.a.).

**Figure 3: Enrollment in upper secondary education, Croatia & Moldova (numbers)**

Source: UNESCO Institute for Statistics (UIS) online database

The proportion of secondary school students who have enrolled in vocational or technical programmes has increased between 2001 and 2010 in Croatia, Turkey, Ukraine and Moldova but has fallen in Egypt (see Figure 3). The increase in vocational enrollment was greatest in Moldova but from very low levels. The shae of vocational enrolment jhas also been rather low in Ukraine. The fall in vocational enrolment in Egypt is quite large (a fall of

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[1] Population growth data are taken from the World Bank Development Indicators database.

38%). Since overall enrollment in secondary education appears to have fallen over the decade (see Figure 4) this suggests a very significant reduction in the number of graduates of vocational and techncial students with practical qualifications and large increase in general edcuation students expecting to find a place at a university.

Figure 4: Percentage of students in secondary education enrolled in vocational programmes, both sexes (%)
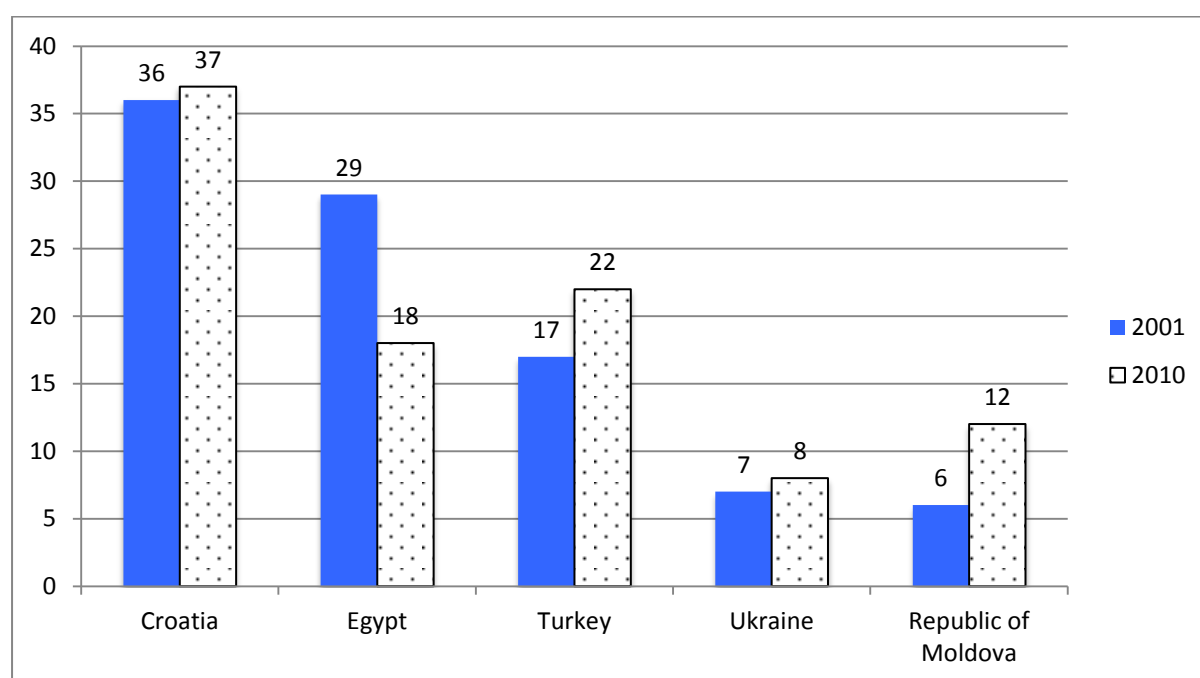
Source: UNESCO Institute for Statistics (UIS) online database

Although there is a large and growing enrolment in vocational education in most of the countries considered here, the employment prospects of these students are poor. Secondary schools, according to enterprise surveys, do not equip students with the sort of skills, which would make them attractive to employers. Consequently, youth unemployment

is high in the region. Vocational schools continue to teach out of date curricula, providing skills that are of little use in the labour market (Masson and Fetsi, 2008: 82) and the unemployment rate among those with only primary or secondary education is far higher than that for graduates of the tertiary education sector. In some countries, the highest unemployment rates are found among the graduates from secondary education. In the next section we demonstrate this in more detail and explore the structure of skill mismatch and its relation to unemployment and employment of workers with different levels of education in some detail.

3 SKILL MISMATCH IN TRANSITION EOCNOMIES

Skill mismatch may be a more permanent phenomenon in transition countries than in developed countries where mismatch mainly affects younger people and tends to decline with age due to occupational mobility, movement up the career ladder in larger firms and investment by employers in on-the-job-training. In transition economies, such mismatch tends to be more persistent for a number of reasons. Firstly, old skills quickly become redundant when new technologies are introduced under restructuring. Job creation in new firms was often biased against workers with low educational attainments, while skills and technological changes gave rise to shortages in the supply of skilled blue-collar workers (Commander and Kollo, 2008). Secondly, employers in transition countries tend to invest relatively little in on-the-job-training due to uncertainty induced by structural change and the poor investment climate (Boeri, 2000). Thirdly, old skills gradually become obsolete with the persistence of long-term unemployment. Fourthly, reskilling may be inhibited by the typically low provision of vocational retraining, adult education and life-long learning opportunities. Overall, these factors may lead to shortages of highly skilled workers and an excess supply of secondary and vocational school leavers. Vertical and horizontal mismatches could be overcome by on-the-job training or career mobility, but employers are often reluctant to spend on employee training and career mobility both between and within sectors is often severely limited by frictional and structural factors such as lack of retraining opportunities and the costs of geographical mobility.

Skill shortages and surpluses of various types have appeared in the transition economies as a consequence of economic restructuring. The process of economic transition involved a simultaneous process of job destruction and job creation in which unskilled workers lost employment disproportionately as the skill content of blue-collar work increased due to technological change (Bilsen & Konings, 1998). Newly created jobs typically require different types of skills to those that have been destroyed. This process of restructuring and the expansion of demand for new skills has often taken place more rapidly than the education and training system has been able to adapt leading to skill shortages (ETF 2011).

Figure 5: Proportion of firms reporting that an inadequately educated workforce is a 'major or very severe' obstacle to the firm (%)
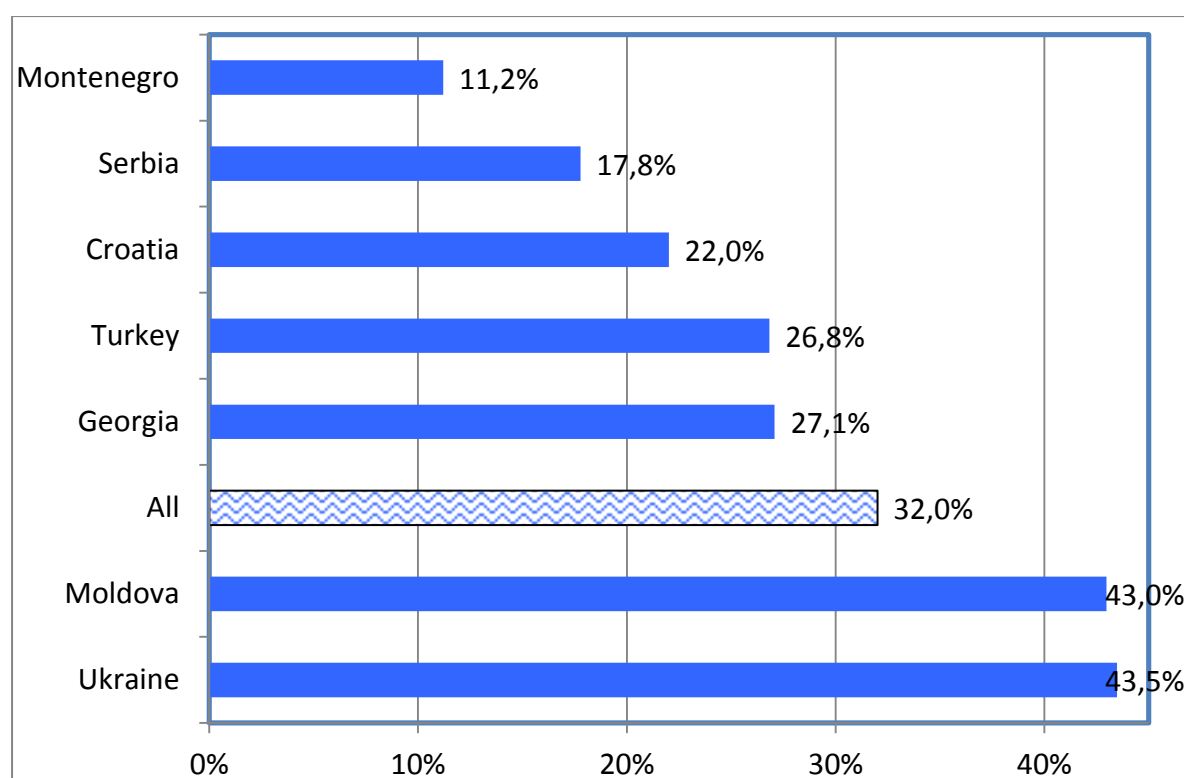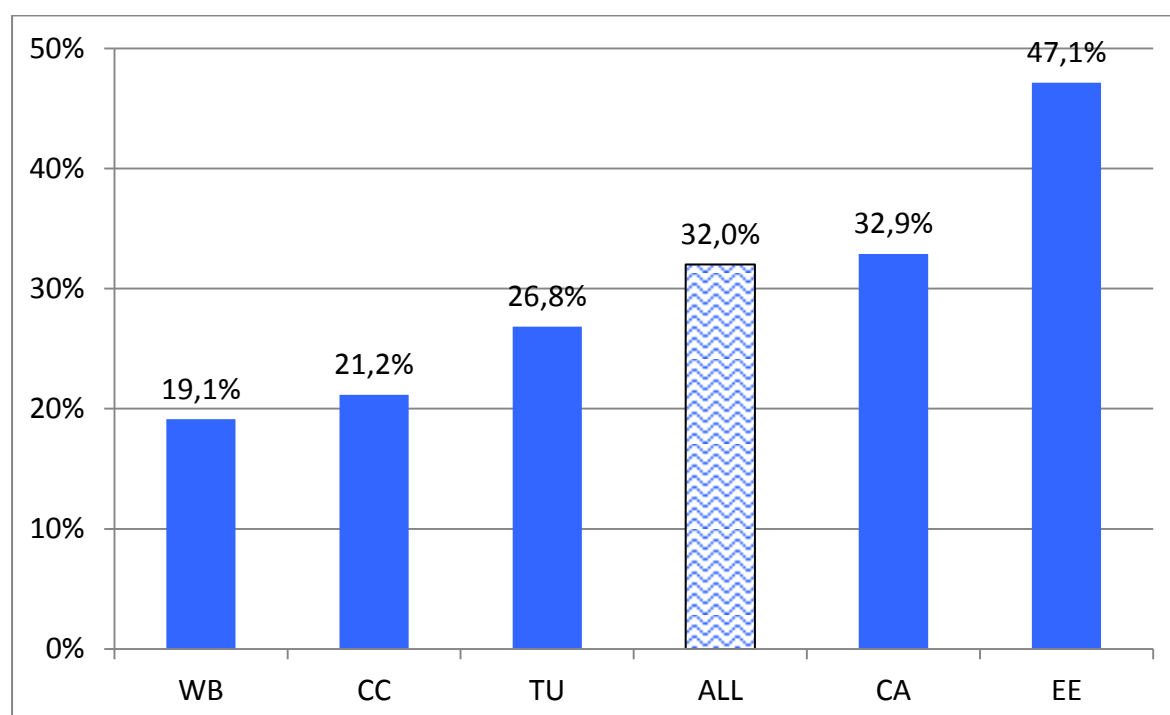

Source: BEEPS Survey 2010, European Bank for Reconstruction and Development (EBRD)

Significant skill mismatches have been reported by employers in many countries and especially in transition countries in the Eastern European neighbourhood region. The extent

of skill mismatch can be identified from the EBRD/World Bank 'BEEPS' survey[2]. The 2010 BEEPS survey covered a total of 21,000 firms in 29 transition countries. Figure 5, derived from this survey data, shows that many firms experience inadequate education as a major or very severe obstacle to their business. In Ukraine and Moldova over two-fifths of firms have such problems with the education of the workforce. In the region as a whole, almost one third of firms have problems with workforce skills. Problems are below average but still severe in Croatia, Georgia and Turkey (more than one-fifth of firms).

Figure 6: Proportion of firms reporting that an inadequately educated workforce is a 'major or very severe' obstacle to the firm (%) by country group

Source: BEEPS Survey 2010, European Bank for Reconstruction and Development (EBRD). Note: WB= 'Western Balkans'; CC= 'Caucuses'; TU=Turkey; CA= 'Central Asia'; EE= 'Eastern Europe'; ALL="All countries"

Figure 2 shows the results from the BEEPS survey aggregated over country groups for all 29 countries included in the survey. The greatest skill mismatches appear in Eastern Europe

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[2] BEEPS stands for "Business Environment and Enterprise Performance Survey".

(Belarus, Moldova and Ukraine) where almost one half of firms report severe skill problems, while the least severe skill problems appear in the Western Balkan countries. Yet, even in the Western Balkans as a whole, almost one-fifth of firms report major or very severe problems with the education level of the workforce.

Large-scale employer surveys have shown that the constraints due to skills mismatches have become more prominent as transition has progressed (Mitra et al., 2010). Skill mismatches in Central Europe have been an obstacle to labour reallocation from low to high productivity sectors and have therefore slowed down the rate of economic growth (Brixiova et al., 2009). In the Western Balkans, skill mismatches have emerged in the higher range of qualifications, with labour surpluses and consequently relatively high unemployment rates among secondary school leavers (Bartlett, 2007). In Poland and Estonia vocational degree holders suffer from comparatively higher unemployment than others (Lamo et al., 2011). Moreover, skills mismatch is a more long-lasting phenomenon than in the developed economies suggesting a relatively high social cost of skill mismatch. Ad hoc skill needs surveys of employers undertaken by EU-funded programmes have identified skill gaps in soft skills (communication, entrepreneurial attitude, team work and positive attitudes to work) and ICT in Western Balkan transition countries (Masson and Fetsi, 2008). The increased demand for generic skills is due to overall rapid structural changes in supply and demand for skills as well as to the decline of manufacturing and growth of the services sector.

Relatively few studies of skill mismatch have been carried out in transition countries. Kogan and Unt (2005) investigated school-to-work transitions in the three transition countries using the European Union Labour Force Survey ad hoc module on school-to-work transitions that was launched in Hungary, Slovenia in 2000 and in Estonia in 2002. They examined the effect of the level of education and social background on the timing of the first significant employment and the match between educational qualifications and occupation among school leavers using multinomial logistic regression techniques. The study found that overeducation became a more serious and widespread phenomenon as transition progressed. Another study carried out in Estonia covering the period 1997-2003, found large

wage penalties associated with the phenomenon of vertical and horizontal mismatch. Unlike the typical case in developed countries, the incidence and wage penalty associated with mismatch was also found to increase with age (Lamo and Messina 2010). This suggests that persistent structural mismatches can occur after periods of fast transition in contrast to the stylised fact observed in developed economies. If this is a general phenomenon in transition countries, then the social costs of skill mismatch are likely to be far higher than in developed countries.

4 SKILL MISMATCH IN EMERGING ECONOMIES

Emerging economies have also experienced large-scale structural change, in their case from the agricultural to the industrial sector. They are also often characterised by strong growth of the public sector, leading to a high share of employment in public activities often under the clientelistic control of ruling parties; a strong growth of informal sector; and a rapid demographic transition leading to a rapidly expanding and youthful population. The modern urban sector employs relatively skilled labour, which attracts rural migrants with inadequate skills in search of higher wages, which leads to an over-supply of unskilled workers. The demographic transition leads to large numbers of young educated people on the labour market and high youth unemployment and consequently results in an over-supply of people with secondary education and skills. However, emigration of skilled workers (brain drain) reduces the supply of skilled workers in the domestic economy typically also leads to shortages of highly skilled people.

The role of the state in emerging economies can be an important determinant of appropriate matching of skills supply and demand. In Korea, Singapore and Taiwan, joined-up policy making enabled developmental states to anticipate future skills needs since the state was also involved in the very industrial policies, which generated the demand for skilled labour (Green, et al. 1999a). Yet, although the integration of economic and skill formation policies in South Korea and Taiwan through modified forms of state planning was initially relatively successful, the power of the state to compel employers to train their workers gradually waned (Green, et al. 1999b). The state-directed policy eventually came

under pressure to reform although the state retains a role in steering these economies. Kuruvilla, et al. (2002) argue that Singapore's successful national skills development model has the potential to move constantly toward higher skills equilibrium, but they question the long-term sustainability of the model and whether it is transferable to other developing countries. Recent research by Özsagir et al. (2010) has shown a positive relationship between the extent of vocational training and the index of industrial production.

Relatively little research has been carried out into the measurement of skills mismatch in emerging economies. A rapid expansion in higher education took place in Taiwan starting from the late 1980s (Lin and Yang, 2009) following which the number of highly educated workers entering the labour market each year increased rapidly, leading to an increase in the incidence of overeducation. In China, a massive expansion in higher education took place after 1999. Survey evidence shows that the incidence of overeducation for graduates has risen to about 20% with an upward trend in the incidence of overeducation, which however is lower in more competitive sectors (Li et al., 2008). Additionally, graduates from the most prestigious universities have a lower probability and a lesser intensity of overeducation than their counterparts from other universities (Li et al., 2010).

5   COMPARATIVE ANALYSIS OF MISMATCH

Previous studies that have estimated the extent of labour market mismatch in developed countries have focused on the labour market flows and the relationship between vacancies and job offers (the so-called "Beveridge curve") (Blanchard and Diamond, 1989; Rogerson et al., 2005). However, in the ENP countries and Turkey there is far less information available on labour market flows. This paper therefore focuses on the relationship between labour market stocks of unemployed and employed workers to investigate the matching process. In this section, mismatch is measured by comparing the share of unemployed people with a given education level to the share of employed people with the same level of education. If, for a given education level, the share of the unemployed with that level of education is higher than the share of the employed with that level of education, then the mismatch ratio will be greater than 1. This indicates a 'positive' mismatch, in the sense that there is an

excess supply of labour with that education level. In other words, the education system is supplying 'too many' workers at that qualification level to the economy relative to demand. Conversely, if the share of unemployed people with a given education level is less than the share in employment the mismatch ratio will be less than 1 and we can say that there is a 'negative' mismatch (in a sense, too few graduates with the given education have been 'produced' by the education system). Only when the shares of an education group in both unemployment and employment are identical will there be a situation of perfect matching for that group. For example, an interpretation of a negative mismatch for the university educated is that there is an excess demand for university graduates. In this example we could infer that there is a 'skill gap' for university graduates.

The measure assumes that there is no substitutability between workers with different education levels. This is a strong assumption. In practice, employers are likely to choose workers with higher education levels to those with lower levels of education, even for jobs that do not require the higher level of education. This is the phenomenon of 'bumping down' (McGuiness, 2006). Given rational profit-maximising behaviour by employers, we would therefore not expect to see perfect matching. Nevertheless, private rationality is not the same as social efficiency. The phenomenon has a social cost in that it implies that too much investment is being allocated to producing an excess of highly educated people for which appropriate jobs are not available. It also implies that people with lower education levels are suffering disproportionately from unemployment, and that the investment in their human capital is also going to waste. Overall, there are significant social costs involved where there is a high degree of mismatch. A negative mismatch for the university educated implies the phenomenon of overeducation.

The overall pattern of mismatch has some surprisingly similar characteristics. In all countries except Egypt the pattern of mismatch is one of an inverted U-shape across education categories, with positive mismatch in intermediate levels of education, and negative mismatch in lower and upper levels of education. Thus, positive mismatch (the proportion in unemployment greater than the proportion in employment) occurs in Croatia and Moldova

in ISCED levels 2 and 3, in Ukraine among those who have completed secondary education (ISCED 3), In Turkey among those who have completed vocational school and high school and in Egypt among those with general secondary, technical secondary and 'above intermediate' education. In most countries, both lower and higher education groups tend to have negative mismatch (the proportion in unemployment less than the proportion in employment). This applies in Croatia and Moldova (ISCED 1 and ISCED 5-6), Ukraine (basic secondary and tertiary), Turkey (primary and illiterate and university) and Egypt (illiterate, 'less than intermediate' and university). The exception is Egypt (where the university educated group experience positive mismatch).

**Figure 7: Mismatch ratio by education group, Croatia, 6-year average (2005-2010)**
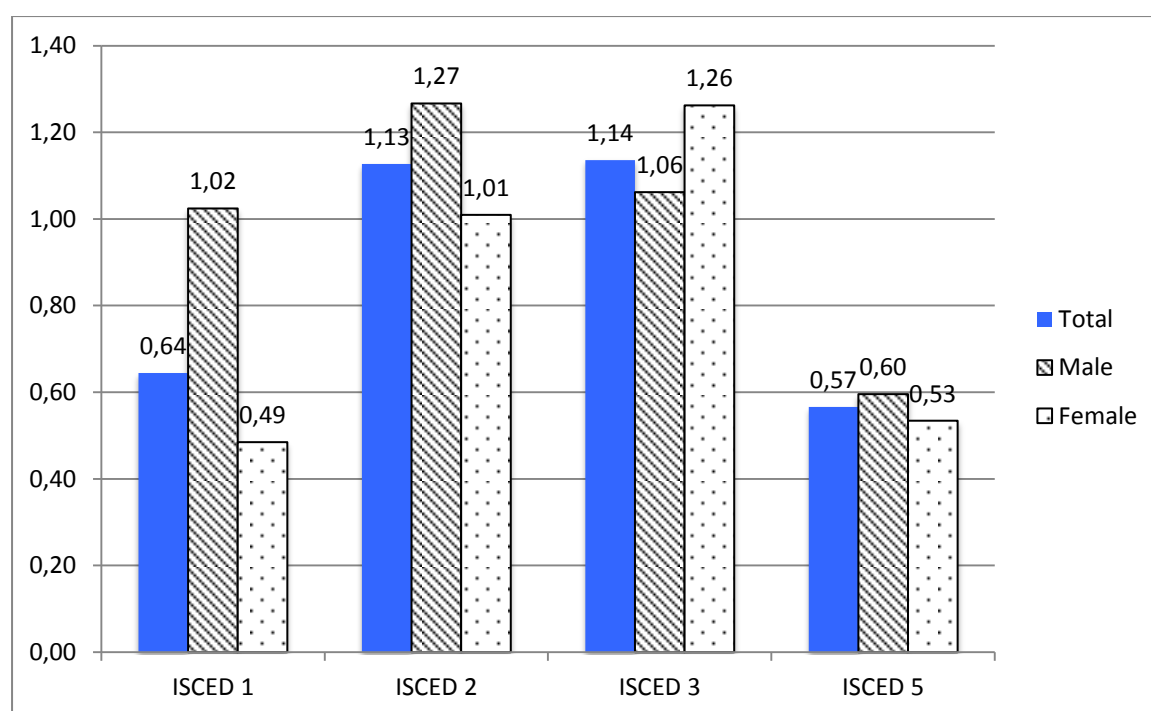
Source: Appendix, Table 1

In Croatia, workers with only first stage primary education (ISCED 1) and those with tertiary level of education (ISCED 5) are negatively mismatched, while those with secondary

education (ISCED 3-4) have a positive mismatch (see Figure 4)[3]. The pattern of gender mismatch differs between men and women. Among those with uncompleted primary education, it is mainly women who experience the greatest mismatch, though this operates in their favour, in that the proportion of unemployed women in this segment is lower than the proportion of employed women (negative mismatch). Perhaps women in this group who do not have a job are more likely to drop out of the labour force and work at home on domestic labour. Among those with secondary education, positive mismatch affects mainly men at ISCED level 2 (lower secondary education) and mainly women at ISCED level 3 (upper secondary education). There are no significant gender differences among the tertiary educated.

**Figure 8: Mismatch ratio by education group, Moldova, 6-year average (2005-2010)**
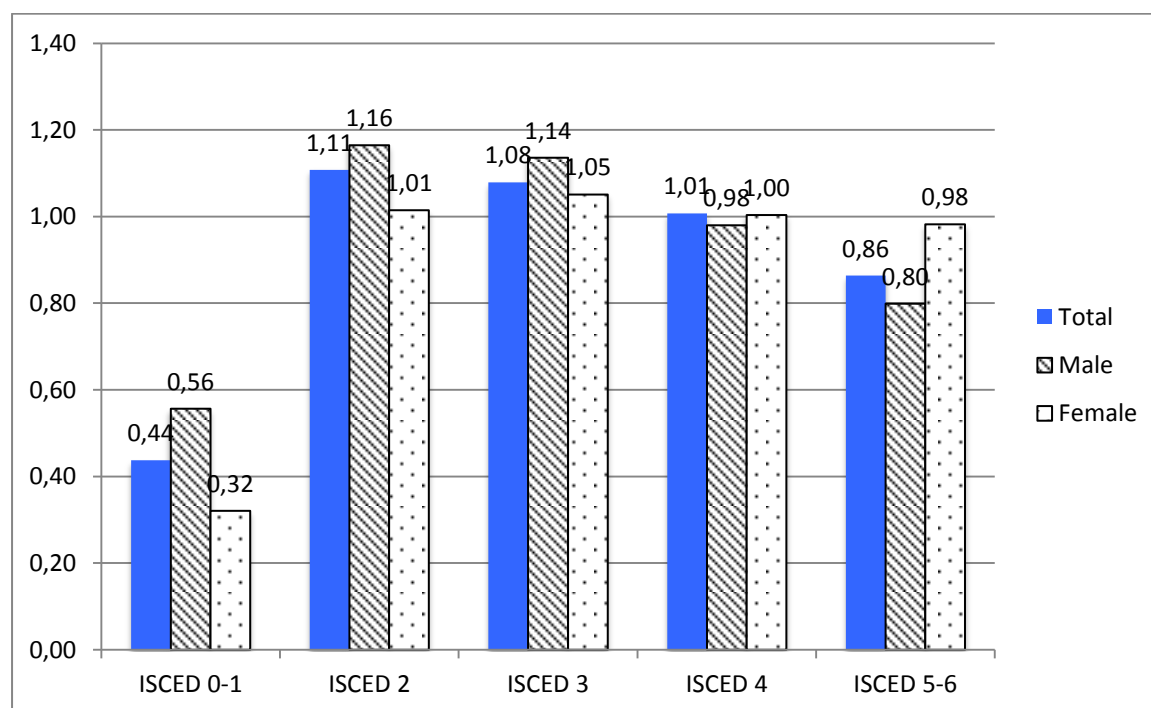
Source: Appendix, Table 3

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[3] For the definitions of the ISCED categories see Table 6 in the Appendix.

In Moldova, the greatest disproportions are among those with first stage primary education levels or less (ISCED 0-1) who have very high negative mismatch, and those with tertiary education (ISCED 5-6). Those with secondary education (ISCED 2 and ISCED 3) have positive mismatch. The group of workers with post-secondary non-tertiary education (ISCED 4) are well matched. The pattern of mismatch in Moldova is similar to that in Croatia. Considering gender imbalances, women with only lower primary education or less have the greatest degree of mismatch, suggesting that if they cannot find a job they drop out of the labour force. At secondary education level men are more mismatched than women on the labour market, while the same is true for tertiary education (greatest deviation from the unit value), reflecting greater positive mismatch in this case.

**Figure 9: Mismatch ratio by education group, Ukraine, 6-year average (2005-2010)**
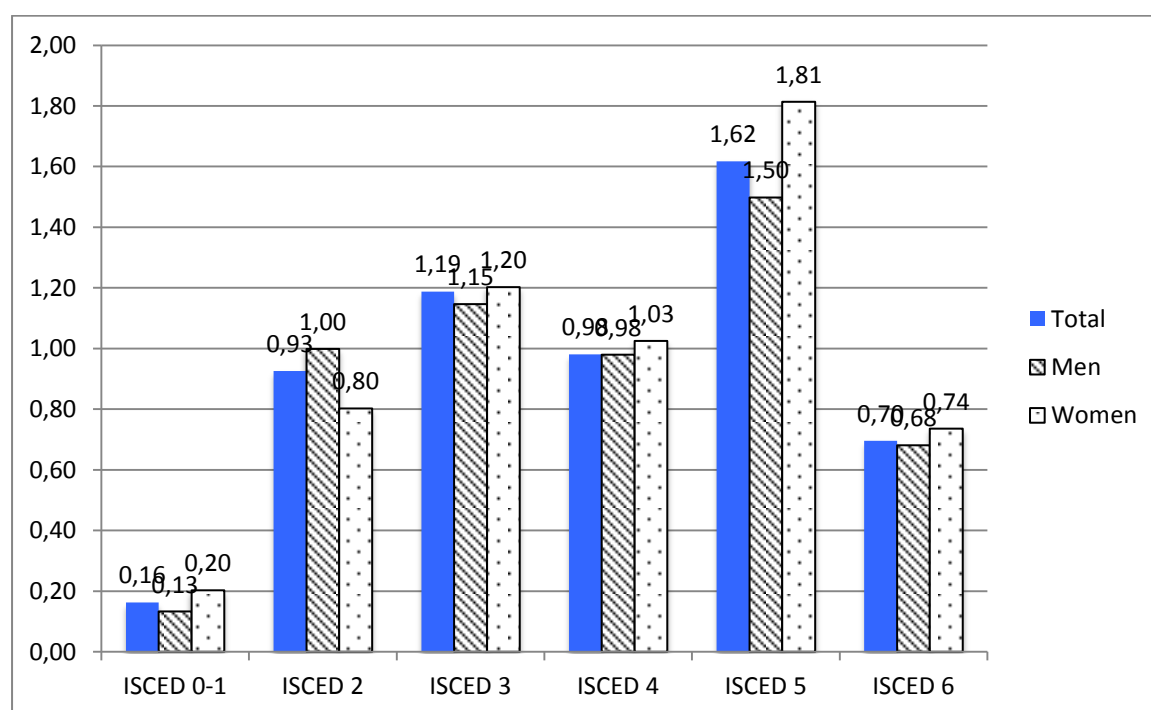
Source: Appendix, Table 5

In Ukraine, the pattern of mismatch is somewhat different to that in Croatia and Moldova. While still exhibiting an inverted-U pattern, the mismatch is shifted to higher levels of education. Workers with only primary education or less show a high degree of negative mismatch, suggesting that they are in excess demand in the labour market, perhaps due to

drop out from the labour force. Workers with lower secondary education and with post-secondary non-tertiary education have a slight degree of (negative) mismatch. The highest degree of positive mismatch is found among the workers with tertiary education, suggesting that unlike Croatia and Moldova it is this highly educated segment of the labour force that has most difficulty finding a matched job. Only when it gets to the higher level of tertiary education do we find negative mismatch, suggesting that this group of workers are in high demand on the labour market.

Figure 10: Mismatch ratio by education group, Turkey, 6-year average (2005-2010)
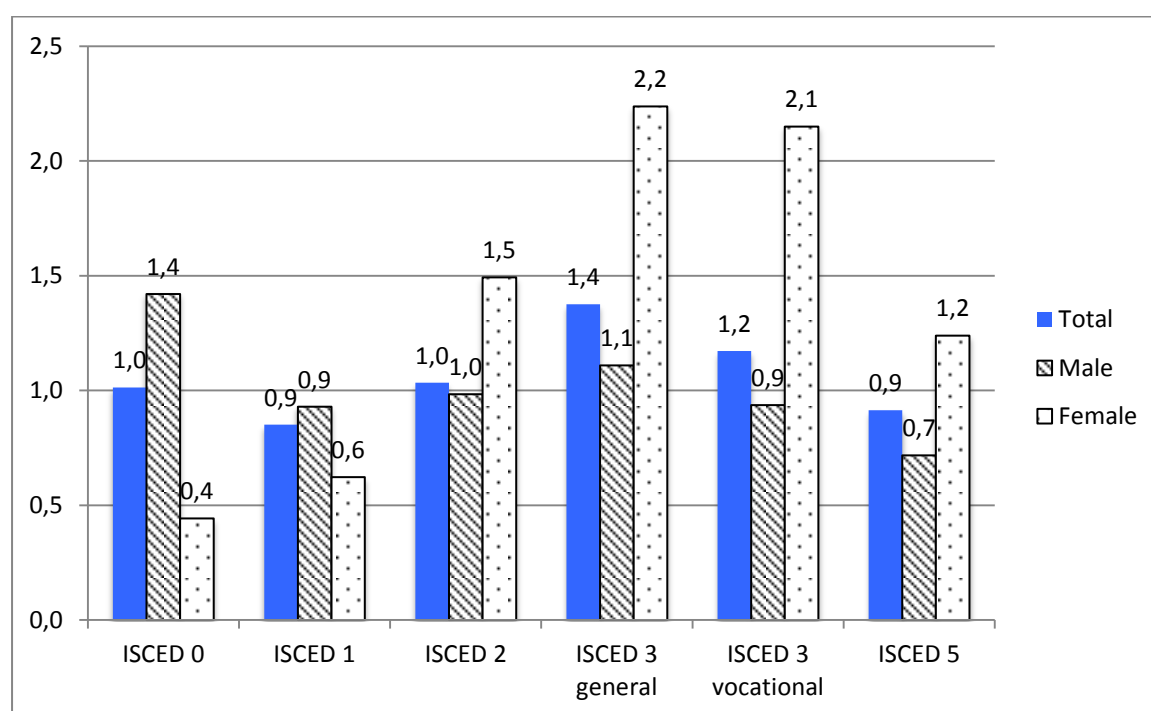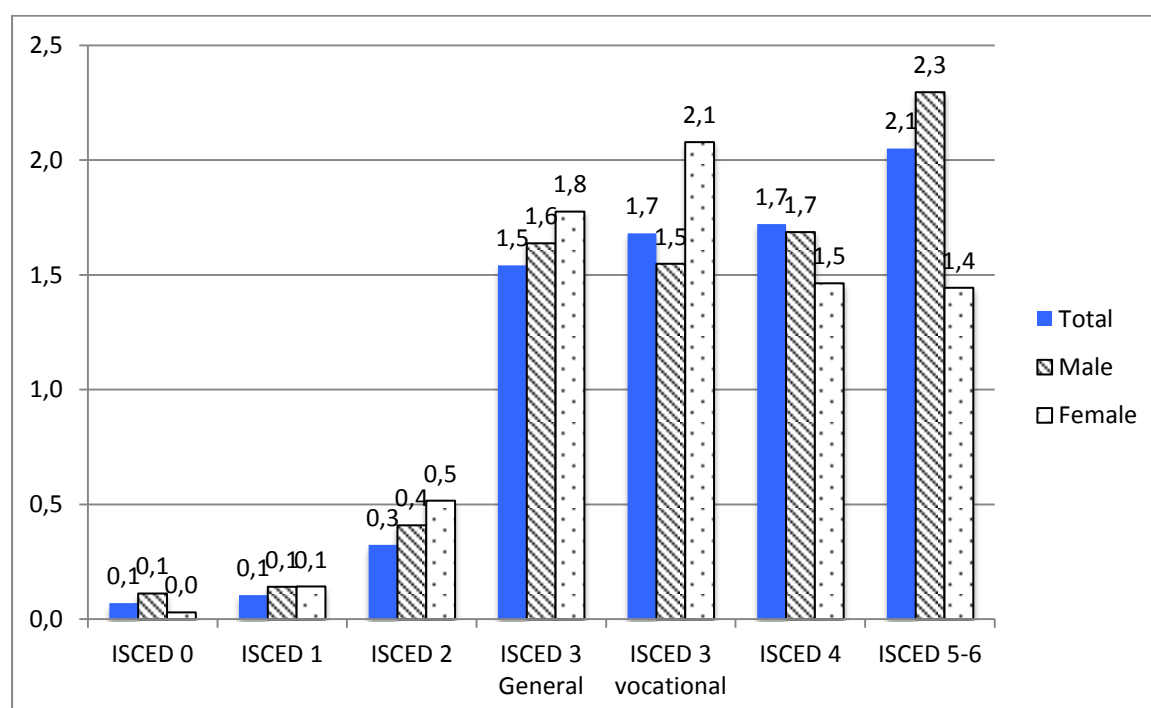

Source: Appendix, Table 4.

In Turkey, the labour market is fairly well matched overall at lower levels of education and at tertiary level. There is a slight negative mismatch for those with primary education and tertiary education, with values of the mismatch index of 0.9 in each case. More substantial positive imbalances are found at intermediate levels of education, as in other countries considered so far, with the highest mismatch among workers with secondary general

education but also a substantial degree of mismatch among those with secondary vocational education. However, the general pattern is rather different when considering gender differences. On the whole, women experience a far greater degree of mismatch than men, whether in cases of negative mismatch (ISCED 0 & 1) or positive mismatch (ISCED 2-5). The negative mismatch at the lower levels of education can perhaps be explained by the phenomenon of women dropping out of the labour force as much as by an excess demand for their services. However, the positive mismatch experienced by women at other education levels, from primary through secondary and right up to tertiary education is quite startling. It would seem that this could only be explained by a high degree of gender discrimination on the Turkish labour market.

Figure 11: Mismatch ratio by education group, Egypt, 6-year average (2005-2010)

Source: Appendix, Table 2

The pattern of mismatch in Egypt is quite different to that in the countries considered so far (Croatia, Moldova, Ukraine, Turkey), in that there is no visible inverted-U shaped pattern of mismatch across the education groups. Instead, in Egypt there is a serious imbalance in the labour market for all education groups, with a clear divide between the workers with at

most primary education (ICED 0-2) who experience strong negative mismatch, and those with secondary education and above who experience strong positive mismatch. The mismatch ratio is especially large for those with university and higher education (mismatch ratio > 2.0). This pattern contrasts with the patterns in the other countries where the university educated tend to be negatively matched. Overall, uneducated workers appear to find it relatively easy to obtain employment (the proportion unemployed workers in this category is far lower than the proportion of employed workers). An alternative explanation could be that these workers simply drop out of the labour market is they do not find a job. However, given that the likely significant demand for unskilled labour in Egypt, it would seem that the interpretation of an excess demand for unskilled workers might be reasonable. The apparent excess supply of university graduates is a striking phenomenon that may well have contributed to the social unrest of recent years in Egypt. The interpretation might be that workers with secondary and tertiary education face an insufficient demand for their services, and there is an excess supply of workers with intermediate and higher levels of education. There is also a significant gender imbalance, with higher positive mismatch for women with either general or vocational secondary education, while mismatch is greater for men who have university education than for women (mismatch ratio for men with tertiary education = 2.3).

6 EMPIRICAL FINDINGS – A SUMMARY

A major finding concerns the different degree of matching efficiency across education qualifications, our proxy for skill levels. In most countries there is a clear divide between mid-level educated workers with secondary education, who suffer high levels of positive mismatch, and more highly educated workers with university education who have a better experience in the labour market (as do workers with a very low level of education). This pattern is found in the transition economies such as Croatia and Moldova. It is similar in Ukraine although tertiary educated workers also suffer high levels of positive mismatch and only the post-graduate qualification ensures easy access to a job. The picture is rather similar in Turkey, with the exception that there is a huge gender bias with women facing far greater degree of mismatch than men at almost all levels of education qualifications.

Egypt shows a completely different pattern, with high levels of mismatch among all education groups. Among workers with primary education or less, the level of negative mismatch is high, while among the more educated with secondary and tertiary levels of education the level of positive mismatch is high.

Relative real wages for skilled workers compared to unskilled workers have been increasing in both Ukraine and Turkey, suggesting a growing demand for skilled labour and hence growing mismatches among this group of workers. However, the recent global economic crisis may have brought a temporary halt or reversal to this process in the countries that have been most affected. Notably, in Ukraine, a country badly affected by the crisis, relative wages for skill workers have fallen in recent years. No such reversal is observed in Turkey, which has rebounded strongly from the crisis and has been enjoying high rates of economic growth while other countries in the region have faced recession.

Overall, the study has shown that at least in the transition countries and Turkey, vocational and general high school graduates often have inappropriate skills and qualifications, and have difficulty finding a job. University graduates, while increasing in number, find jobs relatively easily because restructuring and technological change has increased the demand for highly skilled workers. Both the demand and supply of highly skilled workers has increased. However, as shown by their rising relative wages, demand is outstripping supply as 'skill biased technological change' in both manufacturing and in the rapidly expanding service industries has led to a growing demand for skilled labour. Employers complain that they cannot find enough highly qualified workers (EBRD BEEPS surveys). The problem is especially severe in the ENP countries including Moldova and Ukraine, while also in evidence but to a lesser extent in transition countries in the Western Balkans such as Croatia (now an EU member state). University graduates who cannot obtain employment appropriate to their skill level are in a position to take away jobs from high school and vocational graduates ('bumping down') reinforcing the phenomenon of mismatch in the middle level of educational attainment in these countries. However, the evidence provided in this paper is

insufficient to draw firm conclusions on this point and further research is needed to establish this effect using tracer studies and other types of employee surveys.

In the emerging market economies such as Egypt, the level of mismatch appears to be far higher than in the transition economies although it is declining over time, due in large part to the improved matching of women in the labour market. Nevertheless, large gender differences remain with women with secondary education suffering from mismatch more than men, while the reverse is true for tertiary education – male university graduates in Egypt suffer from the worst mismatch ratio of all the country education groups considered in this paper. It appears that insufficient jobs are being created for the large number of young highly educated workers who are entering the labour market, especially highly educated young men. The problem in these countries is not one of skill biased technological change, rather it is a problem of rapid population growth leading to an outpouring of young educated people onto the labour markets of countries which still lag behind in the level of industrialisation and in the technological level of the industrial sector. There are not enough skilled jobs to absorb all the graduates from the school and university systems. At the same time the large informal sector provides ready employment for unskilled workers, and there is little problem of mismatch among the unskilled, other than among older unskilled workers who must compete with younger workers for unskilled jobs.

7   POLICY CONCLUSIONS

Despite the negative effects of the global economic crisis on labour demand, significant skill mismatches persist in the ENP countries considered in this paper. Policies are needed that address the high level of mismatch in the middle level of education achievement. This means reforming secondary vocational schools to replace outdated curricula and improve the efficiency of school systems. Policy makers need to make the necessary adjustments to education and training systems. To this end, vocational education systems need to adapt or be reformed. Appropriate changes need to be made in the curricula, in the reallocation of teachers between subjects, in teacher retraining and in school restructuring.

Higher education systems also need attention since there is a growing demand for highly skilled workers, evidenced by the high level of mismatch of university graduates. Even though enrolment in universities has increased, there appears to be much scope for further growth at the tertiary level. However, any further expansion of tertiary education also needs to be well regulated to ensure that the quality of the education experience does not decline.

At the same time, the capacity of the public administration to carry out labour market forecasts or skills forecasts is limited by budget cuts, caps on further public sector employment, and a lack of statisticians and labour market experts to carry out the analyses. Contracting out of services may to some extent overcome such limitations, but will not completely solve it. The first priority therefore is to carry out capacity building within the public administration to enable the appropriate staff carry out and use skill mismatch analyses and macroeconomic and sectoral skill forecasts.

Yet, even if the macro- or sector-level skill forecasts are carried out, and the education and training systems are adapted, reformed and restructured, such a top-down approach may still fail to address skill mismatches if the future demand for skills does not match the projections due to unexpected technological and structural change. For this reason, ENP countries should also consider using subsides to ensure a greater degree of skill matching especially for adult training and retraining purposes, and to supplement skills forecasts and skills anticipation activities which are likely to remain especially useful for guiding long-term investments in the provision of initial education.

Finally, the research has shown the substantial and significant common problems of mismatch in the labour markets of both the EU Enlargement and EU Neighbourhood countries. Some specific policy measures could help to lessen mismatch including (i) incentives to older less skilled workers to retrain and to firms to carry out more and better in-house training for workers of all skill levels; (ii) reform of the secondary and vocational education systems especially in transition countries; (iii) specific measures to improve the labour market matching for women workers such as provision of publicly provided nursery and kindergarten education for young children especially in the emerging market countries;

(iv) special encouragement to employers to take on younger skilled workers through job subsidies and internships; (v) encouraging spillover of skills from foreign direct investment companies to small domestic firms in the informal sector; and (vi) provision of improved skill forecasts to professionals in career and education guidance for adults as well as school leavers.

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Table 1: Measure of mismatch, Croatia, 2005-10

		2005	2006	2007	2008	2009	2010
ISCED 0	total	0.000	0.000	0.000	0.000	0.000	0.000
	male		0.000				
	female	0.000	0.000	0.000			
ISCED 1	total	0.491	0.838	0.574	0.610	0.606	0.749
	male	0.475	1.477	1.055	0.000	0.951	1.164
	female	0.485	0.000	0.000	0.000	0.000	0.000
ISCED 2	total	1.012	1.200	1.200	1.234	1.092	1.022
	male	1.147	1.308	1.292	1.495	1.211	1.149
	female	0.884	1.111	1.108	1.053	0.986	0.913
ISCED 3	total	1.209	1.119	1.093	1.107	1.157	1.132
	male	1.131	1.049	1.028	1.035	1.064	1.064
	female	1.328	1.250	1.200	1.256	1.298	1.242
ISCED 5	total	0.474	0.508	0.629	0.563	0.551	0.672
	male	0.492	0.468	0.669	0.652	0.621	0.672
	female	0.447	0.522	0.585	0.496	0.489	0.669
ISCED 6	total	0.000	0.000	0.000	0.000	0.000	0.000
	male	0.000	0.000	0.000	0.000	0.000	0.000
	female	0.000	0.000				0.000

Source: Labour Force Survey, Croatia

Table 2: Measure of mismatch, Egypt, 2005-10

		2005	2006	2007	2008	2009	2010
Illiterate	total	0.050	0.062	0.052	0.058	0.113	0.090
	male	0.102	0.118	0.095	0.104	0.082	0.171
	female	0.007	0.011	0.013	0.015	0.103	0.031
Read & Write	total	0.071	0.087	0.088	0.116	0.142	0.126
	male	0.111	0.128	0.108	0.148	0.167	0.185
	female	0.053	0.079	0.132	0.174	0.268	0.147
Less than intermediate	total	0.307	0.324	0.268	0.332	0.400	0.317
	male	0.435	0.456	0.373	0.454	0.334	0.406
	female	0.375	0.357	0.278	0.392	1.115	0.578
General secondary	total	2.189	2.095	1.161	1.274	1.004	1.522
	male	2.003	1.923	1.263	1.448	0.838	2.350
	female	2.518	2.341	1.289	1.275	1.939	1.294
Technical secondary	total			1.867	1.819	1.625	1.412
	male			1.721	1.644	1.531	1.295
	female			2.222	2.326	1.990	1.776
Above intermediate	total	1.524	1.528	1.709	1.782	1.773	2.014
	male	1.566	1.480	1.573	1.792	1.793	1.918
	female	1.233	1.258	1.508	1.478	1.504	1.795
University & Higher	total	1.764	1.790	2.157	2.052	2.175	2.363
	male	1.995	2.091	2.395	2.295	2.562	2.433
	female	1.254	1.182	1.605	1.411	1.471	1.741

Source: Labour Force Survey, Egypt

Table 3: Measure of mismatch, Moldova, 2005-10

		2005	2006	2007	2008	2009	2010
ISCED 0-1	total	0.386	0.393	0.537	0.490	0.518	0.299
	male	0.581	0.652	0.700	0.537	0.663	0.204
	female	0.251	0.202	0.243	0.408	0.000	0.498
ISCED 2	total	0.963	1.241	1.193	0.930	1.148	1.172
	male	1.011	1.255	1.189	1.080	1.182	1.271
	female	0.903	1.238	1.193	0.741	1.067	0.945
ISCED 3	total	1.104	1.200	1.113	0.930	0.972	1.155
	male	1.158	1.215	1.091	1.054	1.054	1.245
	female	1.090	1.218	1.197	0.804	0.922	1.076
ISCED 4	total	1.142	1.020	0.914	0.991	1.034	0.943
	male	1.080	1.008	0.905	0.973	1.003	0.911
	female	1.194	0.986	0.871	0.983	1.031	0.957
ISCED 5-6	total	0.676	0.643	0.945	1.173	0.880	0.865
	male	0.633	0.599	0.990	0.972	0.824	0.776
	female	0.731	0.724	0.953	1.435	1.009	1.039

Source: Labour Force Survey, Moldova

Table 4: Measure of mismatch, Turkey, 2005-10

		2005	2006	2007	2008	2009	2010
Cannot read or write	total	0.440	0.446	0.503	0.550	0.533	0.488
	male	1.025	1.125	1.241	1.388	1.334	1.223
	female	0.172	0.132	0.178	0.193	0.181	0.191
No diploma	total	0.898	0.909	1.012	1.116	1.091	1.051
	male	1.235	1.232	1.492	1.602	1.473	1.488
	female	0.329	0.435	0.334	0.488	0.562	0.506
Primary (5 years)	total	0.868	0.874	0.838	0.847	0.850	0.827
	male	0.944	0.947	0.927	0.922	0.924	0.914
	female	0.624	0.670	0.570	0.619	0.629	0.621
Junior high (8 years)	total	1.162	1.104	0.993	0.993	1.000	0.953
	male	1.122	1.059	0.948	0.927	0.947	0.898
	female	1.470	1.515	1.409	1.618	1.462	1.480
High school (11 years)	total	1.354	1.430	1.398	1.324	1.345	1.404
	male	1.073	1.133	1.113	1.112	1.103	1.117
	female	2.383	2.414	2.269	1.970	2.127	2.260
Vocational high	total	1.331	1.166	1.185	1.077	1.141	1.135
	male	1.056	0.948	0.960	0.842	0.892	0.916
	female	2.562	2.062	2.139	2.004	2.173	1.959
University	total	0.929	0.921	0.938	0.934	0.848	0.912
	male	0.737	0.765	0.730	0.727	0.664	0.678
	female	1.305	1.155	1.281	1.271	1.158	1.265
Elementary (8 years)	total	1.432	1.586	1.769	1.750	1.751	1.656
	male	1.580	1.682	1.931	1.952	1.909	1.804
	female	1.041	1.339	1.371	1.254	1.338	1.330

Source: Labour Force Survey, Turkey

Table 5: Measure of mismatch, Ukraine, 2005-10

		2005			**2008**	**2009**	**2010**
Tertiary education (ISCED 5 and 6)	total	0.569			0.639	0.742	0.834
	male	0.570			0.687	0.691	0.774
	female	0.573			0.599	0.834	0.936
Basic high education (ISCED 5)	total	1.025			1.640	1.858	1.948
	male	1.363			1.267	1.774	1.589
	female	0.745			1.990	2.081	2.438
Incomplete high education (ISCED 4 and 5)	total	0.965			1.068	0.978	0.913
	male	0.894			1.026	1.044	0.954
	female	1.038			1.118	1.001	0.944
Complete secondary education (ISCED 3)	total	1.259			1.182	1.179	1.132
	male	1.189			1.135	1.155	1.107
	female	1.344			1.237	1.130	1.097
Basic secondary education (ISCED 2)	total	0.995			0.871	0.860	0.979
	male	1.127			0.961	0.830	1.077
	female	0.805			0.743	0.874	0.787
Primary education of less than primary (ISCED 0 and 1)	total	0.289			0.050	0.150	
	male	0.323			0.023	0.052	
	female	0.269			0.071	0.268	

Source: Labour Force Survey, Ukraine

Table 6: ISCED 1997 international classification of education levels

Level 0	Pre-primary education
Level 1	Primary education or first stage of basic education
Level 2	Lower secondary or second stage of basic education
Level 3	(Upper) secondary education
Level 4	Post-secondary non-tertiary education
Level 5	First stage of tertiary education
Level 6	Second stage of tertiary education