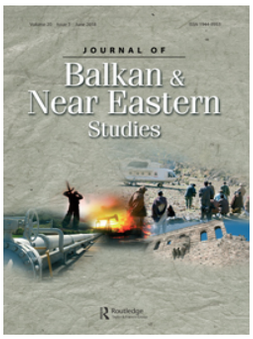

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# Jobless Population and Employment Flows in Recession

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**ABSTRACT**

This paper explores the characteristics and dynamics of the jobless population defined via the NEET concept (population not in education, employment, or training) adjusted to include the entire working-age population and exclude the disabled and retired. Estimation of the total potential labour force, the sum of the NEET and employed population, shows that Croatia has the lowest workforce potential in the EU. Detailed exploration of the Croatian NEET adult population in 2008 and 2011 indicates notable changes in its size and composition during the recession. Single, prime-age male NEETs, with good social relations, are found to have the best chances of finding a job. Their job prospects decrease with household income, especially if it comes from the hidden economy, while social transfers exert negative but statistically insignificant effects.

## Introduction

Low employment and activity rates characterize labour markets in many south-eastern European countries. The root of the problem seems to be structural, and only partly cyclical in nature. The recent recession has uncovered labour market weaknesses in these countries by a notable decline in employment rates. However, even before the recession a substantial segment of the working-age population was inactive, meaning that rising unemployment is not the only reason for low employment rates. A considerable fraction of the population in south-eastern Europe has been without employment, and not seeking it, for years. Eurostat reports that in the EU-28 on average 25% of the population aged 20 to 64 years was inactive in both 2008 and 2011. In four EU countries of south-eastern Europe (Bulgaria, Croatia, Greece and Romania), the average (unweighted) inactivity rate was substantially higher than the EU average, and even increased, from 29% in 2008 to 30% in 2011. Inactivity rates have only marginally declined with the recovery in the post-2011 period. Although there might be many common reasons for high inactivity rates in south-eastern Europe, such as culture, social capital, a high share of hidden economy, or rigid labour legislation, there are certainly important country specificities, as suggested by different countries' responses to the crisis in terms of employment trends and the relative depths of the recent recession.

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The performance of labour markets in south-eastern Europe can be debated in the context of the worldwide liberalization of national employment relations and employment institutions as a part of the globalization project. Howel explains how, for at least the last three decades, governments have become preoccupied with liberalization, often underestimating the stickiness of institutions and their role in compensating workers for the consequences of liberalization.[1] Eurofound, for example, points out that new forms of employment marked by unconventional work patterns and the irregular provision of work, such as employee sharing, job sharing, casual work, ICT-based mobile work, crowd employment, or collaborative employment, have rapidly expanded in recent years.[2] New employment relations remain poorly regulated and have begun to replace standard employment. Along with liberalized traditional employment forms, these new developments have given rise to unemployment, underemployment, precarious employment, labour market segmentation and income inequality. No wonder there are many proponents advocating the need for new European social models in order to adjust to new conditions on the labour markets across the Europe.[3] Countries of south-eastern Europe have been particularly vulnerable due to their already weak national employment institutions. The recent crisis and the austerity measures that have been implemented in response to it have resulted in much harsher labour market downturns in these countries than in more advanced EU economies. National specificities in institutions and policy measures have shaped varying responses in terms of labour market participation and the potential for activation of the inactive population, which is the issue this paper deals with.

Namely, we focus on the NEET (not in education, employment, or training) population in an attempt to better understand employment flows and work-disincentive elements of social benefits in these countries. The term 'NEET' is borrowed from studies on activity among the younger population (aged 15–24), where it originally referred to the population not in employment, education, or training.[4] We shift our attention to more adults here, i.e. the NEET population aged 20–64 years. Accordingly, the original definition of the NEET population is adjusted to better correspond with our main goal of focusing on the jobless adult population that is either active (those looking for a job) or 'activable' (those not looking but potentially available for work).[5] Not all inactive persons have equal potential for activation. In the case of youths, those in formal education or training are not very likely to look for a job.[6] Among the elderly, early retirement or disabilities also pose obstacles to participation in the labour market. Therefore, we define NEET adults as the population *not in employment, education, training, disability or retirement*.[7] NEET adults are therefore either unemployed or inactive without solid institutionalized reasons for inactivity. It can be said that NEETs are either active or passive job seekers. Passive job seekers are those potentially looking for a job, but not complying with statistical conventions enough to be considered as unemployed. The line separating active from passive job seekers is sometimes rather thin. Transition from one to the other is supposed to be easy and therefore it may be reasonable to consider them as one group. It should be said that detection of passive job seekers (or 'activable' persons) depends in part on arbitrary definitions which are open to criticism. For example, in the proposed definition above, those who are inactive due to family reasons are considered to be passive job seekers and are therefore treated as NEETs. However, they may not be interested in employment at all due to personal responsibilities such as looking after children or incapacitated adults. We nevertheless believe that focusing on NEET adults using the abovementioned definition is a useful tool for getting deeper

insights into labour market flows than via the standard approach involving analysis of labour force (employment and unemployment) dynamics alone. For instance, there is a stronger connection between changes in the NEET adult rates and employment rates than between changes in unemployment rates and employment rates.[8] The concept of NEET adults is also considered because it allows testing of the impacts of social transfers and family circumstances on employment prospects.

This paper has two main objectives. The first is to illustrate the concept of NEET adults by using official Eurostat data, including basic estimates on the size and composition of the NEET population at the EU level as well as its more detailed profiling in the case of Croatia, on the basis of micro-data from the Household Budget Survey (HBS). With the HBS data in hand it has been possible to explore the reliance of the NEET population on social transfers which may be an important factor for understanding the inactivity of that part of the population. A comparison of the NEETs' profiles for 2008 and 2011 has enabled us to find out more about their possible relation to labour market flows during the recession. The second objective of the paper is assessment of employment prospects of the NEET population depending on their individual and household characteristics. We analyse the change of the labour market status by probit regression models in order to get a sense of the job prospects of the NEET adults. The results help us to identify particular sub-categories of the NEET population that are closer to the labour market and for whom a well-targeted activation policy is more likely to be successful.

The main contributions of the paper stem from the above-stated objectives. First, we contribute to the literature by exploring labour market flows by focusing on the population actually or potentially available for work, but not working by defining the NEET adult population. We explore its size and structure at the EU level and further use this concept to provide a measure of the total potential labour force for all EU-28 countries. Given that the potential labour force is the lowest in Croatia, we go into more depth about the possible causes of low employment for the working-age (20–64) population in the newest EU member state, a country that is struggling not only with a six-year-long recession, but also deeper structural problems in both the labour market and social security system.

The structure of the paper is as follows. The next section provides a background for the research in the form of reviewing the literature that assesses the problems of inactivity and activation in European labour markets, with special emphasis on Croatia. The third section presents comparative data on NEET adults and the total potential workforce in EU member countries. The fourth section turns its attention to the analysis based on the Croatian HBS data for 2008 and 2011 and provides a profile of the NEET population regarding its demographic and welfare features. It also presents the results of multinomial logit regression for determinants of different labour market statuses, including the NEETs. The results of the probit regressions for job prospects of the NEET population are presented in the fifth section, while the final section offers the main conclusions.

## Employment, unemployment and potential additional workforce

The NEET concept that takes a broader view of the labour supply has been in wider use since 2010 when the Employment Committee (EMCO) agreed that it would focus on the youth who were not employed or enrolled in education and training programmes, in the context of the *Europe 2020 Employment Guidelines*.[9] The same concept applied to the adult

population, as suggested in this paper, can complement recent statistical and academic work on the employment prospects of the unemployed and inactive population. In 2011, Eurostat introduced three new indicators of labour market developments to supplement the standard ones: (i) underemployed part-time workers, (ii) persons seeking work but not immediately available and (iii) persons available for work but not seeking it (discouraged jobseekers and those prevented from seeking work by personal and family circumstances). The first indicator is already covered by regular employment statistics, but deserves special attention. Populations covered by the other two indicators are not treated as parts of the labour force, but rather represent potential additional labour force (PAF).[10] We can see that the last two indicators are highly similar to the 'activable' part of our definition of NEET adults.[11]

Academic literature has already studied movements at the margins of the labour market and among the population that may or may not search for a job. Hazans, for example, has explored labour market participation in Baltic countries since the start of the transition and concluded that trends are driven by pension reforms, changes in regulations related to working pensioners, and increasing enrolment of the youth in further education.[12] He explains that 'the immediate reserve of the labour force', defined as a portion of inactive population aged 15–74 who are not engaged in job searches, although they are willing to work and available for work, represents 4–8% of the total population of this age group, depending on the country.[13]

Gill and colleagues point to a huge loss of the labour force expected in all European countries by 2060, should current trends persist. They stress the fact that some groups of the population—women, youth, elderly, and some minorities—who should work are not working at all and thus they suggest 'radical policy and behavioural changes for Europe to counter the shrinking labour force'.[14] This would include changes in employment and social protection policies to encourage labour force participation and employment, especially emphasizing the need to relax employment protection legislation, renewed immigration policies, and investments in human capital.[15] Similar conclusions are provided in a book by Schmid.[16]

Social transfers could have an important role in determining labour supply. The negative influence of various social programmes on labour market participation has been confirmed in a number of works.[17] While Boeri and van Ours, as well as Moffit, give theoretical and empirical confirmation on the issue,[18] mostly by reviewing the relevant literature, Dague and colleagues examine the labour supply effects of publicly provided health insurance for low-income adults without dependent children in the USA and find that public insurance has a disincentive effect on the labour supply of low-income childless adults.[19] Similarly, Fernandez and Saldarriaga investigate the short-term labour supply responses to cash transfers in Peru and conclude that these transfers reduce the labour supply of the recipients by 6–10 hours in the week following payment.[20]

Low employment rates in south-eastern Europe might also be connected with the system of social transfers. Nelson, for instance, analyses social assistance developments in EU member states in the period 1990–2005 and concludes that social assistance benefit levels have diverged among European countries, mainly because of lagging development in eastern and south-eastern parts of the EU.[21] Ranđelović and Žarković-Rakić analyse the issue in Serbia,[22] whereas Mojsoska Blazevski and colleagues examine the effects of two different social policies on labour market choices in Macedonia.[23] Bejaković and colleagues analyse hypothetical households in Croatia and find significant disincentives in the transition from

unemployment or inactivity to employment for specific type of families—principally those in which a member who is getting a job can only earn a low salary, families receiving all types of available benefits, families with only one adult member who is working, and families with more children.[24] Šućur, on the other hand, conducts an empirical analysis using the 2007 and 2010 HBS data and concludes that the economically active population, and those dependent upon them, has been more heavily affected by the crisis.[25]

## Potential employment measured by NEETs

The out-of-work population is either unemployed or inactive. The unemployed, by definition, actively search for jobs. The inactive population is not searching for a job, and it could be differentiated by that. Illustration of the size of the unemployed and inactive population in the EU in 2014 is shown in Figure 1. The largest proportion of the out-of-work population among those of working age (20–64) is found in Greece and Croatia, 47% and 41%, respectively, and the lowest proportion in Sweden, 20%. The unfavourable position of Greece and Croatia could partly be explained by the effects of the recent crisis. Unemployment rates more than doubled since 2008 in both countries. Yet inactivity seems to be as important an issue as unemployment, if not even more important. Inactivity rates, measured as a share of the inactive in the total population aged 20–64 years, are found to be largest in southern and south-eastern Europe: Italy (32%), Malta (30%), Romania (30%), Croatia (29%), Hungary and Greece (28%).

The main reasons for inactivity of the working-age population are retirement, family reasons, own illness or disability, and education. Although in most of the EU countries legal retirement age is 65 or above, a rather large proportion (over 5% in 2014) of the population in the working-age cohort (20–64) is already retired. In countries such as Croatia and Slovenia this climbs to over 10%. In the EU as a whole, own illness or disability and

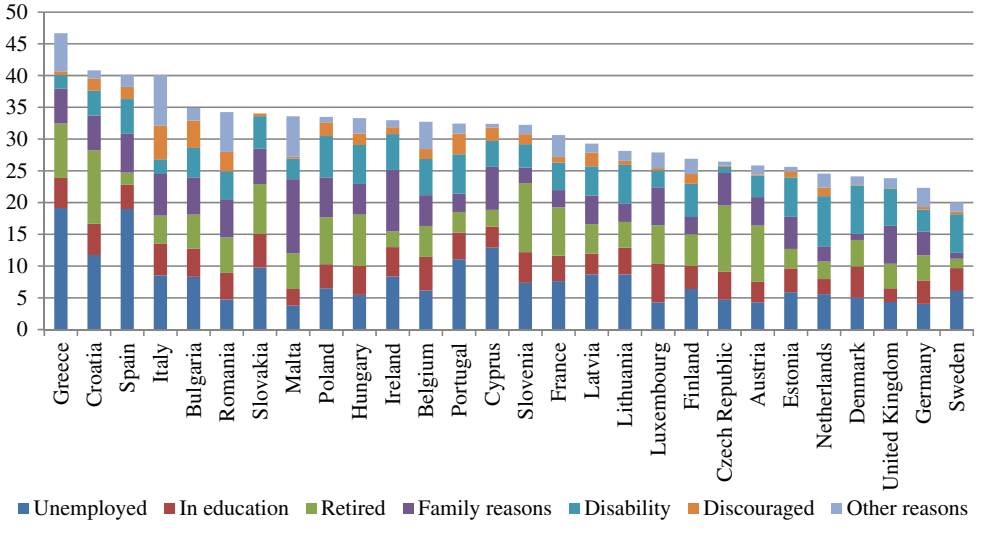


**Figure 1.** Out-of-work population in the EU (in % of the population aged 20–64), 2014. Source: Authors' calculations based on Eurostat data on activity, employment and inactivity rates by the main reason for not seeking employment.

retirement account for about 10% of the working-age population status, whereas in Slovenia and Croatia this proportion goes up to 15% and 16%. Disability as a reason for not participating in the labour market is highly important in some western European countries, such as Denmark and the Netherlands, where 8% of the population aged 20–64 is said to be too disabled to work.

Family reasons (family and personal responsibilities, looking after children or incapacitated adults) are particularly important reasons for staying uninvolved in the workforce in countries such as Malta, Ireland and Cyprus, as well as in most other south-eastern EU member countries. The share of the working-age population in education ranges from 2% in the UK to 6% in Luxembourg, with an average of 4% for the entire EU. Discouragement as a reason for non-employment is most pronounced in Italy and Bulgaria, followed by Portugal and Romania. In total, south-eastern European countries have a much higher proportion of persons who are inactive due to retirement, family obligations and discouragement than in other European countries.

Based on the above information about unemployment and inactivity, we estimate the size of the NEET adult population—that is, the population aged 20–64 years and not in employment, education, training, disability or retirement. Figure 2 shows NEET adults rates (the proportion of the NEET population in the population aged 20–64 years) as well as employment rates for EU countries in 2014 sorted by the size of the sum of these two rates.

The highest NEET rate among EU countries is observed in Greece (31%) followed by Spain (29%), which is quite expected given the extreme unemployment rates in these two countries. High NEET rates are found also in Cyprus, Malta, Bulgaria, Ireland and Romania. As already mentioned, the NEET population can be considered as consisting of active and passive job seekers. The NEET rate therefore indicates the pool of those without a job but ready to start working immediately or those potentially ready to work in certain circumstances.

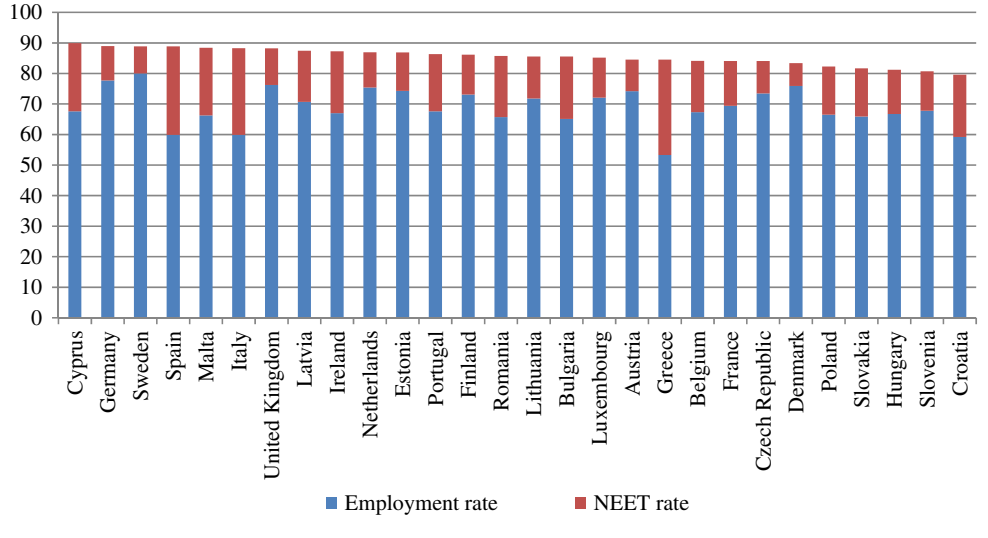


**Figure 2.** Employment and NEET rates (in % of population aged 20–64), 2014. Source: Authors' calculations based on Eurostat data on activity, employment and inactivity rates by the main reason for not seeking employment.

The sum of employment and NEET rates can be considered a measure of the total potential labour force. In this respect, the lowest values are found in Croatia (80%) and Slovenia (81%), indicating rather low capacity of these economies in terms of labour supply. On the other hand, countries such as Cyprus or Spain, despite not such high employment rates, seem to have stronger overall workforce potential. The results also suggest that there are limits to increasing employment rates in a number of EU countries, and to their ability to achieve the goals set forth in the *Europe 2020* strategy. Employment policy, thus, should also be directed towards activation of those who are currently out of the labour market to achieve a durable increase in employment rates.

The recent crisis resulted not only in increased unemployment rates, but also in changes in NEET rates that are closely related to changes in employment rates (Figure 3). In the period 2008–2014, most EU countries experienced increases in NEET rates and decreases in employment rates. The largest (percentage) fall in employment rates occurred in Greece, Spain, Cyprus and Croatia, whereas the largest (percentage) rise in the NEET rate is observed in Slovenia and Denmark. A similar relationship could be found between changes in unemployment and changes in employment, but the correlation coefficient is a bit stronger when observed between changes in the employment and NEET adults' rates.[26] This leads to the conclusion that the segment of the inactive population with the potential for activation needs to be taken into account in the discussion about employment trends.

## The impact of the crisis on the profile of NEET adults—country case of Croatia

A more detailed insight into labour market flows by using the concept of NEET adults is given by exploring micro data for Croatia. We take Croatia as an illustration in this paper since it has one of the highest inactivity and unemployment rates in the EU, and the smallest

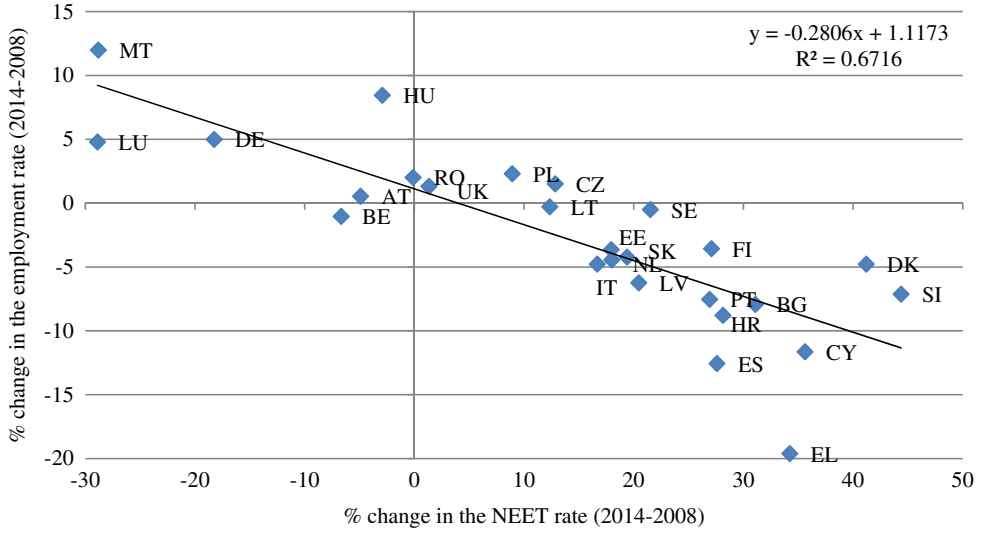


**Figure 3.** Relationship between employment and NEET rates (population aged 20–64). Source: Authors' calculations based on Eurostat data on activity, employment and inactivity rates by the main reason for not seeking employment.
*Note*: Data for the NEET population were not available for France and Ireland in 2008.

total potential labour force. Estimates of the size, composition and changes of the NEET adult population during the recent recession should provide further evidence on the rather sizeable pockets of exclusion from the labour market in Croatia.

## Data description

Estimation of the NEET population is based upon micro data from the Household Budget Survey (HBS) for 2008 and 2011. The HBS has been conducted on a regular basis by the Croatian Bureau of Statistics (CBS) and covers a nationally representative sample of the population.[27] An important advantage of the HBS is that it contains not only demographic, educational and labour status records, but also information on individual- and household-level income from various sources. Profiling of various labour market statuses by multinomial logit regression analysis is prepared on the basis of merged 2010–2011 data. The combination of 2010 and 2011 HBS data was opted for in order to increase the number of observations and get more robust regression results.[28] Although Croatia experienced a small GDP decline of 0.3% in 2011, and labour market indicators deteriorated somewhat compared to 2010, general economic conditions did not change much between 2010 and 2011 and these two years could be treated as one point of observation.[29] The merged 2010–2011 dataset has also been used in probit regression aimed at estimating the employment prospects of the adult NEET population.

The key variable of interest is the labour market status of the population. Seven different groups are distinguished on the basis of their self-reported status at the time of interview: (i) employed (incl. employees, employers and self-employed); (ii) in education (student in regular education); (iii) in training (students or others attending other forms of education); (iv) retired; (v) disabled (those who reported themselves as too disabled for work);[30] (vi) unemployed;[31] and (vii) other inactive. Our main group of interest is the NEET adult population consisting of those who are not employed, not in education or training, not retired, and not disabled. In the context of the above groupings, NEETs are either unemployed or other inactive.

The HBS contains information on various sources of the incomes of all household members. Although most information on incomes is collected for each household member, some information refers to the entire household. Therefore, total income is calculated at the household level and then divided by the number of household members to get household income per capita. Such per capita income is attributed to each household member regardless of his/her genuine contribution to the household budget.

## Main features of the NEET population in Croatia

The composition of the working-age population changed noticeably between 2008 and 2011, more in terms of the proportions of the employed and the unemployed than in the proportions of various inactivity statuses. Figure 4 shows that the employment rate decreased by about seven percentage points between 2008 and 2011, from 64% to 57%, while the proportion of the unemployed in the working-age population increased from 9% to 16%. The proportion of retirees increased somewhat, possibly due to the increased attractiveness of early retirement in an atmosphere of uncertain employment, and the proportion of the working-age population in education decreased. The latter might be the effect of a

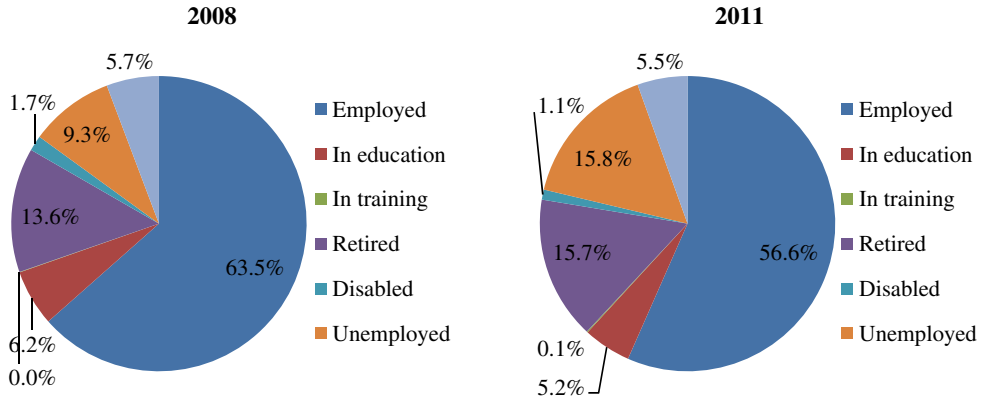


**Figure 4.** Composition of the working-age (20–64) population in Croatia, 2008 and 2011. Source: 2008 and 2011 HBS.

**Table 1.** Composition of the working-age population (20–64) in Croatia by main demographic characteristics, 2008 and 2011.

| | 2008 | | 2011 | |
|---|---|---|---|---|
| | Employed | NEET | Employed | NEET |
| Female (%) | 44.3 | 73.7 | 44.6 | 60.6 |
| Married or in cohabitation (%) | 68.7 | 71.5 | 70.8 | 64.0 |
| Age (avg., years) | 40.5 | 40.4 | 41.2 | 39.7 |
| Age 20–29 (%) | 19.3 | 26.4 | 16.7 | 28.3 |
| Age 30–49 (%) | 56.1 | 43.6 | 57.3 | 43.3 |
| Age 50–64 (%) | 24.6 | 30.1 | 25.9 | 28.4 |
| Primary education or less | 16.0 | 34.4 | 12.4 | 31.9 |
| Secondary education | 63.6 | 57.4 | 68.1 | 62.5 |
| Tertiary education | 20.2 | 7.6 | 19.5 | 5.7 |
| Household size (avg.) | 3.4 | 3.7 | 3.5 | 3.7 |
| No. of children <15 (avg.) | 0.6 | 0.7 | 0.6 | 0.6 |
| Urban (%) | 44.8 | 38.9 | 48.1 | 40.8 |
| Unemployed (% of total) | – | 61.7 | – | 74.2 |
| Total income (HRK) | 36,630 | 22,682 | 32,099 | 19,171 |
| Share of earnings in total income (%) | 87 | 69 | 86 | 66 |

Source: 2008 and 2011 HBS.

reduced period of tertiary education—partly as an element of the Bologna process which was implemented in Croatia in 2005 and partly due to policy changes aimed at discouraging and making more costly the casually prolonged period of study that had been typical of Croatian university students for years. The proportion of the other inactive population remained almost the same between 2008 and 2011. However, the share of the NEETs (the unemployed plus other inactive) among the working-age population increased by six percentage points, from 15% to 21%, in the same period.

It is worth noting that in comparison with other countries (Figure 1), Croatia has a rather high proportion of working-age retirees. The reason for this is more structural than cyclical. First, there is a significant proportion of war veterans and war veterans' families receiving disability and survivor pensions.[32] Secondly, there is a substantial proportion of disability retirement due to other reasons, as well as early retirement under regular old-age pension rules.

The demographic characteristics of NEETs are in most respects different than those of the employed population (Table 1).[33] While there are slightly fewer women among the employed population (about 45% in both years), a large majority of women are among the NEET population (more than 70% in 2008 and around 60% in 2011). This is certainly a point that deserves policy consideration.[34] However, the proportion of women among NEETs decreased in 2011 compared to 2008 as a consequence of the proportionally higher increase of unemployment among men. Loss of jobs in Croatia was chiefly in male-dominated sectors such as manufacturing, industry and construction.

The NEET population, in comparison to the employed, is comprised of a lower proportion of the prime-age population, with a higher proportion of youths and the older population. Household size is slightly smaller for the employed than for NEETs, while the average number of children below the age of 15 in the household is similar for both groups. The employed population has considerably higher education than the NEET population. For example, the proportion of persons with tertiary education among the employed was around 20% and around 8% among NEETs in 2008. The proportion of the urban population is substantially lower among NEETs than among the employed. With the crisis, the proportion of the unemployed among NEETs increased to almost 75% in 2011.

The NEET population is different from the employed population in another very important respect. Household income of NEETs is substantially lower than the household income of employed persons, and income sources are much different. In the course of the recent recession, household incomes fell dramatically in Croatia, even in households of employed persons (Table 1). Average income per household member in the households of employed persons fell by about 12% in real terms between 2008 and 2011. NEETs' households experienced even larger declines in income, of almost 16%, suggesting that this population is highly vulnerable and disproportionally hard hit by the crisis. Households of employed persons receive a large majority of their incomes in the form of earnings, whereas NEETs rely more heavily on government transfers and more than a quarter of their income comes from that source.

As previously mentioned, government transfers are an important dimension to study in the context of the NEET population. As the first piece of information on these transfers in Croatia, we look at the coverage and generosity of social assistance, i.e. transfers based on non-contributory social programmes. Two major groups of transfers are considered: family allowances and needs-based social assistance. The HBS data allows for inclusion of the following benefits in groups of family allowances: child allowance, maternity leave benefits and layette assistance. Needs-based social assistance consists of: social assistance in cash (i.e. support allowance as a form of Guaranteed Minimum Income in Croatia) and social assistance in kind (food, clothing, firewood, etc.).

It appears that coverage of social assistance programmes in Croatia is rather low. About 20% of the working-age (20–64) population was covered by some kind of social programme in 2008, while this was the case for about 17% of the working-age population in 2011 (Table 2). Coverage was higher for the NEET population, around 35% in 2008, but it dropped to around 29% in 2011. A higher coverage for the NEET population is expected because this population is poorer than average and one of the goals of social assistance programmes is to help the most vulnerable. However, programmes of 'the last resort', such as needs-based social assistance programmes, are characterized by particularly low coverage in Croatia—around 4% of the entire working-age population and 10% of the NEET population was covered in

**Table 2.** Coverage and generosity of social assistance programmes: working-age population (20–64) in 2008 and 2011 (direct and indirect beneficiaries).

| | 2008 | | | 2011 | | |
|---|---|---|---|---|---|---|
| | Total | Non-NEET | NEET | Total | Non-NEET | NEET |
| | | | *Coverage* | | | |
| All social assistance programmes | 20.3 | 17.7 | 35.0 | 16.9 | 13.8 | 28.5 |
| Family allowances | 17.6 | 15.5 | 29.2 | 13.5 | 11.5 | 21.1 |
| Needs-based social assistance | 4.0 | 2.9 | 9.8 | 4.9 | 3.2 | 11.5 |
| | | | *Generosity* | | | |
| All social assistance programmes | 13.7 | 12.3 | 19.6 | 19.5 | 15.7 | 30.3 |
| Family allowances | 11.9 | 11.3 | 14.3 | 16.5 | 15.4 | 19.5 |
| Needs-based social assistance | 17.5 | 13.8 | 28.2 | 22.7 | 13.1 | 43.7 |

Notes: Programme coverage is the proportion of population in each group that receives the transfer (including all members of beneficiary household). Generosity is the average transfer amount as a share of pre-transfer income calculated for beneficiaries only and expressed in percentages.
Source: 2008 and 2011 HBS.

2008. There was, however, a slight increase in coverage of needs-based programmes in 2011 for both the NEET and non-NEET population. Coverage of family allowances decreased due to lower coverage of maternity leave benefits. It appears that family allowances are not designed in a flexible manner because the number of beneficiaries did not react to income declines in the crisis among both the NEETs and non-NEETs.

Generosity, defined as the share of the average transfer amount in pre-transfer income in beneficiary households, is another important feature of social transfers. On average, social assistance programmes in Croatia provided some 14% of pre-transfer incomes in 2008 for those households that receive such transfers. In the case of NEET persons' households, they received around 20% of their incomes from various social transfers. That was slightly higher for beneficiaries of needs-based social assistance due to their lower incomes. It is worth noting that generosity increased between 2008 and 2011 for both types of programmes and for the entire working-age population. However, this is the result of declining market incomes of the population and not of increased social transfers.

## *Determinants of labour market status*

The impact of various individual and household characteristics on labour market status is further explored by means of a multinomial logistic regression model. The dependent variable is set as a categorical variable of the status of the working-age (20–64) population. The reasoning behind the use of a multinomial logit is the unordered categorical property of the dependent variable.

We have grouped the working-age population (20–64) into four more-or-less homogeneous groups: employed; NEETs; in education or training; and retired or disabled. Independent variables are different personal and household characteristics, with some of them being examined in the previous section. The results of the multinomial logistic regression are presented in Table 3. Instead of the regular multilogit coefficients, we present only margins here, i.e. the predicted probabilities of an outcome. Margins allow us to interpret the impact of each parameter on the outcome of interest independently of other outcomes.

Apparently, only higher education and the presence of other employed adults in the household have clear significant negative effects on the probability of being a NEET. This

**Table 3.** Results of the multinomial logit estimation for the working-age (20–64) population, 2010 and 2011.

| Margins—mlogit | Employed^ | | NEET | | In education or training | | Retired or disabled | |
|---|---|---|---|---|---|---|---|---|
| Female | −0.040** | (0.018) | −0.041*** | (0.015) | 0.027*** | (0.004) | 0.054*** | (0.014) |
| Married | 0.167*** | (0.022) | −0.086*** | (0.016) | −0.104*** | (0.021) | 0.023* | (0.013) |
| Child under 2 in HH | 0.018 | (0.038) | −0.015 | (0.033) | 0.015 | (0.022) | −0.018 | (0.024) |
| Child 2–5 in HH | 0.064** | (0.030) | −0.049* | (0.027) | −0.020 | (0.023) | 0.005 | (0.020) |
| Inter.: female*married | −0.112*** | (0.026) | 0.176*** | (0.020) | 0.026 | (0.022) | −0.090*** | (0.016) |
| Inter.: female*child under 2 | −0.051 | (0.044) | 0.084** | (0.036) | −0.036 | (0.025) | 0.003 | (0.031) |
| Inter.: female*child 2–5 | −0.040 | (0.038) | 0.091*** | (0.032) | −0.019 | (0.028) | −0.032 | (0.026) |
| Age (ref: Age 30–49) | | | | | | | | |
| Age 20–29 | −0.067*** | (0.021) | 0.098*** | (0.013) | 0.123*** | (0.012) | −0.153*** | (0.023) |
| Age 50–64 | 0.251*** | (0.025) | 0.202*** | (0.016) | −0.680*** | (0.028) | 0.226*** | (0.008) |
| Education (ref: secondary school) | | | | | | | | |
| Primary school | −0.082*** | (0.018) | 0.134*** | (0.011) | −0.087*** | (0.021) | 0.035*** | (0.008) |
| Post-secondary education | 0.203*** | (0.016) | −0.103*** | (0.016) | −0.051*** | (0.0078) | −0.050*** | (0.011) |
| Urban settlement | −0.033*** | (0.011) | −0.004 | (0.010) | 0.021*** | (0.004) | 0.016** | (0.008) |
| Region (ref: Zagreb region) | | | | | | | | |
| Central Croatia | 0.006 | (0.015) | −0.002 | (0.014) | −0.004 | (0.006) | −0.001 | (0.010) |
| Eastern Croatia | −0.082*** | (0.015) | 0.088*** | (0.012) | −0.007 | (0.007) | 0.001 | (0.010) |
| North-Adriatic Croatia | −0.021 | (0.018) | 0.018 | (0.017) | −0.005 | (0.008) | 0.008 | (0.012) |
| South-Adriatic Croatia | −0.082*** | (0.015) | 0.071*** | (0.013) | 0.004 | (0.006) | 0.007 | (0.011) |
| A child 6–14 in HH | −0.016 | (0.013) | 0.020* | (0.011) | 0.017*** | (0.006) | −0.020* | (0.011) |
| Working adult (20–64) in HH | 0.108*** | (0.018) | −0.045*** | (0.012) | 0.013* | (0.007) | −0.076*** | (0.010) |
| Elderly (65+) in HH | −0.050*** | (0.013) | 0.010 | (0.011) | 0.009 | (0.006) | 0.030*** | (0.008) |
| Proxy for income of other HH members | −0.003*** | (0.001) | 0.002*** | (0.0004) | 0.001*** | (0.0002) | −2.42e-05 | (0.0004) |
| Proxy for hidden economy | −0.084*** | (0.009) | 0.057*** | (0.006) | 0.016*** | (0.003) | 0.010** | (0.005) |
| Log pseudolikelihood | −7,748.5 | | −7,748.5 | | −7,748.5 | | −7,748.5 | |
| Prob > $x^2$ | 0.000 | | 0.000 | | 0.000 | | 0.000 | |
| Pseudo $R^2$ | 0.2552 | | 0.255 | | 0.255 | | 0.255 | |
| Observations | 9628 | | 9628 | | 9628 | | 9628 | |
| Observations with dep't var = 1 | 5557 | | 1795 | | 533 | | 1743 | |

Notes: ^base outcome. Robust standard errors in parentheses. Margins after mlogit are presented.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; Source: 2010 and 2011 HBS.

suggests that those people who have finished some form of higher education and live in a household where somebody is already working have a lower chance of becoming a NEET person. The outcome for the education variable is expected; however, the lower probability of being a NEET if there is a higher number of working adults in the household might point to the importance of social relationships connected with the employment of a household member. These relationships might be of benefit for other household members, helping them to find a job or other ways to escape NEET status.

Positive and significant effects of the variables indicating the amount of income in the household (income from paid employment of other household members and a higher exposure of the household to the hidden economy[35]) on labour market status suggests what could be the main disincentives for the NEET population to find employment. If these household-based findings are generalized, it can be said that the results indicate that the presence of the hidden economy is a significant factor behind the high inactivity (and low employment) rates in Croatia.

As for the employed group, it mostly demonstrates the opposite characteristics to the NEET population. Determinants of the probability of belonging to the group of those in education or training, or those in retirement or disabled, are pretty much as expected. For instance, one can observe the positive effect of the younger age group (20–29) on the probability of attending some form of education and the positive effect for households that have more income at their disposal for financing the (higher) education of one of their members. In the case of those who are retired or disabled, older age and having finished only primary school are the strongest predictors. The proxy for the hidden economy positively and significantly affects the probability of belonging to inactive groups, indicating that availability of time (in the case of retirement) is important for engagement in the hidden economy, and that additional income from that source is important in financing education.

## Employment prospects of the NEET population

The Croatian HBS contains information on both current labour market status and the most frequent status in the previous year, which enables us to take a closer look at changes in the labour market status, in particular changes from NEET to employment. This is done by applying the probit regression model:[36]

$$\Pr(Y = 1|X) = \Phi\left(X'\beta\right) \tag{1}$$

The dependent variable is set to 1 if an adult was primarily NEET in the last 12 months but is currently employed, while the independent variables ($X$) are ones that have already been tested in the above multinomial logit models. Table 4 presents the results in the form of the margins for four different model specifications—the first two are pretty much the same as in the case of the multinomial logit estimation, except for the inclusion of social assistance in the second specification, while the third and the fourth exclude regions from the estimation.

At least two findings deserve our attention. The first is the importance of social interactions on the probability of employment for the NEET population. A dummy variable indicating that at least one adult is employed in the household is found to have a significant positive effect on the probability of , employment for the NEET population. In other words, if there are more persons already working in a household, there is a higher chance for a NEET person to become employed as well. The second interesting finding is the impact of unemployment and social assistance benefits. In this study we could not confirm any significant impact at the usual statistical levels of these benefits. However, the negative sign of the variables for beneficiaries of family and needs-based social assistance is a weak indication that social benefits might have some disincentive effects for seeking employment for the Croatian NEET population. It is worth a reminder that rather low coverage and generosity

**Table 4.** Margins after probit for successful employment of the NEETs.

| Margins—probit | (1) | | (2) | | (3) | | (4) | |
|---|---|---|---|---|---|---|---|---|
| Female | −0.019 | (0.020) | −0.017 | (0.020) | −0.020 | (0.020) | −0.019 | (0.020) |
| Married | −0.002 | (0.024) | −0.002 | (0.024) | −0.004 | (0.024) | −0.005 | (0.024) |
| Child under 2 in HH | −0.009 | (0.039) | 0.001 | (0.040) | −0.004 | (0.040) | 0.005 | (0.041) |
| Child 2–5 in HH | 0.025 | (0.037) | 0.037 | (0.038) | 0.031 | (0.037) | 0.041 | (0.038) |
| Inter.: female*married | −0.056** | (0.028) | −0.058** | (0.028) | −0.055** | (0.028) | −0.055** | (0.028) |
| Inter.: female*child under 2 | −0.017 | (0.041) | −0.014 | (0.041) | −0.012 | (0.041) | −0.010 | (0.041) |
| Inter.: female*child 2–5 | −0.016 | (0.045) | −0.022 | (0.045) | −0.023 | (0.045) | −0.029 | (0.045) |
| Age (ref: Age 30–49) | | | | | | | | |
| Age 20–29 | −0.001 | (0.018) | 8.16e-05 | (0.018) | −0.002 | (0.018) | −0.001 | (0.018) |
| Age 50–64 | −0.043** | (0.018) | −0.045** | (0.019) | −0.042** | (0.019) | −0.044** | (0.019) |
| Education (ref: secondary school) | | | | | | | | |
| Primary school | −0.057*** | (0.018) | −0.054*** | (0.018) | −0.053*** | (0.018) | −0.049*** | (0.017) |
| Post-secondary education | 0.013 | (0.025) | 0.014 | (0.025) | 0.006 | (0.025) | 0.006 | (0.025) |
| Urban settlement | 0.005 | (0.014) | 0.003 | (0.014) | −0.003 | (0.014) | −0.004 | (0.014) |
| Region (ref: Zagreb region) | | | | | | | | |
| Central Croatia | 0.037* | (0.022) | 0.036* | (0.022) | | | | |
| Eastern Croatia | 0.048** | (0.021) | 0.051** | (0.021) | | | | |
| North Adriatic Croatia | 0.011 | (0.030) | 0.006 | (0.029) | | | | |
| South Adriatic Croatia | −0.011 | (0.024) | −0.010 | (0.024) | | | | |
| Child 6–14 in HH | 0.002 | (0.017) | 0.012 | (0.018) | −0.003 | (0.017) | 0.005 | (0.018) |
| Working adult (20–64) in HH | 0.054*** | (0.020) | 0.053*** | (0.020) | 0.052*** | (0.020) | 0.050** | (0.020) |
| Elderly (65+) in HH | −0.011 | (0.017) | −0.011 | (0.017) | −0.015 | (0.017) | −0.016 | (0.017) |
| Proxy for income of other HH members | −0.002** | (0.001) | −0.002** | (0.001) | −0.002*** | (0.001) | −0.002*** | (0.001) |
| Proxy for hidden economy | −0.007 | (0.008) | −0.008 | (0.008) | −0.009 | (0.008) | −0.010 | (0.008) |
| Someone in HH receives UB | | | 0.026 | (0.018) | | | 0.021 | (0.018) |
| Someone in HH receives family SA | | | −0.027 | (0.025) | | | −0.020 | (0.021) |
| Someone in HH receives core SA | | | −0.0123 | (0.022) | | | −0.014 | (0.021) |
| Log pseudolikelihood | −490.04 | | −487.96 | | −496.98 | | −495.35 | |
| Prob > $x^2$ | 0.000 | | 0.000 | | 0.000 | | 0.000 | |
| Pseudo $R^2$ | 0.087 | | 0.091 | | 0.074 | | 0.077 | |
| Observations | 1891 | | 1891 | | 1891 | | 1891 | |
| Observations with dep't var = 1 | 161 | | 161 | | 161 | | 161 | |

Notes: Robust standard errors in parentheses.
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; Source: 2010 and 2011 HBS.

of the social assistance transfers in Croatia (Table 3) is one of the reasons for the missing significance in our regression results. The effect of unemployment benefits on employment probability is positive, but again not significant. The right to claim unemployment benefits in Croatia is restricted to a relatively short period of time and the amounts rapidly decline with time, and are rather low on average (less than one-third of the average wage).[37] In such

a setting, the period of receiving unemployment benefits might correspond to the most intensive job searching and the highest probability of finding employment.

Other findings include a significantly lower probability of employment for a NEET if they are a married female and/or an elderly person (50–64) and/or have a low education level (primary school or less). Based on the negative sign of the regression coefficient, it might be that a higher engagement of NEET households in the hidden economy leads to lower chances of finding job for a NEET person, but such a relationship is not found to be statistically significant. Income from paid employment of other household members significantly negatively affects the probability of employment for the NEET population.[38]

## Conclusions

This paper focused on the characteristics of both active job seekers and inactive persons that are considered to be 'activable', the group jointly called the NEET adult population—i.e. the population *not in employment, education, training, disability or retirement*. The size of the NEET adult (20–64 years) population in proportion to the total population of that age group has been estimated for all EU-28 member states. The NEET population, together with the employed population, is considered to represent the total potential labour force of an economy. It is shown that there are notable differences in the size of potential labour forces across the EU. It is largest in Cyprus, Germany, Sweden and Spain (around 90% of the working-age population) and the lowest in Croatia (80%).

The paper primarily focuses on Croatia, a post-transition country in south-eastern Europe and the newest EU member state, which has thus far experienced a six-year-long recession with immeasurable labour market consequences. Apart from rather high unemployment, there are many among the working-age population in Croatia who are inactive due to various other reasons, with retirement being especially pronounced. Regardless, at least part of the inactive population should be activated in order to increase future employment rates. In any case, the size of the overall NEET population relative to the working-age population in Croatia is not particularly high in the overall European context; the NEET rate was the sixth highest in the EU in 2014. Or, to put it differently, the EU-wide strategic goal of having an employment rate of 75% for the population aged 20–64 years by 2020 seems achievable for Croatia only if almost all of the current (2014) NEET adults become employed.

This calls for a careful design of activation policies that would identify the key obstacles to higher labour market participation and employment and address ways of removing them in order to increase the utilization of existing human capacities in the country. However, in order to do that, a clearer identification of the NEET population is needed, which is provided in this paper using the micro-data from the Household Budget Survey. In particular, this paper sheds light on the main demographic characteristics of active job seekers and the potentially 'activable' population in Croatia, but, perhaps more importantly, on their household characteristics, including the effect of social benefits on their (un)employment.

The main results from the Croatian HBS suggest that the share of the NEETs among the Croatian working-age population increased significantly in the observed period marked by the continued recession. Around 60% of NEETs in 2011 were women. Compared to the employed, NEETs are slightly younger, less well educated, more often live in rural areas and in households more deeply engaged in the hidden economy. Probit estimation of job

prospects of the NEET population show that single, prime-age male NEETs with good social relations have the best chances for finding a job. The probability of employment for NEETs decreases with increasing household income, including income from the hidden economy, indicating employment disincentives. Although social assistance benefits are found to have a negative effect on employment probability, this effect is not statistically significant, which is attributed to the rather low coverage and generosity of these benefits in Croatia.

Thus it appears that the crisis, along with the accompanying liberalization of institutions and policies, only aggravated the deep-rooted structural problems in the functioning of the labour markets in Croatia and other south European countries. These affect not only the current social situation, but also future economic developments. Perhaps, as is often advocated in both academic and political discourse, new European social models need to be developed in order to better combine competitive labour markets with adequate social security for workers.

## Disclosure statement

Some ideas for the current research have emerged within the framework of the authors' consultancy work for the World Bank. However, all the results and opinions are solely of the authors and cannot be attributed to the World Bank.

## Notes on contributors

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## Notes

1. C. Howel, 'Regulating class in the neoliberal era: the role of the state in the restructuring of work and employment relations', *Work, Employment and Society*, 30(4), 2016, pp. 573–589.
2. See, for instance, H. Sarfati, 'Coping with the unemployment crisis in Europe', *International Labour Review*, 152(1), 2013, pp. 145–156; or C. Hermann, 'Crisis, structural reform and the dismantling of the European Social Model(s)', *Economic and Industrial Democracy*, 2014, pp. 1–18, doi: 10.1177/0143831X14555708.
3. Eurofound, *New Forms of Employment*, Publications Office of the European Union, Luxembourg, 2015.
4. EC (European Commission), *Employment and Social Developments in Europe 2013*, European Commission—Directorate-General for Employment, Social Affairs and Inclusion, Brussels, 2014.
5. Note that by statistical conventions the term unemployed refers to a person who does not have a paying job but is immediately available for work and is actively seeking a job. The

term 'jobless population' or 'out-of-work population' is used in a broader sense for all those without a job regardless of their search activity and availability.

6. At least not in countries such as Belgium, Bulgaria, Croatia, Czech Republic, Hungary, Italy, Cyprus, Romania and Slovakia, where the overlap between the labour market and education is very small, as explained in the publication by Eurostat, *Participation of Young People in Education and the Labour Market*, Statistics Explained, European Commission—Eurostat, Brussels, 2013 <http://epp.eurostat.ec.europa.eu/statistics_explained/extensions/EurostatPDFGenerator/getfile.php?file=161.53.53.3_1405766480_37.pdf> (accessed 25 January 2014).
7. Use of some other abbreviation for this group has been considered so as to be better aligned with the definition, for example, the NEETDR population (not in employment, education, training, disability or retirement). However, we have decided to use the more common term—NEET—due to the same underlying idea.
8. Please refer to Figure 3 and Figure A1 in the Appendix 1.
9. EC (European Commission), *Youth neither in Employment nor Education and Training (NEET)—Presentation of Data for the 27 Member States*, European Commission—Directorate-General for Employment, Social Affairs and Inclusion, Brussels, 2010.
10. Eurostat, *New Measures of Labour Market Attachment—3 New Eurostat Indicators to Supplement the Unemployment Rate*, Eurostat: Statistics in Focus No. 57/11, European Commission—Eurostat, Brussels, 2011 <http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-11-057/EN/KS-SF-11-057-EN.PDF> (accessed 15 January 2014).
11. The importance of focusing on the adult NEET population and its 'rough' measure, which is somewhat different than the one we presented here, is also given in A. Artner, 'Is youth unemployment really the major worry?', *Journal of Contemporary Central and Eastern Europe*, 21(2–3), 2013, pp. 183–205.
12. M. Hazans, 'Looking for the workforce: the elderly, discouraged workers, minorities, and students in the Baltic labour markets', *Empirica*, 34(4), 2007, pp. 319–349.
13. Ibid.
14. I. Gill, J. Koettl and T. Packard, 'Full employment: a distant dream for Europe', *IZA Journal of European Labor Studies*, 2(19), 2013, pp. 1–34.
15. Ibid.
16. G. Schmid, *Full Employment in Europe: Managing Labour Market Transitions and Risks*, Edward Elgar Publishing, Cheltenham, UK and Northampton, MA, US, 2008.
17. For instance, O. Ashenfelter, 'Determining participation in income-tested social programs', *Journal of the American Statistical Association*, 78(383), 1983, pp. 517–525.
18. R. Moffitt, 'Welfare programs and labor supply', in A. J. Auerbach and M. Feldstein (eds), *Handbook of Public Economics*, Elsevier, Amsterdam, 2002, pp. 2393–2430; T. Boeri and J. van Ours, *The Economics of Imperfect Labour Markets*, Princeton University Press, Princeton, NJ, 2008.
19. L. Dague, I. DeLeire and L. Leininger, *The Effect of Public Insurance Coverage for Childless Adults on Labor Supply*, IZA Discussion Papers No. 8187, IZA, Bonn, 2014.
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21. K. Nelson, 'Social assistance and minimum income benefits in old and new EU democracies', *International Journal of Social Welfare*, 19(4), 2010, pp. 367–378.
22. S. Ranđelović and J. Žarković Rakić, 'Improving work incentives in Serbia: evaluation of a tax policy reform using SRMOD', *International Journal of Microsimulation*, 6(1), 2013, pp. 157–176.
23. N. Mojsoska Blazevski, M. Petreski and D. Petreska, *Increasing Labour Market Activity of the Poor and Females: Let's Make Work Pay in Macedonia*, EUROMOD Working Paper, No. EM16/13, Institute for Social and Economic Research, University of Essex, Colchester, 2013.

24. P. Bejaković, I. Urban, S. Bezeredi and A. Matejina, 'Isplati li se raditi u Hrvatskoj?' [Does it pay off to work in Croatia?], *Revija za socijalnu politiku* [Croatian journal of social policy], 19(1), 2012, pp. 83–92.
25. Z. Šućur, 'Stari i novi siromasi u hrvatskom društvu: empirijski uvid' [The old and new poor in Croatia: new view], *Bogoslovska smotra* [Ephemerides theologicae Zagrabienses], 84(3), 2014, pp. 577–610.
26. Figure A1 in the Appendix 1 shows the relationship between the change in the employment and unemployment rates.
27. During the preparation of this paper, the last survey round for which micro data was available was from 2011. As the most severe part of the crisis and adjustments to it occurred from 2008 to 2011, the observed period should reflect the impact of the crisis well.
28. The HBS in Croatia is a cross-sectional survey without a panel component. Observation units from year to year are made differently by survey design and therefore merging sequential surveys cannot result in the same unit being counted twice.
29. Basic statistics presented in the Appendix confirm that data for 2011 and 2010–2011 refer to very similar structural characteristics of the economy.
30. Those who are retired due to disability and receive a disability pension would probably place themselves within the group of retired persons. Therefore, a tiny group of the disabled consist of those who are temporarily disabled due to sickness or for other reasons are physically unable to search for or accept a job.
31. There is information on how 'actively' the unemployed were looking for jobs in the 2011 HBS, but not in the 2008 HBS. Therefore we rely on self-reported status alone in our determination of activity status.
32. Pension insurance data for 2011 indicate that around 2% of the population aged 25–49 and 3.5% of the population aged 50–64 received war veteran's pensions. For male populations of given age groups, these proportions are 4% and 6%, respectively.
33. Detailed descriptive statistics are shown in Table A1 in the Appendix.
34. The disadvantaged position of women in the Croatian labour market, as well as the reasons behind this occurrence, has been discussed in a number of works, such as T. Matković, 'Tko što radi? Dob i rod kao odrednice položaja na tržištu rada u Hrvatskoj' [Who does what? Age and Gender as Determinants of the Position on the Labour Market in Croatia], *Revija za socijalnu politiku* [Croatian journal of social policy], 15(3), 2008, pp. 479–502; D. Nestić, 'The gender wage gap in Croatia—estimating the impact of differing rewards by means of counterfactual distributions', *Croatian Economic Survey*, 12(1), 2010, pp. 83–119; J.Gelo, Š. Smolić and M. Strmota, 'Sociodemografske odrednice zaposlenosti žena u Hrvatskoj' [Socio-Demographic Determinants of Female Employment in Croatia], *Društvena istraživanja* [Društvena istraživanja : journal for general social issues], 20(1), 2011, pp. 69–88; V. Hazl, S. Crnković Pozaić, B. Meštrović and A. Taylor, *Current Position of Women in the Croatian Labour Market—Assessment Report*, Women in the Labour Market, EuropeAid/128290/D/SER/HR (E1896), WYG International Ltd, 2011.
35. The proxy for the hidden economy is a ratio between total consumption and total household income. A higher ratio indicates higher income from hidden activities of household members because spending is higher than income and supposedly financed by money that came from informal sources. This or a similar proxy for the hidden economy is often used in studies on the informal economy, for instance in C. A. Pissarides and G. Weber, G. 'An expenditure-based estimate of Britain's black economy', *Journal of Public Economics*, 39, 1989, pp. 17–32.
36. Logistic model (logit) gives almost the same results.
37. I. Tomić and P. Domadenik, 'Matching, adverse selection and labour market flows in a (post) transition setting: the case of Croatia', *Post-communist Economies*, 24(1), 2012, pp. 39–72.
38. One caveat regarding the data used in our study must be kept in mind. The HBS is designed on a cross-sectional basis, which limits the information needed for properly detecting changes in the labour market status of an individual. We have been able to collect information only about changes in status, from the NEET to the employed, within a year and also only in the period 2010/11, which was marked by an ongoing recession and limited flows into employment.

## Appendix 1

**Table 1A.** Descriptive statistics for the working-age (20–64) population: 2008, 2010 and 2011.

| | 2008 | | | | | | 2011 | | | | | | 2010 and 2011 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Total | | Employed | | NEET | | Total | | Employed | | NEET | | Total | | Employed | | NEET | |
| | Mean | St.Dv. | Mean | St.Dv. | Mean | St.Dv. | Mean | St.Dv. | Mean | St.Dv. | Mean | St.Dv. | Mean | St.Dv. | Mean | St.Dv. | Mean | St.Dv. |
| *Personal characteristics* | | | | | | | | | | | | | | | | | | |
| Female | 0.50 | 0.50 | 0.44 | 0.50 | 0.74 | 0.44 | 0.50 | 0.50 | 0.45 | 0.50 | 0.61 | 0.49 | 0.50 | 0.50 | 0.45 | 0.50 | 0.63 | 0.48 |
| Married or coh. HH member | 0.65 | 0.48 | 0.69 | 0.46 | 0.72 | 0.45 | 0.65 | 0.48 | 0.71 | 0.45 | 0.64 | 0.48 | 0.65 | 0.48 | 0.70 | 0.46 | 0.65 | 0.48 |
| Age | 41.62 | 12.60 | 40.55 | 10.94 | 40.44 | 12.63 | 42.35 | 12.81 | 41.21 | 10.73 | 39.67 | 12.66 | 42.16 | 12.77 | 40.99 | 10.91 | 40.21 | 12.53 |
| Age 20–29 | 0.22 | 0.42 | 0.19 | 0.40 | 0.26 | 0.44 | 0.21 | 0.41 | 0.17 | 0.37 | 0.28 | 0.45 | 0.21 | 0.41 | 0.18 | 0.38 | 0.26 | 0.44 |
| Age 30–49 | 0.46 | 0.50 | 0.56 | 0.50 | 0.44 | 0.50 | 0.45 | 0.50 | 0.57 | 0.49 | 0.43 | 0.50 | 0.45 | 0.50 | 0.56 | 0.50 | 0.44 | 0.50 |
| Age 50–64 | 0.32 | 0.47 | 0.25 | 0.43 | 0.30 | 0.46 | 0.34 | 0.48 | 0.26 | 0.44 | 0.28 | 0.45 | 0.34 | 0.47 | 0.26 | 0.44 | 0.29 | 0.46 |
| Primary school | 0.20 | 0.40 | 0.16 | 0.37 | 0.34 | 0.48 | 0.19 | 0.39 | 0.12 | 0.33 | 0.32 | 0.47 | 0.20 | 0.40 | 0.14 | 0.35 | 0.32 | 0.47 |
| Secondary school | 0.64 | 0.48 | 0.64 | 0.48 | 0.57 | 0.49 | 0.67 | 0.47 | 0.68 | 0.47 | 0.62 | 0.48 | 0.65 | 0.48 | 0.66 | 0.47 | 0.61 | 0.49 |
| Postsecondary educ. | 0.15 | 0.36 | 0.20 | 0.40 | 0.08 | 0.27 | 0.14 | 0.35 | 0.20 | 0.40 | 0.06 | 0.23 | 0.15 | 0.36 | 0.20 | 0.40 | 0.07 | 0.25 |
| *Household characteristics* | | | | | | | | | | | | | | | | | | |
| Urban settlement | 0.45 | 0.50 | 0.45 | 0.50 | 0.39 | 0.49 | 0.47 | 0.50 | 0.48 | 0.50 | 0.41 | 0.49 | 0.46 | 0.50 | 0.46 | 0.50 | 0.41 | 0.49 |
| Zagreb region | 0.26 | 0.44 | 0.28 | 0.45 | 0.16 | 0.37 | 0.25 | 0.43 | 0.28 | 0.45 | 0.19 | 0.39 | 0.26 | 0.44 | 0.28 | 0.45 | 0.19 | 0.39 |
| Central Croatia | 0.22 | 0.42 | 0.23 | 0.42 | 0.22 | 0.41 | 0.23 | 0.42 | 0.24 | 0.43 | 0.21 | 0.41 | 0.23 | 0.42 | 0.24 | 0.43 | 0.20 | 0.40 |
| Eastern Croatia | 0.19 | 0.39 | 0.17 | 0.38 | 0.26 | 0.44 | 0.20 | 0.40 | 0.16 | 0.37 | 0.29 | 0.46 | 0.20 | 0.40 | 0.18 | 0.38 | 0.27 | 0.45 |
| North Adriatic Croatia | 0.14 | 0.34 | 0.14 | 0.35 | 0.10 | 0.30 | 0.12 | 0.33 | 0.14 | 0.35 | 0.09 | 0.29 | 0.13 | 0.33 | 0.13 | 0.34 | 0.10 | 0.30 |
| South Adriatic Croatia | 0.19 | 0.39 | 0.17 | 0.38 | 0.26 | 0.44 | 0.20 | 0.40 | 0.18 | 0.38 | 0.22 | 0.41 | 0.20 | 0.40 | 0.18 | 0.38 | 0.23 | 0.42 |
| Consumption quintile 1 | 0.16 | 0.37 | 0.13 | 0.34 | 0.29 | 0.46 | 0.17 | 0.38 | 0.11 | 0.32 | 0.32 | 0.47 | 0.17 | 0.38 | 0.12 | 0.32 | 0.33 | 0.47 |
| Consumption quintile 2 | 0.19 | 0.39 | 0.18 | 0.38 | 0.22 | 0.42 | 0.19 | 0.39 | 0.17 | 0.38 | 0.22 | 0.41 | 0.19 | 0.39 | 0.18 | 0.38 | 0.22 | 0.41 |
| Consumption quintile 3 | 0.20 | 0.40 | 0.20 | 0.40 | 0.20 | 0.40 | 0.20 | 0.40 | 0.21 | 0.41 | 0.20 | 0.40 | 0.20 | 0.40 | 0.20 | 0.40 | 0.20 | 0.40 |
| Consumption quintile 4 | 0.21 | 0.41 | 0.23 | 0.42 | 0.16 | 0.37 | 0.21 | 0.41 | 0.23 | 0.42 | 0.14 | 0.35 | 0.21 | 0.41 | 0.23 | 0.42 | 0.14 | 0.34 |
| Consumption quintile 5 | 0.23 | 0.42 | 0.26 | 0.44 | 0.12 | 0.32 | 0.23 | 0.42 | 0.28 | 0.45 | 0.12 | 0.33 | 0.23 | 0.42 | 0.27 | 0.44 | 0.12 | 0.32 |
| Child <2 years in HH | 0.06 | 0.23 | 0.07 | 0.25 | 0.08 | 0.27 | 0.07 | 0.26 | 0.08 | 0.27 | 0.10 | 0.30 | 0.07 | 0.25 | 0.08 | 0.26 | 0.09 | 0.28 |
| Child 2–5 years in HH | 0.12 | 0.32 | 0.13 | 0.34 | 0.14 | 0.35 | 0.12 | 0.32 | 0.14 | 0.35 | 0.13 | 0.34 | 0.11 | 0.32 | 0.14 | 0.34 | 0.13 | 0.33 |
| Child 6–14 years in HH | 0.25 | 0.43 | 0.28 | 0.45 | 0.29 | 0.45 | 0.23 | 0.42 | 0.27 | 0.44 | 0.24 | 0.43 | 0.25 | 0.44 | 0.29 | 0.45 | 0.27 | 0.44 |
| Empl. (20–64) in HH | 0.69 | 0.46 | 0.74 | 0.44 | 0.66 | 0.47 | 0.66 | 0.47 | 0.72 | 0.45 | 0.63 | 0.48 | 0.67 | 0.47 | 0.73 | 0.45 | 0.64 | 0.48 |
| Non-empl. (20–64) in HH | 0.45 | 0.50 | 0.44 | 0.50 | 0.50 | 0.50 | 0.53 | 0.50 | 0.51 | 0.50 | 0.60 | 0.49 | 0.51 | 0.50 | 0.47 | 0.50 | 0.56 | 0.50 |
| An elderly (65+) in HH | 0.20 | 0.40 | 0.19 | 0.39 | 0.21 | 0.41 | 0.21 | 0.41 | 0.20 | 0.40 | 0.20 | 0.40 | 0.22 | 0.41 | 0.21 | 0.41 | 0.22 | 0.42 |
| HH receives UB | 0.05 | 0.21 | 0.04 | 0.19 | 0.11 | 0.31 | 0.06 | 0.24 | 0.05 | 0.21 | 0.14 | 0.34 | 0.07 | 0.25 | 0.05 | 0.22 | 0.13 | 0.34 |
| HH receives fam. SA | 0.18 | 0.38 | 0.18 | 0.38 | 0.29 | 0.46 | 0.14 | 0.34 | 0.13 | 0.33 | 0.21 | 0.41 | 0.15 | 0.36 | 0.15 | 0.36 | 0.23 | 0.42 |
| HH receives needs SA | 0.04 | 0.19 | 0.02 | 0.15 | 0.10 | 0.30 | 0.05 | 0.22 | 0.02 | 0.14 | 0.12 | 0.32 | 0.05 | 0.22 | 0.03 | 0.16 | 0.11 | 0.32 |
| Income of other HH membs. | 8.59 | 11.85 | 10.68 | 12.37 | 5.54 | 9.65 | 8.30 | 11.71 | 10.89 | 12.35 | 5.06 | 8.57 | 8.37 | 11.54 | 10.64 | 12.07 | 5.38 | 8.94 |
| Hidden economy | 1.09 | 0.71 | 1.03 | 0.66 | 1.23 | 0.77 | 1.17 | 0.81 | 1.08 | 0.70 | 1.30 | 0.84 | 1.13 | 0.79 | 1.05 | 0.71 | 1.26 | 0.83 |
| Size of HH | 3.10 | 1.50 | 3.37 | 1.44 | 3.68 | 1.48 | 3.20 | 1.53 | 3.52 | 1.45 | 3.70 | 1.54 | 3.22 | 1.52 | 3.50 | 1.45 | 3.69 | 1.52 |
| No. of observations | 5033 | | 3091 | | 783 | | 3930 | | 2110 | | 853 | | 9628 | | 5557 | | 1795 | |

Source: 2008, 2010 and 2011 HBS.

**Figure A1.** Relationship between employment and unemployment rates (population aged 20–64). Source: Authors' calculations based on Eurostat data.