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Youth unemployment in Italy and Russia:

Aggregate trends and the role of individual determinants

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Aggregate trends and the role of individual determinants[1]

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Abstract

Youth unemployment is a troublesome problem in many European countries. In the first part of the paper, we consider the aggregate trends in some EU countries and in Russia; we especially investigate the recent period after the global crisis and Great Recession. We then consider the different types of determinants, including macroeconomic conditions, structural determinants, labour market institutions and regulations. However, the focus of our analysis is on the role played by individual and family determinants such as age, gender, education level, marital status, health, household income, housing condition.

The econometric part of the paper makes use of Eurostat micro-level data EU-SILC for Italy and RLMS-HSE data set for Russia. We consider a Heckman probit model to estimate the unemployment risk of young people in the period 2004-2011. Our main research question is to explain the probability of being unemployed for young people in terms of their personal characteristics and compare these outcomes with results for the same model for adult people. We take also into account some macro variables, such as living in urban areas or the regional unemployment rate. The results are of interest, since the two countries have quite different labor market institutions, besides having different levels of youth unemployment. However, most of the explanatory variables act in the same direction in both countries and it is interesting to compare the relative size of such effects (that we measure through the "average partial effects").

Keywords: youth unemployment, individual determinants of unemployment, regional unemployment, Heckman Probit.

JEL classification: J64

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1. Introduction

The youth unemployment rate is, in most countries, at least twice as high as the total unemployment rate. In many countries it has strongly augmented in the last five years, after the global crisis. Long-term unemployment is especially pernicious, since it causes a loss of work experience and human capital, or in the case of young people a loss of abilities acquired at school; thus it leads to lower employability and reduced earnings over the entire life cycle. Thus, it raises the risk of a "lost generation" (e.g., Scarpetta et al. 2010).

The causes of youth unemployment are several, they refer to macroeconomic conditions, structural determinants, institutional features (concerning both the labour market rules and the school system). In this paper we shall review some of them. However, in the econometric part we shall focus on the personal and family characteristics.

Although in the descriptive section we analyze the recent trends of youth unemployment in many countries, with particular reference to the recent period after the crisis, our econometric investigations focus on two large countries: Italy and Russia. These countries are different from many points of view – structural and institutional conditions, macroeconomic trends, etc. – but precisely for this reason it is interesting to assess whether the personal and family determinants behave in a similar manner or not.

The aim of this paper is, more precisely, to explain the probability of being unemployed for young people in terms of their personal or family characteristics and compare these outcomes with results for the same model for adult people. The empirical analysis refers to the period 2004-2011 for both countries. We use Eurostat micro-level data EU-SILC for Italy and RLMS-HSE data set for Russia.

The econometric strategy is based on the Heckman probit model to estimate the unemployment risk of young people; this model is appropriate since it takes into account the possibility of non-random selection of labour participation. In addition to individual characteristics, we consider also some macro variables, such as living in urban areas or the regional unemployment rate. We provide also more detailed estimations, for instance by gender. The comparisons between the two countries are mainly achieved by computing (and showing in graphical form) the APE, i.e. the "average partial effects".

The structure of the paper is the following. In Section 2, we illustrate the trends for youth and total unemployment rate in Italy, Russia as well as may EU countries (and some other countries in the world). Section 3 presents a review of the main determinants of youth unemployment, both at the macro and at the individual level. In Section 4 there is a description of the data sets used in the empirical investigations and some descriptive statistics of the samples are presented. The econometric investigations of the determinants of the total and youth unemployment rates, for the two countries, are shown and discussed in Section 5. Section 6 concludes the paper.

2. Recent trends in Youth Unemployment in Italy, the EU countries and Russia

Let us consider, first of all, the trends in the total unemployment rate (TUR). Even before the crisis there were big variations across countries. In 2007 (see Table 1), TUR was 3.9% in Japan, 4.6% in the USA and 7.2% in the European Union (EU). Within the EU it ranged from 3.6% (the Netherlands) to 11.2% (Slovakia).

Table 1 - Unemployment rate (all ages): EU countries and comparisons

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2013/2007 ratio*
European Union (28)	9,3	9,1	8,3	7,2	7,1	9	9,7	9,7	10,5	10,9	*1,5*
Euro area	9,2	9,1	8,4	7,6	7,6	9,6	10,1	10,1	11,4	12,1	*1,6*
Belgium	8,4	8,5	8,3	7,5	7	7,9	8,3	7,2	7,6	8,4	*1,1*
Bulgaria	12,1	10,1	9	6,9	5,6	6,8	10,3	11,3	12,3	12,9	*1,9*
Czech Republic	8,3	7,9	7,1	5,3	4,4	6,7	7,3	6,7	7	7	*1,3*
Denmark	5,5	4,8	3,9	3,8	3,5	6	7,5	7,6	7,5	7	*1,8*
Germany	10,5	11,3	10,3	8,7	7,5	7,8	7,1	5,9	5,5	5,3	*0,6*
Estonia	9,7	7,9	5,9	4,6	5,5	13,8	16,9	12,5	10,2	:	*2,2*
Ireland	4,5	4,4	4,5	4,7	6,4	12	13,9	14,7	14,7	13,1	*2,8*
Greece	10,5	9,9	8,9	8,3	7,7	9,5	12,6	17,7	24,3	27,3	*3,3*
Spain	10,9	9,2	8,5	8,3	11,3	18	20,1	21,7	25	26,4	*3,2*
France	9,3	9,3	9,2	8,4	7,8	9,5	9,7	9,6	10,2	10,8	*1,3*
Croatia	13,8	12,8	11,4	9,6	8,4	9,1	11,8	13,5	15,9	17,6	*1,8*
Italy	**8**	**7,7**	**6,8**	**6,1**	**6,7**	**7,8**	**8,4**	**8,4**	**10,7**	**12,2**	*2,0*
Cyprus	4,6	5,3	4,6	3,9	3,7	5,4	6,3	7,9	11,9	16	*4,1*
Latvia	11,7	10	7	6,1	7,7	17,5	19,5	16,2	15	11,9	*2,0*
Lithuania	11,6	8,5	5,8	4,3	5,8	13,8	17,8	15,4	13,4	11,8	*2,7*
Luxembourg	5	4,6	4,6	4,2	4,9	5,1	4,6	4,8	5,1	5,9	*1,4*
Hungary	6,1	7,2	7,5	7,4	7,8	10	11,2	10,9	10,9	10,2	*1,4*
Malta	7,2	6,9	6,9	6,5	6	6,9	6,9	6,5	6,4	6,5	*1,0*
Netherlands	5,1	5,3	4,4	3,6	3,1	3,7	4,5	4,4	5,3	6,7	*1,9*
Austria	4,9	5,2	4,8	4,4	3,8	4,8	4,4	4,2	4,3	:	*1,0*
Poland	19,1	17,9	13,9	9,6	7,1	8,1	9,7	9,7	10,1	10,3	*1,1*
Portugal	7,5	8,6	8,6	8,9	8,5	10,6	12	12,9	15,9	16,5	*1,9*
Romania	8	7,2	7,3	6,4	5,8	6,9	7,3	7,4	7	7,3	*1,1*
Slovenia	6,3	6,5	6	4,9	4,4	5,9	7,3	8,2	8,9	10,2	*2,1*
Slovakia	18,4	16,4	13,5	11,2	9,6	12,1	14,5	13,7	14	14,2	*1,3*
Finland	8,8	8,4	7,7	6,9	6,4	8,2	8,4	7,8	7,7	8,2	*1,2*
Sweden	7,4	7,7	7,1	6,1	6,2	8,3	8,6	7,8	8	8	*1,3*
United Kingdom	4,7	4,8	5,4	5,3	5,6	7,6	7,8	8	7,9	:	*1,5*
Iceland	3,1	2,6	2,9	2,3	3	7,2	7,6	7,1	6	5,4	*2,3*
Norway	4,3	4,5	3,4	2,5	2,5	3,2	3,6	3,3	3,2	3,5	*1,4*
Turkey	:	9,2	8,7	8,8	9,7	12,5	10,7	8,8	8,1	:	*0,9*
United States	5,5	5,1	4,6	4,6	5,8	9,3	9,6	8,9	8,1	7,4	*1,6*
Japan	4,7	4,4	4,1	3,9	4	5,1	5,1	4,6	4,3	:	*1,1*
Russia	**7,8**	**7,1**	**7,1**	**6,0**	**6,2**	**8,3**	**7,3**	**6,5**	**5,5**	**5,5**	*0,9*

Source: Eurostat and Rosstat (Russia)

Note: 2012/2007 ratio if 2013 not available*

Then, the financial crisis and the Great Recession led to an increase in unemployment, but the increase was rapid in the countries with more flexible labour markets and slower in markets where rigidities or internal flexibilities were prevailing. In the EU, unemployment has risen also in 2012-13 because of the new recession caused by the sovereign debt crisis; despite the current recovery (2014) it is expected to remain at high levels for a long period. On average, after normal

recessions, employment returns to its pre-crisis levels after four or five months following the recovery, but such lags are longer in the case of financial crises. An exceptional case is provided by Germany, where unemployment decreased even in the crisis period (from 11.3% in 2005 and 8.7% in 2007 to 5.3% in 2013), thanks to the internal flexibility within firms, the labour hoarding practices and also the public support.

The largest increases from 2007 to 2013 (see the last column of Table 1) have been recorded in Cyprus, Greece, Spain, Ireland, where TUR has increased by a factor around 3 up to 4; among the big countries it has also doubled in Italy (from 6.1% to 12.2%). While in the EU as a whole it has augmented by half, in the USA it has more than doubled from 2007 to 2010, then it had fallen back to around 7%. A similar profile, although at lower levels, is shown in Russia. Apart from the German reduction, the smallest increases are recorded in Poland, Austria, Belgium, Malta, Romania and – outside Europe – Japan and Turkey.

As to "youth unemployment" definition[2], in most countries it refers to individuals aged 15-24 years. However some other ages are sometimes considered; moreover, problems such as underemployment and informal sector employment may be particularly relevant for young people in certain areas (this is the case of the South of Italy and certain Russian regions). For the youth unemployment rate (YUR), too, the pre-crisis situation (2007) exhibited wide variations (Table 2): from 7% in the Netherlands to 22.9% in Greece.

In many countries, even before the recent crisis, the YUR has been increasing. The general impact of the crisis on YUR has been similar to that of TUR: e.g. in the EU it has also increased by half (see next to the last column in Table 2). Nevertheless, even in the flexible countries such as the USA, it exhibits higher persistence (compared to TUR). In some other countries, the initial impact of the crisis on YUR has been moderate, but they suffer because of bad long run consequences, such as loss of work experience and human capital, lower employability and reduced earnings over the entire life cycle, poorer job quality and precarious employment.

Furthermore, in a number of countries the impact of the crisis on YUR has been larger, also due to adverse institutional settings; this is the case of Italy. Young workers, who have weaker work contracts, lower qualifications and less experience than older workers, have borne the brunt of the "Great Recession" (Arpaia and Curci, 2010). The largest increases of the YUR in the 2007-2013 period are recorded in Cyprus (augmented by a factor of 3.8), Spain (3.1), Ireland (2.9), Greece and Lithuania (2.6), Latvia and Slovenia (2.2), Estonia and Croatia (2.2), Bulgaria and Italy (2.0). The YUR actually decreased only in Germany (and partially in Turkey).

If we now focus on the YUR/TUR ratio (last column of Table 2), we can see that the YUR is double than the TUR in most countries: for instance, this is the mean situation in the EU, but also in non-European countries (including the USA). A better performance of young people (compared to the TUR) can be found in the Netherlands and, also in this case, in Germany, where the YUR in 2013 was less than 8%. On the contrary, a worse situation is recorded in Luxembourg (3.4 ratio and 19.9% YUR in 2013), Italy (3.3, 40%), Romania (3.2, 23.6%), Russia (3.1, 17.3%), Sweden (2.9, 23.4%), Belgium (2.8, 23.7%), Czech Republic (2.7, 18.9%), Poland (2.7, 27.3%), United Kingdom (2.7, 21%). In

[2] In addition to the youth unemployment rate, some other definitions are sometimes used. For example, O'Higgins (2011) and Scarpetta et al. (2010) observe that the size of the group of "youth left behind" can be proxied by the number of young people who are neither employed nor in education or training (NEET). This definition is now considered also by OECD, Eurostat, and other institutions.

absolute terms, the highest YUR are those of Greece (58.6%), Spain (55.7%), Croatia (49.9%), Italy (40%). In Ireland, a country also deeply affected by the crisis, is "only" equal to 26.8%.

Table 2 - Youth unemployment rate (<25 years): EU countries and comparisons

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2013/ 2007 ratio*	YUR/TUR ratio (2013)°
EU Union (28)	19,1	18,9	17,6	15,7	15,8	20,1	21,1	21,5	23	23,5	*1,5*	*2,2*
Euro area	17,9	18,1	16,9	15,4	15,9	20,2	20,9	20,8	23,1	24	*1,6*	*2,0*
Belgium	21,2	21,5	20,5	18,8	18	21,9	22,4	18,7	19,8	23,7	*1,3*	*2,8*
Bulgaria	24,3	21	18,3	14,1	11,9	15,1	21,8	25	28,1	28,6	*2,0*	*2,2*
Czech Rep.	20,4	19,3	17,5	10,7	9,9	16,6	18,3	18,1	19,5	18,9	*1,8*	*2,7*
Denmark	8,2	8,6	7,7	7,3	8,1	11,8	13,9	14,3	14	13	*1,8*	*1,9*
Germany	13,8	15,6	13,8	11,9	10,6	11,2	9,9	8,6	8,1	7,9	*0,7*	*1,5*
Estonia	21,6	16,1	11,9	10,1	12,1	27,5	32,9	22,3	20,9	:	*2,1*	*2,0*
Ireland	8,7	8,6	8,7	9,1	13,3	24	27,6	29,1	30,4	26,8	*2,9*	*2,0*
Greece	26,9	26	25,2	22,9	22,1	25,8	32,9	44,4	55,3	58,6	*2,6*	*2,1*
Spain	22	19,7	17,9	18,2	24,6	37,8	41,6	46,4	53,2	55,7	*3,1*	*2,1*
France	20,8	21,3	22,4	19,8	19,3	24	23,7	22,9	24,7	25,5	*1,3*	*2,4*
Croatia	32,8	31,9	28,8	24	21,9	25,1	32,6	36,1	43	49,9	*2,1*	*2,8*
Italy	**23,5**	**24**	**21,6**	**20,3**	**21,3**	**25,4**	**27,8**	**29,1**	**35,3**	**40**	***2,0***	***3,3***
Cyprus	10,2	13,9	10	10,2	9	13,8	16,6	22,4	27,8	38,7	*3,8*	*2,4*
Latvia	20	15,1	13,6	10,6	13,6	33,3	36,2	31	28,5	23,2	*2,2*	*1,9*
Lithuania	23,1	16,3	10,2	8,4	13,3	29,6	35,7	32,6	26,7	21,9	*2,6*	*1,9*
Luxembourg	16,4	14,6	15,5	15,6	17,3	16,5	15,8	16,4	18	19,9	*1,3*	*3,4*
Hungary	15,5	19,4	19,1	18,1	19,9	26,5	26,6	26,1	28,1	27,2	*1,5*	*2,7*
Malta	16,6	16,5	15,9	13,9	12,2	14,4	13,1	13,8	14,2	13,9	*1,0*	*2,1*
Netherlands	9	9,4	7,5	7	6,3	7,7	8,7	7,6	9,5	11	*1,6*	*1,6*
Austria	9,7	10,3	9,1	8,7	8	10	8,8	8,3	8,7	:	*1,0*	*2,0*
Poland	39,6	36,9	29,8	21,6	17,2	20,6	23,7	25,8	26,5	27,3	*1,3*	*2,7*
Portugal	18,9	19,8	20,1	20,4	20,2	24,8	27,7	30,1	37,7	37,7	*1,8*	*2,3*
Romania	21	19,7	21	20,1	18,6	20,8	22,1	23,7	22,7	23,6	*1,2*	*3,2*
Slovenia	16,1	15,9	13,9	10,1	10,4	13,6	14,7	15,7	20,6	22,7	*2,2*	*2,2*
Slovakia	33,4	30,4	27	20,6	19,3	27,6	33,9	33,7	34	33,6	*1,6*	*2,4*
Finland	20,7	20,1	18,7	16,5	16,5	21,5	21,4	20,1	19	19,9	*1,2*	*2,4*
Sweden	20,4	22,6	21,5	19,2	20,2	25	24,8	22,8	23,7	23,4	*1,2*	*2,9*
United K.	12,1	12,8	14	14,3	15	19,1	19,6	21,1	21	:	*1,5*	*2,7*
Iceland	8,1	7,2	8,2	7,1	8,2	16	16,2	14,6	13,6	10,7	*1,5*	*2,0*
Norway	11,2	11,4	8,8	7,2	7,3	9,2	9,2	8,7	8,6	9,1	*1,3*	*2,6*
Turkey	:	17,4	16,4	17,2	18,4	22,7	19,7	16,8	15,7	:	*0,9*	*1,9*
United States	11,8	11,3	10,5	10,5	12,8	17,6	18,4	17,3	16,2	15,5	*1,5*	*2,1*
Japan	9,5	8,7	8	7,7	7,3	9,1	9,3	8,2	8,1	:	*1,1*	*1,9*
Russia	20.8	18.3	19.6	16.9	16.3	22.6	20.4	17.9	17.3	:	*1,0*	*3,1*

Source: Eurostat and Rosstat (Russia)

*Notes: *: 2012/2007 ratio if 2013 not available; °(2012) for the same countries*

Although we have made, so far, many comparisons across countries, we must emphasize that there is a wide variation also within countries, especially in the large ones. For example, in Italy unemployment has traditionally been much higher in Southern regions in comparison to the rest of the country: in 2007, TUR was equal to 11% in the South compared to 6.1% for the country as a whole; in 2011 (the last available year for regional data) 13.3% and 8.4% respectively. In the case of

YUR, the differences are similar, e.g. 39.2% in 2011 in the South of Italy and 29.1% in the whole country. Apparently the relative increase between 2007 and 2011 (last column of Table 3) appears smaller in the South: this is because the impact of economic crises in such regions has been lagged, although it is more persistent over time.

If we consider some individual regions, the variation is even greater. As an example of "good" regions, we consider Lombardy, which the richest and most populated region in the North, although it is not the best from the point of view of unemployment (the regions in the North-East of the country perform even better). The worst region, from the point of view of unemployment, is Campania, a populous region in the South. In 2011, the TUR was equal, in the two mentioned regions, to 5.8% and 15.5% and the YUR to 20.7% and 44.4%, respectively. Despite these significant regional variations, we can maintain that youth unemployment is in any case a worrying problem in all regions of the country.

Also in Russia there are significant regional variations (Table 4), with the total unemployment rate as low as 1.5-1.7 per cent in St. Petersburg and Moscow, on one side, and 13 per cent in the North Caucasus, on the other side.

Table 3 - Unemployment rate: regional differences in Italy

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	11/07
Total unemployment	9,0	8,5	8,4	8,0	7,7	6,8	6,1	6,7	7,8	8,4	8,4	*1,4*
Lombardy	3,3	3,3	3,6	4,0	4,1	3,7	3,4	3,7	5,4	5,6	5,8	*1,7*
Campania	18,8	17,6	16,9	15,6	14,9	12,9	11,2	12,6	12,9	14,0	15,5	*1,4*
South of Italy	16,0	15,0	15,0	14,0	14,0	12,0	11,0	11,0	12,0	13,0	13,3	*1,2*
Youth unemployment	23,1	22,0	23,6	23,5	24,0	21,6	20,3	21,3	25,4	27,8	29,1	*1,4*
Lombardy	9,7	10,1	11,2	12,7	13,0	12,3	12,9	12,5	18,5	19,8	20,7	*1,6*
Campania	45,5	44,7	39,9	37,7	38,8	35,4	32,5	32,4	38,1	41,9	44,4	*1,4*
South of Italy	39,0	38,0	37,0	36,0	37,0	33,0	31,0	31,0	34,0	38,0	39,2	*1,3*

Source: Istat

Table 4 – Total unemployment rate: regional differences in Russia

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	13/04
The Russian Federation	7,8	7,1	7,1	6,0	6,2	8,3	7,3	6,5	5,5	5,5	*0,7*
Central Federal District	4,7	4,3	4,0	3,1	3,6	5,8	4,6	4,1	3,1	3,3	*0,7*
Northwestern Federal District	6,0	5,4	4,9	4,1	5,0	6,9	5,9	5,1	4,0	4,3	*0,7*
Southern Federal District	9,6	8,4	8,2	7,0	6,4	8,6	7,6	7,0	6,2	6,5	*0,7*
The North Caucasus Federal District	18,8	17,1	22,6	19,2	15,7	16,0	16,5	14,5	13,1	13,0	*0,7*
Volga Federal District	7,9	7,4	6,5	6,1	6,2	8,6	7,6	6,5	5,3	4,9	*0,6*
Urals Federal District	7,4	6,7	6,8	4,9	5,5	8,1	8,0	6,8	6,0	5,7	*0,8*
Siberian Federal District	9,9	9,3	8,7	7,6	8,3	10,5	8,7	8,1	7,1	7,2	*0,7*
Far Eastern Federal District	8,9	7,9	7,4	6,6	7,7	9,2	8,6	7,4	6,7	6,5	*0,7*
Moscow	1,6	0,8	1,6	0,8	0,9	2,8	1,8	1,4	0,8	1,7	*1,1*
St. Petersburg	2,7	2,2	2,4	2,1	2,0	4,1	2,6	2,0	1,1	1,5	*0,6*

Source: Rosstat

3. Factors explaining Youth Unemployment: a brief survey

Before analysing the youth unemployment problem and the literature on micro determinants (personal and family characteristics), we discuss the issue of unemployment in general. At the macro level we can identify three groups of variables[3]: cyclical conditions, structural variables, institutional framework.

The business cycle, measured for instance by the growth of output or GDP, is a key explanatory variable of labour demand, hence of employment and unemployment dynamics. The link between GDP growth and unemployment change is normally expressed through the Okun's law; changes in Okun's coefficients across countries and over time are generally explained by differences in institutions and policies (IMF, 2010). The highest impact of the crisis can be delayed up to three years and persistence of effects is sometimes detected up to five years.[4] The impact of GDP on unemployment can be amplified by systemic uncertainty, for instance after events of financial crises (Bartolucci et al. 2011). Some other macroeconomic variables that are significant in explaining unemployment dynamics include productivity growth, trade openness, the terms of trade dynamics, the inflation rate and real (long-term) interest rates.

Concerning the second group of variables, i.e. structural variables, we can mention the following: the trade specialisation of countries, the links between the financial structure and real economic activities, the degree of competitiveness. In broader terms, structural variables include also demographic variables such as population density, the age structure of population (or the percentage of young, or old, people), migration flows.

A third group of variables comprises the institutional determinants, whose importance was recognized since a long time (Nickell and Layard, 1999). They include regulation and policies concerning product markets (liberalisations, reforms, "economic freedom", etc.), housing markets (incidence of home ownership and housing policies), and more specifically labour markets. Some specific variables are the following: degree of unionisation (union density and union coverage), structure of collective bargaining (degree of coordination and/or centralisation), employment protection legislation (EPL), incidence of temporary (or part-time) contracts, labour taxes, unemployment benefits and – last but not least - active labour market policies.[5] Notice that reforms in labour and product markets are mutually reinforcing, justifying comprehensive reform programmes; moreover, improvements in labour market performance require reforms in more than one area of the labour market (Bassanini and Duval, 2009).

According to OECD (2006), two-thirds of non-cyclical unemployment changes are explained by changes in policies and institutions. The traditional OECD's view (since the *Jobs Studies* of the '90s) is that the weak employment performance in many European countries can be explained in terms of

[3] Part of this discussion is better explained in Choudhry et al. (2013), where it is shown in the empirical section that YUR are particularly sensitive not only to economic growth, but also to variables such as economic freedom, labour market reforms, share of part time employment, and active labour market policies.

[4] With reference to previous financial crises, Choudhry et al. (2012), considering approximately 70 countries in the world, found that the crises' impact on YUR is significant and robust; youth unemployment increases until five years after a financial crisis, with the largest effects in the second and third years.

[5] The key roles of active labour market policies (ALMP) and unemployment benefits in the explanations of changes in both employment and the unemployment rate are confirmed by the empirical analysis of Destefanis and Mastromatteo (2010).

labour market rigidities and inappropriate policies or institutions. A progressive shift of resources, from passive income support to active measures, was therefore advocated.

If we now analyze the specific issue of youth unemployment, first of all it should be observed that YUR are more sensitive to the business cycle than adult unemployment rates. According to many studies, there is a disproportionately large response of youth employment or unemployment to changes in overall unemployment (Blanchflower and Freeman, 2000). Also following the recent crisis and the Great Recession, the young have suffered disproportionately: see e.g. Bell and Blanchflower (2011)[6] and Bruno et al. (2014). In particular, the rate of transition of the youth from unemployment to employment fell dramatically (this is well documented, in the case of Ireland, by Kelly et al., 2013).

However, the worse youth labour market performance, compared to adults, can be explained by more specific elements. In the first place, we should mention the lower level of human capital. This explains the wide differences existing within the young group: OECD (2005) found that young people with low human capital and few skills are more exposed not only to higher YUR, but also to long-term unemployment, unstable and low quality jobs, and perhaps social exclusion. Although young people generally dispose of higher education than older workers, often they lack other components of human capital, like generic and job-specific work experience.[7] In fact, the existence of a youth experience gap harms the employability of young people; an "experience trap" happens when employers select workers with experience, hence labour-market entrants are never hired and so cannot increase their own experience.

From this point of view, some other determinants become important. First of all, the quality of the educational system and its structure: it seems that "dual apprenticeship systems", like the German one, guarantee better outcomes. Secondarily, the school-to-work transition system (STWT)[8] is relevant, particularly to facilitate "good matches"; in fact, a possible cause of high youth unemployment and low quality employment is the mismatch between the knowledge acquired through formal education and the skills required by the labour market (young workers are generally less efficient in job search activities than adults)[9]. Thirdly, the labour market institutions are also important in the case of young workers: for example, the impact of unemployment benefits, labour taxes, minimum wages, employment protection legislation has been investigated.

A crucial variable is the diffusion of temporary contracts: not only during recessions are young workers generally among the first to lose their jobs (especially in countries with the highest EPL on "permanent contracts"), but labour hoarding practices can further reduce the labour demand for young people.[10] Thus, because of the reduction in labour demand, school-leavers compete with more jobseekers for fewer vacancies and youth unemployment increases and becomes persistent over time: this is the risk of a "lost generation" (Scarpetta et al., 2010). Moreover, not only are the young more often unemployed (or in the NEET group), but even when employed they are frequently "underemployed", in the sense of more likely working part-time (even though they would prefer full-

[6] In this study, the sensitivity of YUR to adult rates, for the Oecd countries in the 1970-2009 period, is estimated equal to 1.8.

[7] In fact in some countries (Belgium, Italy, and a number of eastern European states) unemployment rates among graduates have sometimes been higher than those with a secondary qualification.

[8] Appropriate "school-to-work" transition services are fundamental to break up the work experience trap, See Caroleo and Pastore (2007), Quintini and Manfredi (2009), Pastore (2012b) and Formez (2012).

[9] An incentive to restrict their job search activity is given by the willingness of parents to support their children, should they not find work.

[10] In many countries, for example in Italy, practically all new employment opportunities in the recent period have been temporary (O'Higgins, 2012).

time), or under temporary contracts rather than permanent ones (Bell and Blanchflower, 2011). In many cases, the increase in youth unemployment is also accompanied by a decline in participation (due to the "discouraged worker effect") or intensified emigration flows.[11]

We also mention here the recent policies undertaken at the EU level in support of youth employment. The new "Youth opportunity initiative" (European Commission, 2010) is designed to prevent early school leaving, help youngsters in developing skills relevant to the labour market, assisting young people in finding a first good job and ensuring on-the-job training. In particular, the "Youth Guarantee Recommendation" (agreed by the EU Council of Ministers in 2013) requires the Member States to put in place measures to ensure that young people up to age 25 receive a good quality offer of employment, continued education, an apprenticeship or a traineeship within four months of leaving school or becoming unemployed (Eurofound, 2012).

Before considering the individual and family determinants of youth unemployment, we should recall that there are few investigations of unemployment, in general, and youth unemployment, in particular, at a regional (sub-national) level. Marelli et al. (2012) show that regional unemployment differentials are wide and persistent and low unemployment regions tend to cluster close to each other; in addition, such differentials show a clear core-periphery pattern. With specific reference to YUR, we mention Demidova et al. (2013) concerning the Russian regions and Demidova et al. (2014) regarding both Italian and Russian regions; in both studies, the use of distance matrixes allows an analysis of the role played by the spatial effects. A feature of the Russian labour market that should be stressed is its overall flexibility, both in terms of working time and of pay; this flexibility comes from the willingness and ability of both employers and employees to curtail their exposure to formal rules and rely on informal arrangements (Gimpelson et al., 2010).

Notice that in the case of Italy, the usual dichotomy of the labour market is between the Mezzogiorno's regions, i.e. the South and the two islands, where unemployment rates are much higher, activity rates very low, together with the presence of informal activities (or the "black" economy), versus the remaining regions of the country (in the North and Centre Italy).[12] In Russia, both North-South and East-West divisions have been considered (see the two papers by Demidova et al. mentioned above), although the second type of geographical division is more common. In addition to such divides, other types of polarisation can be detected, for instance contrasting the urbanised centres (especially Moscow's region) to the rural regions, affected by economic and demographic decline; the rather low interregional mobility in Russia should also be mentioned (Shilov and Möller, 2009).

Let us now turn to the microeconomic determinants of unemployment, with reference to the personal or family characteristics. The econometric investigations making use of micro-data are not numerous, but they are increasing over time. They use either large samples of cross-sectional units or longitudinal data. While a specific application to Italian and Russian data will be made in the next sections, we provide here some examples of empirical investigations making use of micro-data.

[11] In some countries like Ireland the age-selective emigration may have reduced, after the crisis, the youth–adult unemployment ratio.

[12] A recent paper by De Sanctis (2008) focuses on youth employment and unemployment and compares the situation of Mezzogiorno with that of other European regions. Notice that Southern regions have been especially hurt by the recent crisis. However Pastore (2012c) found that that high unemployment regions have a higher, not a lower rate of reallocation; this is because they especially suffer from high job destruction, rather than from low job creation. Thus economic policies should be targeted at increasing labour demand and raising the competitiveness of such regions.

An interesting investigation was made by Kostoris and Lupi (2002) on Italy's unemployment.[13] In addition to the probability of unemployment, they estimated the probability of participation in the labour force and the probability of long-term unemployment. In particular, they found – by means of standard logit models – that youth unemployment strongly depends on family's income and wealth; this is particularly true for "first-job seekers" (but there is no significant relation in case of "strictly unemployed"). Moreover, the probability of unemployment decreases if the families possess their own enterprises. Education seems to have opposite effects for the first-job seekers and strictly unemployed: low school degrees increase the risk of unemployment only for the second group. Finally some regional and local variables (average regional per-capita income, local fiscal burden, local public-to-total employment ratio, size of the town of residence, etc.) turn out to be significant.

Caroleo and Pastore (2003) investigated the youth labour market participation decisions in a selection of European countries. The analysis focuses on Spain and Sweden, two countries with rigid and flexible sequential STWT systems respectively, with training following education, and Germany as the best example of a dual educational and training system. They estimated, through multinomial logit estimates, the probability of belonging to one of the five different labour market statuses: unemployment, employment, training, education and inactivity. As to the results, despite significant differences between the three countries, they found little evidence for the positive role of training programmes in increasing the employability of young participants. The subsequent study by Pastore (2012a) focuses on the probability of finding employment rather than being jobless in a sample of young adults in Poland, by making use of Heckman probit estimates and controlling for the possible selection bias (in fact employment/joblessness and investment in education are not independent choices). He found that also regional characteristics may be important: in high unemployment areas young people prefer to seek a job rather than study.

A joint consideration of personal characteristics and macroeconomic conditions can be found in Hérault et al. (2012), analysing employment outcomes and school-to-work transition of young people in Australia (for the period 1985-2008). They used longitudinal data from two different national surveys and employed a multinomial logit specification. The most important finding is that young men who did not complete secondary school suffered the largest increase in unemployment risks as the unemployment rate increases (on the contrary for females the main impact is an increase in part-time work); overall, the effects of the unemployment rate appear to be more important for youth performance than those of GDP growth.

Bell and Blanchflower (2011) argued that young people aged 16–24 have suffered disproportionately during the recent Great Recession. For the EU-27 countries they used data from the Eurobarometer surveys (February 2008-February 2010) including 88,000 observations. They found that unemployment rates tend to be higher among the poorly qualified (less educated) young.[14] Finally, Dolado et al. (2013), by using cross-country econometric evidence from different micro-datasets, focused on the labour market characteristics and determinants of youth unemployment in Spain, together with some other key youth labour market dimensions (wages, decisions to work and study, mobility, type of employment contract, time to find a first job, skill mismatch, etc.).

[13] They used micro-data from Bank of Italy's surveys on households' income.

[14] In this study they focus not only on the determinants, but also on the consequences of youth unemployment, including the long-run effects. Through another investigation on micro data, they show – making use of a continuing longitudinal study that seeks to follow the lives of all those living in Great Britain and various measures of "wellbeing" (life satisfaction, health status, mental health, job satisfaction) – that youth unemployment continues to hurt even two decades later; however, spells of unemployment experienced after age 23 have little bearing on later well-being.

Finally, we recall here the most common variables that have been used in this type of studies. The commonly used personal variables comprise: gender, age, health conditions, family status (single or married, being head of household, number of children, young adults still living with their parents i.e. cohabitation choice), education level (e.g. primary school, secondary school or tertiary education), nationality (country of origin or immigrant status)[15]. In case of individuals who had previously worked, the most recent industry of employment is in some cases taken into account; perhaps jointly with occupation or profession. In other cases, especially regarding freshly graduated students in search of their first occupation, the school-to-work transition procedures and methods of job search (employment service, asking a friend, etc.) are analysed.

As to the family variables, the most frequently used is family income (disposable income is more often employed) and other family characteristics or socioeconomic background (e.g. parents' education and employment status); wealth variables are sometimes considered, although information about the house is more easily obtainable (number of rooms, area of the apartment, available services, presence of computers or use of internet, etc.). The location of the household is also important, with particular reference to urban or rural locations. More generally, the region of residence plays a key role, provided the previously mentioned regional differentiation in unemployment rates.

4. The role of individual determinants: the data sets used and descriptive statistics

For our empirical analysis, concerning the period 2004-2011, we consider two source of data: RLMS-HSE data for Russia and EU-SILC[16] for Italy. We selected observations relating to youth people aged 15-24 years and, for comparison purposes, adult people aged 25-60 years for Russia and 25-64 for Italy; in fact, these countries have different retirement ages and different definition of "working age". We analysed the 2004-2011 period for both countries. Our main variable of interest is the employment status of the respondents, among the "active people". We use ILO definition to determine unemployed persons.

Figure 1 shows the dynamics of the unemployment rate which we calculated using sample data for Russia and Italy. As for macro level data, sample data shows the youth unemployment rate is much higher for Italy than for Russia. At the end of the considered period the youth unemployment rate in Italy is twice bigger than in Russia, 30 and 15% respectively. Adult unemployment rates are quite similar for both countries and much lower than the youth unemployment rate.

Table 5 presents some descriptive statistics for our samples, separately for Russia and Italy and youth and adult people. Unemployment rate for adult people is 5% and 6% in Russia and Italy respectively while the youth unemployment rate is 15% and 27% respectively.

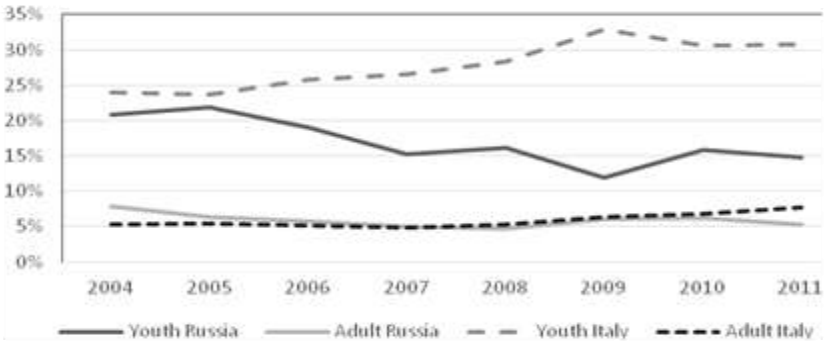
The average age of the youth in Russia and Italy database is similar: 21 years. However, for adult people mean age in the sample for Italy is higher (also due to a different retirement age). The share of men in Russian sample is lower than in Italian sample for both youth and adult people. The share of young people with tertiary education is higher in Russia than in Italy, 0,15 against 0,09. This

[15] In the case of Germany, the country with the best youth performance (see section 2), Burkert and Siebert (2007) found that "compared to Germans, migrant men and especially migrant women have a higher risk of unemployment and occupational mismatch".

[16] Istat, Indagine sulle condizioni di vita (UDB IT - SILC). This is a survey carried out in the EU countries according to a common methodology. Only the A. (of course not Istat) is responsible for the elaborations in this paper.

fact could be explained by differences in education system in both countries. In Russia people graduate from University at 22 years; in Italy it is higher (also because few students complete their graduate degrees within the standard university period). However, the share of adult people with high education is similar for both countries, while the number of people with secondary education is higher for Italy both for young and adult people. There is a huge difference in youth's marital status between Russia and Italy; in Russia the incidence of married individuals is much bigger: 30% compared to 4% in Italy. This is due to different customs as well as national and cultural traditions.

Figure 1. Unemployment rate in Russia and Italy among youth and adult people.



Note: Authors calculation using RLMS-HSE (Russian database) and EU-SILC (Italian database).

However, there are no significant differences in marital status among adult persons. Considering further personal characteristics, youth people of both countries have good health: only 1-2% of them have bad health. Around 80% of individuals in Russia live in urban areas and 33-36% of individuals in Italy live in densely populated areas. Interesting figures concern the presence of a computer: approximately 70% of the Russian young individuals own a computer; the same figure can be found for Italy. However, only 30% of the Russian adult have a computer while the corresponding figure is 70% for Italy.

There are also some household characteristics synthesized in Table 5, such as housing, number of household members and family disposable income (computed as a ratio to average family income in the sample). It is important to mention that this ratio of disposal incomes is similar for both countries. In Russia the average housing per household member is 10,6 square meters for youth people and 12,2 for adult people. The number of rooms per household is approximately 3,5 in Italy. Average number of household members is three in Russia. We do not find such data for Italy. About one fifth of the Russian respondents were not born in Russia. In Italy this figure is smaller than 7%.

Table 5. Descriptive statistics in our sample.

Variables	Russian Federation				Italy			
	Youth		Adult		Youth		Adult	
	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.	Mean	Std.dev.
Share of unemployed	0,15	0,36	0,05***	0,21	0,27	0,45	0,06***	0,23
Age	21,48	2,01	42***	9,87	21,63	1,95	42***	9,64
Male (share)	0,51	0,50	0,45***	0,50	0,59	0,49	0,58**	0,49
Secondary education (share)	0,30	0,46	0,28***	0,45	0,56	0,50	0,41***	0,49
Tertiary education (share)	0,15	0,36	0,27***	0,45	0,09	0,29	0,23***	0,42
Married (share)	0,30	0,46	0,74***	0,44	0,04	0,19	0,63***	0,48
Urban (share)[17]	0,79	0,41	0,77**	0,42	0,33	0,47	0,36***	0,48
Bad health (share)	0,02	0,13	0,06***	0,23	0,01	0,09	0,03***	0,17
Housing per household member[18]	10,59	5,52	12,19***	7,02	3,59	1,09	3,62**	1,13
Number of household members	3,45	1,45	1,11*	1,56			1,14***	
Family disposable income[19]	1,13	0,91	0,49***	0,95	1,09	0,69	0,70	0,83
Computer (share)[20]	0,74	0,44	0,18**	0,50	0,70	0,46	0,07***	0,46
Foreign nationality (for Russia) or citizenship (for Italy)	0,15	0,36	0,08	0,34	0,06	0,24		0,21
Moscow (share)	0,09	0,28	0,03	0,28				
St. Petersburg (share)	0,03	0,18		0,18			0,27***	
South of Italy (share)[21]					0,33	0,47	0,06***	0,44
Number of observations[22]	4330		26695		11635		155182	

Note: Significance of test of equal means between adult and youth: *** p<0.01, ** p<0.05, * p<0.1.

5. Econometric estimation and results

In this paper we model probability to be unemployed for youth and adult people. We start to use binary choice models. The main specification could be written as:

$$P\left(Y_i = 1 \middle| X\right) = F\left(x_i'\beta\right) \tag{1}$$

where $F\left(\cdot\right)$ is a normal distribution function. $Y_i = 1$ if a person is unemployed and 0 otherwise. It is so when latent variable y_i^* in latent equation $y_i^* = x_i\beta + u_{1i}$ is greater than zero. Therefore,

[17] For Italian data it is the variable DB100 (Degree of urbanization) in EU-SILC. This dummy variable equals 1 for the densely populated area and 0 for the intermediate area and thinly populated area. For Russia this variable equals 1 for urban areas and 0 otherwise.

[18] For Italian data this variable means number of rooms for household. For Russian data it is housing in square meters per household member.

[19] Family disposable income is considered as the ratio of nominal family income to average income in the sample by the year (therefore we also adjust for effects of inflation). In Russia it is measured in rubles per household members. In Italy disposable income is measured in euros per family.

[20] This is the share of people in the sample who owns a computer.

[21] It includes both Southern regions and the two islands (i.e. Mezzogiorno's regions in a broad sense).

[22] Number of observations for Russia is for all variables except variable nationality. Not all people answered for these questions. The number of observations for these variables are presented in Table 7.

$Y_i = 1 \; if \; y_i^* > 0$. x_i is vector of explanatory variables, and β is a vector of estimated coefficients. Therefore, we consider a probit model. However, in this case there is sample selection problem, because non all people are active in the labour market.

To take into account the non random selection of labour participation for youth and adult people we estimate probit model with correction for sample selection (Heckman Probit).[23] The binary outcome (1) will be observed only when the individual is active. Therefore, the selection equation is:

$$y_i^{select} = \left(z_i \beta + u_{2i} > 0 \right) \tag{2}$$

where $y_1^{select} = 1$ when the individual is active in the labour market. We suppose, that error terms from equation (1) is $u_{1i} \sim N(0,1)$ and from equation (2) is $u_{2i} \sim N(0,1)$, and $corr\left(u_{1i}, u_{2i}\right) = \rho$. If $\rho = 0$ then we can reject non-random selection and we don't need to correct for selection. We test this hypothesis using Likelihood ratio test.

To estimate equations (1) and (2) we use maximum likelihood method. Our explanatory variables for both equations are individual characteristics of the people in the sample (age, gender, education level, marital status, health, having a computer); the characteristics of households (disposable household income, housing); the characteristics of location (urban area, unemployment rate in the region); time effects which control for macro conditions and crisis effect. However, we use unique variables for the selection equation, which is the probability to be inactive in the labour market, such as student status and disability.

For the quantitative interpretation and comparisons between countries, we estimated average marginal effects accounting for the fact that most of our variables are dummies. Average partial effect for Heckman probit model is $APE_{x_k} = \sum_{i=1}^{N} \frac{\partial P\left(Y_i = 1 \middle| x_i, y_i^{select} = 1\right)}{\partial x_k} \Big/ N$ for continuous variables. We multiply average marginal effects on standard deviation of the corresponding regressor x_k $\left(APE_{x_k} \cdot \sigma_{x_k} \right)$[24] in order to measure the significance of the variables, characterizing the degree of influence of the variable on the probability. The larger absolute value of $APE_{x_k} \cdot \sigma_{x_k}$ the larger is the contribution of the standard deviation change of the variable x_k to the probability of being unemployed (equation 1). For discrete variables average partial effect is the difference in conditional probabilities to be unemployed for different values of the dummy variable, i.e. $APE_D = \sum_{i=1}^{N} \left[P\left(Y_i = 1 \middle| x_i, D_i = 1, y_i^{select} = 1\right) - P\left(Y_i = 1 \middle| x_i, D_i = 0, y_i^{select} = 1\right) \right] \Big/ N$.

We estimate equation (1) and (2) separately for youth and adult individuals in Russia and Italy. In fact, we tested the significance of no differences between youth and adult for both countries and we can reject such an hypothesis at any significance level.

[23] For recent empirical investigations making use of this methodology, see Kogan (2010), Pastore (2012a), Addabbo et al. (2013).

[24] Something similar was in (Peresetsky, 2007) and (Peresetsky et al., 2011). However, the author multiply coefficients from probit model on standard deviation f regressors.

5.1. *Econometric results for Italy*

Econometric results for Italy are presented in Table 6. Columns 1- 3 present results for youth people. Columns 4-6 present results for the adults. We consider two types of models: probit (model 1) and Heckman probit (model 2). The selection equation (model 3) represents the probability to be active in the labour market.

First of all, we can see that signs and significance of coefficients are exactly the same for youth and adult (column 1, 2 and 4, 5 respectively). However, correlation between unemployed and selection equation, rho is significant for both youth and adult. Therefore, it is important to control for non random selection and let us now focus on results for Heckman probit (model 2).

Firstly, let's consider our main equation of interest, the unemployed equation. We can see that **age** variable is highly significant for youth people. The coefficient is negative, this means that probability to be unemployed decreases with age. For adult individuals, the relationship between probability to be unemployed and age is nonlinear, it is U-shaped. However, the threshold is 68.5 years, which is out of our sample. There is a significant and negative coefficient for **male**, i.e. women have higher probability to be unemployed than men. However, the probability to be active is also higher for male for both age groups. **Marital status** is also significant for both youth and adult people: probability to be unemployed is lower for married people. This can be explained by the fact that married people are more motivated to find a job (moreover, especially in Italy, young people who are "single" often live with their parents and are maintained by them if unemployed). **Bad health** leads, as expected, to higher probability to be unemployed. If the person owns a **computer**, the probability to be unemployed decreases. This fact is associated with the education level of the person and her income level.

We obtained a significant coefficient for the secondary and tertiary **education** for adult. The education reduced probability to be unemployed. However, for youth people secondary education level increases the probability to be unemployed and tertiary education is insignificant; for adults the result is opposite. A possible explanation is that the low-educated young people have longer years, in the 15-24 age interval, to search for (and successfully find) a job; graduated individuals have at the best one or two years to search for (and find) a job: the probability of being unemployed consequently increases.[25] The important thing is that high education performs well (decreasing the unemployment risk) in the case of adult workers.

The probability to be unemployed is higher for more densely populated area. The coefficients for the variable **urban** is significant and positive for both youth and adult people. This can be explained by labor supply behavior: many people migrate to urban areas to search for a job.

As to **housing** condition, such as number of rooms, it is significant and positive for both youth and adult. Disposable household **income** (with respect to average in the sample by the year) is highly significant and has negative coefficients for both age groups. Therefore, respondents from rich families have higher probability to be employed.

[25] From this point of view, the age group 15-24 is misleading in the case of Italy (15-29 or 15-34 would be better). On the other hand, for many other control variables, this group is satisfactory; moreover, it is convenient to maintain the same age intervals for Italy and Russia.

Table 6. Probit (model 1) and Heckman probit (model 2) for Italy, 2004-2011. Youth: 15-24 age. Adult: 25-64 age.

VARIABLES	Youth			Adult		
	Unemployment equation		Selection	Unemployment equation		Selection
	model 1	model 2	model 2	model 1	model 2	model 2
	(1)	(2)	(3)	(4)	(5)	(6)
Student			-2.325***			-0.971***
			(0.024)			(0.016)
Age	-0.117***	-0.139***	0.914***	-0.092***	-0.137***	0.282***
	(0.007)	(0.008)	(0.085)	(0.006)	(0.009)	(0.003)
Age2			-0.018***	0.001***	0.001***	-0.004***
			(0.002)	(0.000)	(0.000)	(0.000)
Disability	-0.071	-0.026	-0.181***	0.173***	0.204***	-0.230***
	(0.077)	(0.076)	(0.052)	(0.022)	(0.022)	(0.011)
Male	-0.118***	-0.171***	0.283***	-0.252***	-0.378***	0.903***
	(0.029)	(0.029)	(0.021)	(0.013)	(0.025)	(0.007)
Secondary education	0.066**	0.056*	0.026	-0.242***	-0.286***	0.361***
	(0.032)	(0.032)	(0.024)	(0.015)	(0.016)	(0.008)
Tertiary education	0.062	0.051	0.082*	-0.174***	-0.255***	0.641***
	(0.057)	(0.056)	(0.042)	(0.018)	(0.023)	(0.010)
Married	-0.394***	-0.278***	-0.587***	-0.295***	-0.267***	-0.165***
	(0.082)	(0.081)	(0.051)	(0.014)	(0.015)	(0.008)
Urban area	0.262***	0.274***	-0.043**	0.147***	0.153***	-0.062***
	(0.030)	(0.030)	(0.022)	(0.013)	(0.013)	(0.007)
Housing	0.056***	0.067***	-0.059***	0.012*	0.016***	-0.035***
	(0.014)	(0.014)	(0.010)	(0.006)	(0.006)	(0.003)
Bad health	0.438***	0.587***	-0.797***	0.290***	0.361***	-0.437***
	(0.160)	(0.157)	(0.095)	(0.034)	(0.035)	(0.016)
Household income	-0.686***	-0.689***	0.116***	-0.520***	-0.536***	0.185***
	(0.029)	(0.029)	(0.013)	(0.014)	(0.014)	(0.005)
Computer	-0.172***	-0.156***	0.036	-0.144***	-0.150***	0.077***
	(0.033)	(0.032)	(0.025)	(0.014)	(0.014)	(0.008)
Unemployment rate	0.005***	0.006***	-0.005***	0.071***	0.074***	-0.031***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)
Constant	2.159***	2.804***	-10.315***	0.992***	2.037***	-5.080***
	(0.171)	(0.179)	(0.869)	(0.117)	(0.214)	(0.061)
+ time effects						
Observations	9,940		32,978	126,578		194,068
Uncensored observations		9,940			126,578	
Rho			-0.342***			-0.291***
			(0.040)			(0.050)
LR test (independent equations) (rho = 0), chi(1)			75.03			32.29
Log likelihood	-5206.36		-15035.02	-23597.02		-116239.6
Wald chi2(19)	1464.34		1416.80	10106.19		8525.70
% of correctly predicted (cut off 0.2)	85.73	86.01		32.36	32.46	

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

To take into account the macroeconomic conditions, in our model we also control for regional specific features, such as regional **unemployment rate**[26]. For both groups, this variable is significant and has a positive sign. Therefore, if the average unemployment rate in the region is higher, the probability to be unemployed is higher too. Finally, we got significant coefficients for the **time dummies** after the 2007 year (not reported in the table). This clearly reflects the impact of the recent crisis. All coefficient for the 2008-11 years are significant and positive for both youth and adult people. Therefore, the probability to be unemployed is much higher in the crisis period.

To test the quality of the estimated Heckman probit models, we estimated the percent of correctly predicted outcomes for a given cut off 0.2. For youth the percent of correctly predicted is higher than for adult, 86% and 32% respectively (see last row at the Table 6). The reason is because the number of unemployed is higher for youth individuals, therefore the model can better predict unemployment for them.

If we consider the selection equation (model 3), we can see that most of the variables, which are significant in the unemployment equation, are also significant in the selection equation. However, they have an opposite sign, because they estimate the effect of the explanatory variables on the probability to be active in the labor market. Only marital status has the same sing in both equations. If the individual is married than the probability to be active is lower; this may be explained by the behaviour of women: in many Italian regions (especially in the South) they don't look for jobs if married.[27] The student status is intentionally included only in selection equation: it is significant for both age groups and has a negative sign. This means that the probability to be active is lower – as expected – when the individual is student.

We also control for immigrant people (Table 8 in Appendix). Our results show that **immigrant** people have a lower chance to be unemployed if they are young: this can be explained by the fact that young people decide to migrate to Italy only if they have a chance to find a job (the coefficient is not significant in case of adult individuals). Finally, Table 9 in Appendix presents the results differentiated by gender.

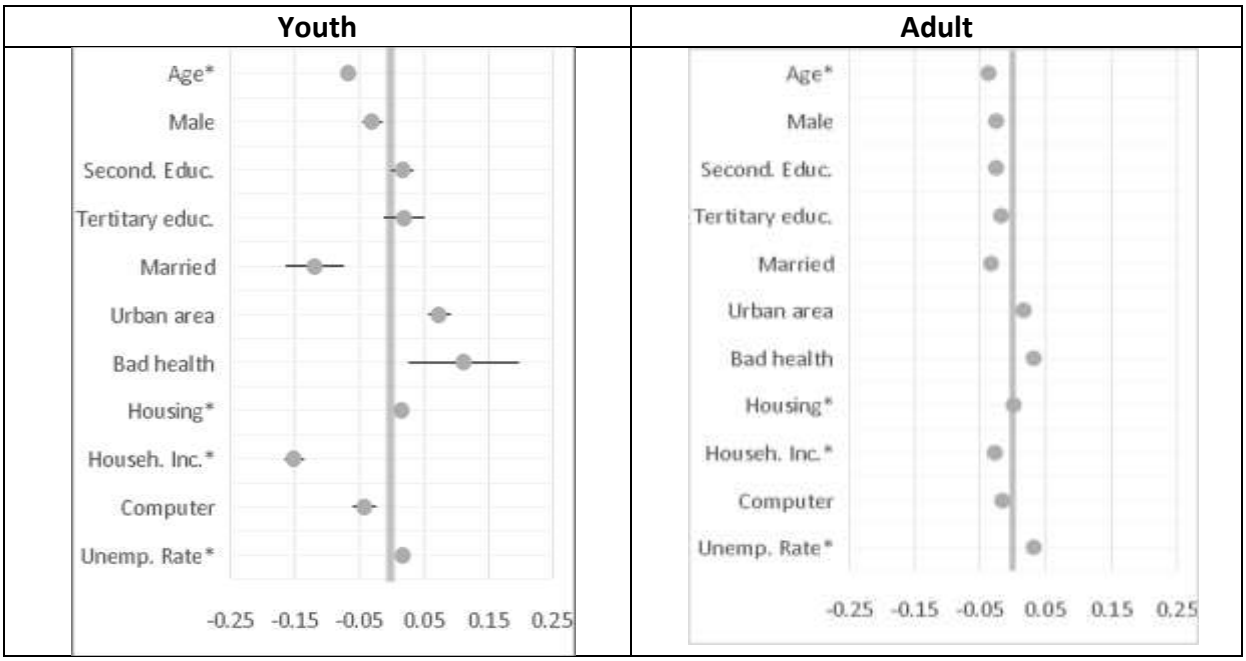
Figure 2 presets a graphical representation of average partial effects (APE), which we discussed above. We compare, for the different regressors, the marginal effects for youth and adult individuals. In general, we find that APEs are much higher for young individuals than for adult. Therefore, considering almost all regressors, they are more significant for the youth. However, the macro level variable, the unemployment rate, has higher influence on probability to be unemployed for the adults.

Considering the individual regressors, APE of the variable urban is higher for youth. The household income, marital status and bad health have the most significant effect on the probability to be unemployed for young people: an increase of household income by one standard deviation decreases the probability to be unemployed by 0.15. Bad health decreases the probability to be unemployed by 0.11 and marital status decreases this probability by the same value. An increase in age by one standard deviation raises the probability to be unemployed by approximately 0.07 for the youth and 0.04 for the adult. Therefore, age is more critical for young individuals.

[26] We consider 5 regions (Nuts-1 level of Eurostat) for Italy. We use the regional youth unemployment rate for youth people (15-24 age) and the regional total unemloyment rate for the adult.

[27] On the other hand, if they do look for jobs, they are more likely to find them, perhaps due to more intensive search efforts (this explains the negative sign in the unemployment equation).

Figure 2. Comparison of APE and their confidence intervals for youth and adult unemployed in Italy.



Note: * is for continuous variables.

5.2. *Econometric results for Russia*

Econometric results for Russia are presented in Table 7. Columns 1-3 show the results for young people and the other columns are for adult people. First of all, we compare results for probit (model 1) and Heckman probit (model 2). The selection equation (model 3) refers to the probability to be active.

We notice that an important difference between the two models (1 and 2) is found only for the secondary education variable, in case of youth unemployment, and for the regional unemployment rate in case of adult unemployment. These variables are insignificant in the unemployment equation with selection. All other variables have the same signs and significance for both types of models. However, the correlation between disturbances in the selection and in the unemployment equation are significant. Therefore, we discuss below the results of the Heckman probit model.

Firstly, we consider individual characteristics. There is significant result for **age**, which has a negative coefficient for both age groups, as in Italy. There is no significant nonlinear relationship between age and probability to be unemployed. However, there is nonlinearity by age in the selection equation for youth and adult individuals. **Gender** is significant only for adult people and the probability to be unemployed is higher for men. However, gender is significant in the selection equation for both age groups and the "male" variable has a positive sign. Therefore, the probability to be active in the labour market is higher for men. For young people both **education** proxies are insignificant; on the contrary, for adults both education levels are significant and have a negative sign. **Marital** status is significant only for the youth, showing a reduced probability to be unemployed if married, as in Italy. Bad **health** is significant for unemployment only for adult people. The presence of a computer is a significant factor only for adult: it decreases the probability to be unemployed.

Table 7. Probit (model 1) and Heckman probit (model 2) for Russia, 2004-2011. Youth: 15-24 age. Adult: 25-60 age.

VARIABLES	Youth			Adult		
	Unemployment equation		Selection	Unemployment equation		Selection
	model 1	model 2	model 2	model 1	model 2	model 2
	(1)	(2)	(3)	(4)	(5)	(6)
Student			-2.088***			-1.917***
			(0.046)			(0.180)
Disability			-0.577***			-0.994***
			(0.119)			(0.035)
Age	-0.146***	-0.055***	0.720***	-0.010***	-0.010***	0.178***
	(0.014)	(0.014)	(0.117)	(0.002)	(0.001)	(0.008)
Age2			-0.014***			-0.002***
			(0.003)			(0.000)
Male	0.018	0.072	0.251***	0.151***	0.182***	0.378***
	(0.050)	(0.048)	(0.036)	(0.028)	(0.028)	(0.020)
Secondary education	-0.134**	-0.060	0.140***	-0.122***	-0.099***	0.224***
	(0.060)	(0.058)	(0.045)	(0.035)	(0.034)	(0.023)
Tertiary education	0.080	0.116	0.115	-0.110***	-0.082**	0.308***
	(0.086)	(0.083)	(0.076)	(0.039)	(0.039)	(0.028)
Married	-0.161***	-0.170***	-0.226***	-0.044	-0.052	-0.174***
	(0.060)	(0.057)	(0.046)	(0.033)	(0.032)	(0.023)
Urban area	0.014	0.051	0.377***	0.103***	0.123***	0.213***
	(0.062)	(0.058)	(0.043)	(0.034)	(0.033)	(0.022)
Bad health	0.120	-0.049	-0.362***	0.253***	0.157***	-0.412***
	(0.175)	(0.167)	(0.115)	(0.053)	(0.056)	(0.032)
Housing	0.003	0.003	0.002	-0.003	-0.003	0.006***
	(0.005)	(0.004)	(0.003)	(0.002)	(0.002)	(0.001)
Household income	-0.311***	-0.266***	0.113***	-0.281***	-0.270***	0.157***
	(0.038)	(0.037)	(0.022)	(0.024)	(0.024)	(0.014)
Computer	0.120*	0.081	0.330***	-0.162***	-0.123***	0.409***
	(0.063)	(0.060)	(0.046)	(0.034)	(0.034)	(0.024)
Unemployment rate	0.018***	0.012**	-0.030***	0.010**	0.006	-0.040***
	(0.007)	(0.006)	(0.004)	(0.005)	(0.005)	(0.003)
Constant	2.179***	-0.056	-8.168***	-0.979***	-1.046***	-2.431***
	(0.301)	(0.316)	(1.166)	(0.092)	(0.091)	(0.180)
+time effects						
Observations	4,330		9,350	26,695		31,553
Uncensored observations		4,330			26,695	
Rho			0.842***			0.453***
			(0.072)			(0.128)
LR test (independent equations) (rho = 0), chi(1)			179.06			15.89
Log likelihood	-1684.43		-4750.91	-4744.01		-15972.4
Wald chi2(18)	331.46		112.34	472.84		353.89
% of correctly predicted (cut off 0.2)	51.28	44.78		0.08	0.4	

Note: Standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Secondly, we analyzed **regional** specific features. The probability to be unemployed is higher in **urban areas** for adult people. A possible reason is the operation of labour supply effects: people move to urban areas to search for jobs. The average **unemployment rate**[28] in the region increases the probability to be unemployed for the youth and reduces the probability to be active for both age groups. Among the various household characteristics, only disposable **household income** is highly significant and has a negative coefficient, as in Italy. For Russia, too, we find significant **time effects** (with negative signs in the crisis period), however not all year dummies are significant.

As already discussed for the case of Italy, also for Russia the variables in the selection equation have opposite signs compared to the unemployment equation. Two specific variables have been intentionally included only in the selection equation: disability and student status; both of them are significant and have negative sign for youth and for adult individuals.

The percentage of correctly predicted outcomes (unemployed individuals) in Russian models turns out to be lower than for Italy. That is due to the lower number of unemployed person in the sample. It is 44.4% for the youth unemployment model and only 0.4% for the adult one. Therefore, the model has low predictive power for adult unemployment in Russia.

Figure 3. Comparison of APE and their confidence intervals for youth and adult unemployed in Russia.

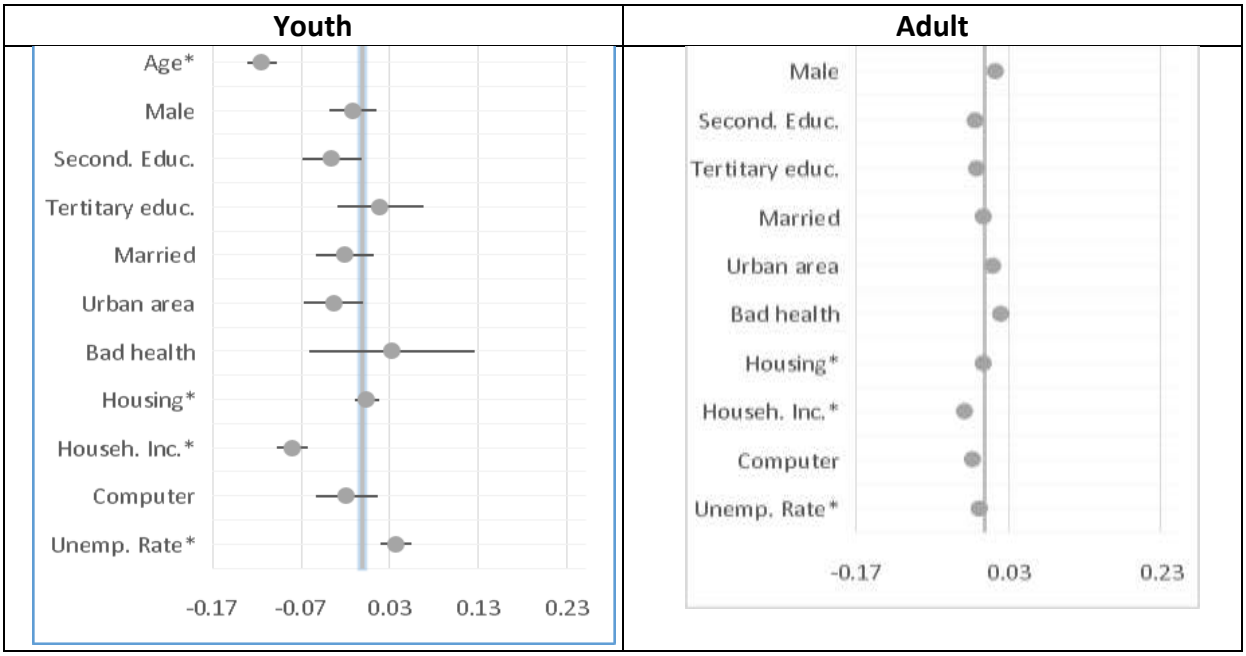


Figure 3 presents average partial effects for youth and adult unemployment equations. As for Italy, APEs for the youth are higher than for the adult. The highest APE is found for the age variable. A rise of age by one standard deviation decreases the probability to be unemployed of young individuals by 0.11. High marginal effects are also found in case of household income (-0.08). The APE of the regional unemployment rate is significant only for the youth (it is 0.037).

[28] We consider all regions of Russia which are included in RLMS-HSE data. We use the regional youth unemployment rate for the youth (under 29 years) and the total unemloyment rate for the adult.

We also considered a specification including the variable of non Russian **nationality**, (Table 10 in Appendix). These results should be discussed separately since the number of observations dramatically reduces in this case. This variable (non-Russian nationality) is significant only in the unemployment equation for adult people and has a positive sign, as in Italy. However, non Russian nationality is significant also in the selection equation and has a negative sign for both age groups.

5.3. *A synthesis of results for both countries*

We can compare the results obtained for both countries by contrasting the average partial effects (see Figures 2 and 3). The highest negative effect for the probability to be unemployed for youth is found – for both countries – in the case of household income. The APE of marital status and bad health, which are important for the Italian young individuals, are insignificant for Russian young people. There is also a difference concerning the urban area variable: the probability to be unemployed is lower for Russian young individuals who live in urban areas, but there is a positive (increasing) effect in the Italian case. Bad health has a strong effect on the employment status, for adult people both in Italy and Russia: the APE is 0.03 and 0.02 respectively. The housing condition has very low effect on the employment status, unlike household incomes.

Considering the partial effects of adult people, the APE of household income for adult is the same (-0.027) in Russia and Italy. There is strong gender effect for adult people. However, this variable has different signs in different groups. In Russia adult men have higher probability to be unemployed than women (by 0.01); in Italy, however, women have higher probability (APE is 0.026) to be unemployed than men. Education is a significant factor only for adult, however its effect is not so strong. Adult with secondary education have lower probability to be unemployed, than people with primary education, by 0.01 in Russia and 0.025 in Italy. If the adult person has tertiary education, the probability to be unemployed is smaller by 0.011 in Russia and 0.017 in Italy.

Therefore, for young people the key factors explaining their (un)employment status are household incomes and age for both countries, the regional unemployment rate for Russia, and marital status, urban area and bad health for Italy. It is important to mention that individual characteristics, in general, are less important than the regional ones.

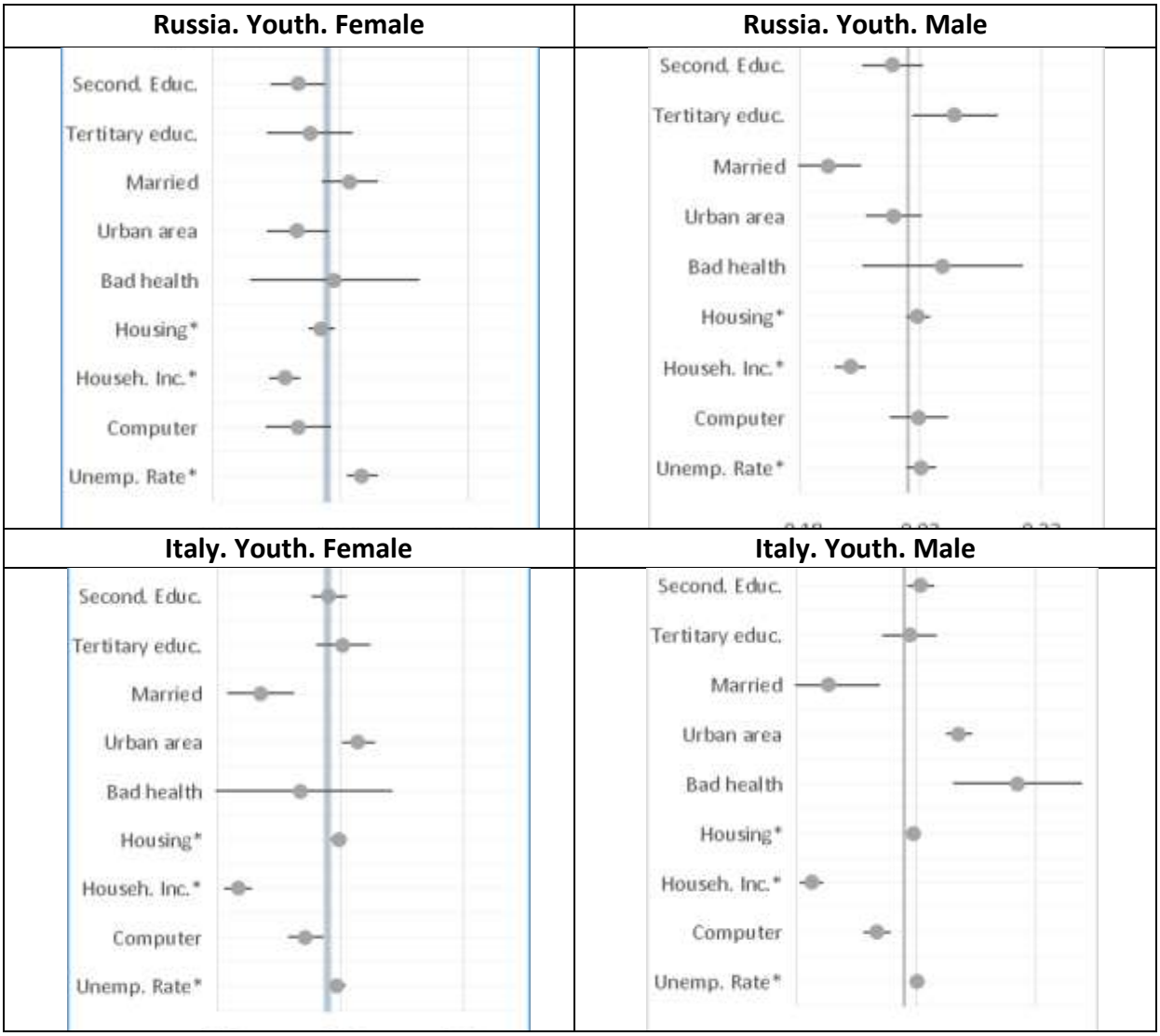
For adult people, regional specific characteristics are also very important; however, individual characteristics provide more significant contributions to the explanation of the unemployment status. In most cases, the APEs for Italian models are higher than for Russian models (in fact the unemployment risk is higher in Italy and so also the elasticities).

5.4. *Additional evidence*

As additional evidence we decide to consider differences in characteristics of youth unemployment in Italy and Russia by gender. Statistical tests show that there are significant differences between genders in both countries. Estimation results of Heckman probit models are in Table 9 and 11 in Appendix for Italy and Russia respectively.

Figure 3 presents the APE for both countries and gender. First of all, we find that when APE is significant, it has the same sign for youth females and males in both countries.

Figure 3. Comparison of APE and their confidence intervals for Russia and Italy for youth by gender.



Tertiary education is significant and has positive sign only for young Russian men; for Italian men we find the same effect in case of secondary education: the explanation is that, after finishing the school or the university, they have little time to find a job (when they start looking for it). In Russia secondary education reduces the unemployment risk for females. Marital status is significant and has a negative sign for females and males in Italy and only for males in Russia. Bad health is an important factor only for the Italian men.

Young individuals with higher household income exhibit a lower probability to be unemployed, both in Italy and in Russia; however, in Italian models the APE is higher. Computer's ownership is a significant variable only for Italian female and male individuals: having a computer reduces the probability to be unemployed: in fact, it makes more efficient the job search process.

Concerning the regional characteristics, the regional unemployment rate is significant and has a positive sign for all groups. However, the APE for Russian females is the highest. Urban area is an important factor of the unemployment status only for Italian females and males: the signs are positive (differently from the Russian case) because labour supply effects are probably dominant;

many young people migrate to Italian urban areas in search for jobs or remain in such areas after finishing the school (or the university) but stay unemployed for a certain period.

6. Conclusions

Youth unemployment is much higher than adult unemployment and has been particularly sensitive to the economic cycle, reaching after the recent crisis top values (in 2013) as high as 59% in Greece, 56% in Spain, 50% in Croatia, 40% in Italy. In Russia, it is lower – also thanks to informal activities of young people – but it has also increased after the crisis.

In several studies, individual and family characteristics have been found important elements in shaping the differences and trends in youth unemployment. However, in our paper we have found that such characteristics are more important for adults rather than young people. For instance, this is the case for the education variable (especially tertiary education). Also the gender is more important for adult people: females face higher risk of unemployment in Italy, while the opposite is true in Russia.

These results have been obtained in a Heckman Probit model. We analysed the 2004-2011 period for both countries: Italy and Russia. Our key variable of interest was the unemployment status of the respondents. We selected observations relating to young people (aged 15-24 years) and, for comparison purposes, adult people (aged 25-60 years for Russia and 25-64 for Italy). Our explanatory variables included individual characteristics; the characteristics of households; the characteristics of location (region); and time effects (to control for macro conditions and crisis effects). For a quantitative interpretation and comparisons between countries, we also estimated average marginal effects: in fact, most of our variables are dummies. For youth individuals APEs are much higher than for adult in both countries.

The highest negative marginal effect for the probability to be unemployed, for both countries and age groups, is found in the case of household disposable income. Moreover, the unemployment risk decreases with age of young people (especially in Russia) and marital status (being single increases the risk) in Italy.

In any case, the highest positive (marginal) effects are detected for the regional unemployment rate, which leads to higher unemployment risk. Bad health has high significant positive effect on unemployment status especially in Italy. In general, regional characteristics turn out to be more important than individual and family features as risk factors of unemployment. Finally[29] also the time effects are quite significant and, especially for Italy, they lead to an increased unemployment risk in the recent crisis period (2008-2011).

To conclude, youth unemployment is detrimental to society because it is a waste of resources; it causes a permanent loss of human capital; it affects health and diminishes the well-being of society, not only for the unemployed (e.g. for anxiety over job security). Bell and Blanchflower (2011) found evidence that spells of youth unemployment have harmful impacts on a number of outcomes – happiness, job satisfaction, wages and health – even many years later.

[29] For future research, we could think of further improvements in the empirical investigations, for instance considering some age classes different from 15-24 years (e.g. 15-29 years would be more appropriate for certain explanatory variables in the case of Italy) or allowing for the type of university degrees (e.g. humanistic vs. scientific).

Regarding the policy implications of our study, firstly we emphasize that appropriate "school-to-work" transition services (as specified in Section 3) are important, since our empirical results have shown that higher education, by itself, is not enough to guarantee higher employment to young people. Moreover, there is also a need of targeted policies, differentiated by gender (for instance helping women in finding jobs in Italy)[30], supporting people with bad health or youngsters living in under-performing regions in both countries. In fact, we have econometrically detected the importance of the regional unemployment rate in affecting the individual probability of unemployment. The risk of rising – especially after the recent crisis – and persistent unemployment is much higher in such regions. Only through effective policies we can avoid the threat that a "lost generation" will be with us for many years to come.

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[30] This is especially true for Southern Italian regions. In Russia, on the contrary, the unemployment risk is higher for men, but more for adults than for youngsters.

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APPENDIX

Table 8. Probit (model 1) and Heckman probit (model 2) with nationality variable for Italy, 2004-2011. Youth: 15-24 age. Adult: 25-60 age.

	Youth		Adult	
VARIABLES	Unemployment equation	Selection	Unemployment equation	Selection
	(1)	(2)	(3)	(4)
Student		-2.324***		-0.966***
		(0.024)		(0.016)
Disability	-0.040	-0.180***	0.157***	-0.229***
	(0.076)	(0.052)	(0.022)	(0.011)
Age	-0.140***	0.914***	-0.029***	0.282***
	(0.008)	(0.085)	(0.001)	(0.003)
Age2		-0.018***		-0.004***
		(0.002)		(0.000)
Male	-0.172***	0.283***	-0.182***	0.902***
	(0.029)	(0.021)	(0.017)	(0.007)
Secondary education	0.042	0.028	-0.215***	0.360***
	(0.032)	(0.024)	(0.016)	(0.008)
Tertiary education	0.038	0.084**	-0.131***	0.641***
	(0.056)	(0.042)	(0.020)	(0.010)
Married	-0.187**	-0.596***	-0.320***	-0.170***
	(0.082)	(0.052)	(0.013)	(0.008)
Urban area	0.274***	-0.043**	0.142***	-0.062***
	(0.030)	(0.022)	(0.013)	(0.007)
Housing	0.053***	-0.058***	0.011*	-0.034***
	(0.014)	(0.010)	(0.006)	(0.003)
Bad health	0.592***	-0.798***	0.251***	-0.437***
	(0.158)	(0.095)	(0.035)	(0.016)
Household income	-0.698***	0.116***	-0.495***	0.188***
	(0.029)	(0.013)	(0.014)	(0.005)
Computer	-0.185***	0.039	-0.141***	0.079***
	(0.032)	(0.025)	(0.014)	(0.008)
Unemployment rate	0.005***	-0.005***	0.069***	-0.030***
	(0.001)	(0.001)	(0.002)	(0.001)
Immigrant	-0.692***	0.044	0.017	0.049***
	(0.071)	(0.049)	(0.029)	(0.018)
Constant	2.947***	-10.326***	-0.352***	-5.102***
+ time effects	(0.181)	(0.870)	(0.043)	(0.061)
Observations		32,978		194,068
Uncensored observations	9,940		126,578	
Rho		-0.341***		0.175***
		(0.040)		(0.031)
LR test (independent equations) (rho = 0), chi(1)		74.78		32.13
Log likelihood		-14982.64		-116236.2
Wald chi2(20)		1499.44		8528.53
Observations		32,978		194,068
Number of uncensored observations	9,940		126,578	
% of correctly predicted (cut off 0.2)	85.97		32.42	

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9. Probit (model 1) and Heckman probit (model 2) for Italy by gender, 2004-2011. Youth: 15-24 age.

	Female		Male	
VARIABLES	Unemployment equation	Selection	Unemployment equation	Selection
	(1)	(2)	(3)	(4)
Student		-2.275***		-2.395***
		(0.035)		(0.033)
Disability	-0.018	-0.066	-0.050	-0.284***
	(0.110)	(0.074)	(0.106)	(0.073)
Age	-0.157***	0.919***	-0.126***	0.944***
	(0.012)	(0.128)	(0.010)	(0.116)
Age2		-0.019***		-0.019***
		(0.003)		(0.003)
Secondary education	-0.063	0.238***	0.131***	-0.149***
	(0.050)	(0.037)	(0.041)	(0.033)
Tertiary education	0.003	0.287***	0.059	-0.131**
	(0.078)	(0.057)	(0.084)	(0.063)
Married	-0.181*	-0.680***	-0.591***	0.638***
	(0.097)	(0.057)	(0.160)	(0.191)
Urban area	0.170***	-0.007	0.348***	-0.065**
	(0.045)	(0.031)	(0.040)	(0.030)
Housing	0.074***	-0.071***	0.063***	-0.047***
	(0.022)	(0.015)	(0.019)	(0.014)
Bad health	0.062	-0.765***	0.854***	-0.819***
	(0.265)	(0.150)	(0.201)	(0.124)
Household. income	-0.648***	0.116***	-0.730***	0.121***
	(0.043)	(0.018)	(0.039)	(0.018)
Computer	-0.158***	0.123***	-0.153***	-0.060*
	(0.049)	(0.035)	(0.043)	(0.035)
Unemployment rate	0.004***	-0.003**	0.007***	-0.007***
	(0.002)	(0.001)	(0.002)	(0.001)
Constant	3.312***	-10.591***	2.267***	-10.168***
	(0.275)	(1.315)	(0.234)	(1.185)
Observations		16,329		16,649
Uncensored observations	4,072		5,868	
Rho		-0.385***		-0.292***
		(0.059)		(0.054)
LR test (independent equations) (rho = 0), chi(1)		43.97		29.17
Log likelihood		-6942.736		-7943.542
Wald chi2(18)		590.57		849.83
% of correctly predicted (cut off 0.2)	88.07		83.96	

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10. Probit (model 1) and Heckman probit (model 2) with nationality variable for Russia, 2004-2011. Youth: 15-24 age. Adult: 25-60 age.

	Youth		Adult	
VARIABLES	Unemployment equation	Selection	Unemployment equation	Selection
	(1)	(2)	(3)	(4)
Student		-2.049***		-1.594***
		(0.061)		(0.245)
Disability		-0.709***		-1.107***
		(0.161)		(0.047)
Age	-0.076***	0.879***	-0.011***	0.174***
	(0.020)	(0.159)	(0.002)	(0.011)
Age2		-0.018***		-0.002***
		(0.004)		(0.000)
Male	0.107*	0.330***	0.181***	0.427***
	(0.063)	(0.048)	(0.037)	(0.026)
Secondary education	-0.021	0.198***	-0.159***	0.215***
	(0.074)	(0.059)	(0.046)	(0.030)
Tertiary education	0.080	0.140	-0.112**	0.320***
	(0.105)	(0.095)	(0.051)	(0.037)
Married	-0.188***	-0.208***	-0.059	-0.187***
	(0.072)	(0.058)	(0.042)	(0.030)
Urban area	0.059	0.378***	0.154***	0.249***
	(0.078)	(0.057)	(0.044)	(0.028)
Bad health	0.082	-0.457***	0.181**	-0.424***
	(0.210)	(0.154)	(0.076)	(0.042)
Housing	0.004	0.004	-0.002	0.005***
	(0.006)	(0.004)	(0.003)	(0.002)
Household income	-0.354***	0.094***	-0.245***	0.165***
	(0.050)	(0.029)	(0.030)	(0.019)
Computer	0.115	0.448***	-0.129***	0.382***
	(0.084)	(0.064)	(0.043)	(0.030)
Unemployment rate	-0.007	-0.023***	0.005	-0.028***
	(0.010)	(0.007)	(0.007)	(0.005)
Non Russian nationality	0.004	-0.220***	0.150***	-0.236***
	(0.087)	(0.064)	(0.049)	(0.034)
Constant	0.506	-10.117***	-1.059***	-2.709***
+time effects	(0.453)	(1.601)	(0.148)	(0.241)
Observations		5,420		18,699
Uncensored observations	2710		15829	
Rho		0.782***		0.431**
		(0.100)		(0.178)
LR test (independent equations) (rho = 0), chi(1)		82.75		7.68
Log likelihood		-2789.638		-9311.827
Wald chi2(19)		88.84		219.28
% of correctly predicted (cut off 0.2)	44.27		0.97	

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 11. Probit (model 1) and Heckman probit (model 2) for Russia by gender, 2004-2011. Youth: 15-24 age.

	Female		Male	
VARIABLES	Unemployment equation	Selection	Unemployment equation	Selection
	(1)	(2)	(3)	(4)
Student		-2.142***		-2.080***
		(0.066)		(0.067)
Disability		-0.490***		-0.778***
		(0.147)		(0.207)
Age	-0.059***	0.743***	-0.056***	0.710***
	(0.020)	(0.166)	(0.020)	(0.170)
Age2		-0.015***		-0.014***
		(0.004)		(0.004)
Secondary education	-0.043	0.256***	-0.085	0.010
	(0.080)	(0.061)	(0.087)	(0.072)
Tertiary education	-0.018	0.168*	0.315***	0.125
	(0.117)	(0.097)	(0.119)	(0.136)
Married	-0.148*	-0.569***	-0.208**	0.599***
	(0.077)	(0.059)	(0.089)	(0.092)
Urban area	0.028	0.406***	0.055	0.334***
	(0.088)	(0.061)	(0.080)	(0.063)
Bad health	-0.159	-0.415***	0.059	-0.340*
	(0.244)	(0.151)	(0.235)	(0.188)
Housing	-0.003	0.007	0.009	-0.005
	(0.007)	(0.005)	(0.006)	(0.005)
Household income	-0.226***	0.105***	-0.315***	0.139***
	(0.052)	(0.032)	(0.052)	(0.032)
Computer	0.042	0.431***	0.124	0.159**
	(0.088)	(0.065)	(0.083)	(0.069)
Unemployment rate	0.026***	-0.024***	-0.002	-0.040***
	(0.009)	(0.006)	(0.009)	(0.006)
Constant	-0.147	-8.474***	0.255	-7.526***
+time effects	(0.460)	(1.664)	(0.444)	(1.685)
Observations		4,810		4,540
Uncensored observations	2133		2188	
Rho		0.913***		0.750***
		(0.109)		(0.100)
LR test (independent equations) (rho = 0), chi(1)		100.67		70.77
Log likelihood		-2422.518		-2221.964
Wald chi2(17)		62.04		65.50
Observations		4,810		4,540
Uncensored observations	2133		2188	
% of correctly predicted (cut off 0.2)	48.08		51	

Note: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1