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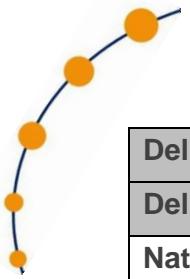
MOVE

Mapping mobility – pathways, institutions and structural effects of youth mobility

Deliverable 2.4 – Final Work Package Report WP2
“Sampling and secondary analyses of macro data of youth mobility in Europe and the partner countries”

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1. Introduction (Karen Hemming and Frank Tillmann)

We are providing herewith our final report of work package 2 “Sampling and secondary analyses of macro data of youth mobility¹ in Europe and the partner countries”. The report was edited by P3 (German Youth Institute, Germany). P4 (ASE Bucharest, Romania) and P5 (Miskolci Egyetem, Hungary) contributed to the report especially with theoretical and statistical modelling from their macro-economic perspective. P3 had the overall responsibility for the work package 2 and provided the database for the analysis: “MOVE-Scientific Use File (MOVE-SUF) for secondary macro data of European youth mobility” (Hemming, Tillmann, and Dettmer 2016). P3 also conducted descriptive analysis on youth mobility indicators and mapping analysis. Additionally, P3 and P6 (HiSF, Norway) were also involved in the compilation of the theoretical background. The following partners contributed to the national country case studies: P1 (University of Luxembourg), P3, P4, P5, and P6. The following partners contributed with the description of their national framework conditions: P1, P3, P4, P5, P6, and P7 (ICN, Spain). Ute Karl, as MOVE coordinator, supported the process of work package 2 from the beginning onwards with valuable supervision and feedback. Thank you so much! The MOVE scientific advisor Jochen Clasen contributed his feedback to the current report, we would also like to say thank you for your help. Please, note the responsible author for the contents of each chapter at the end of the heading (in brackets).

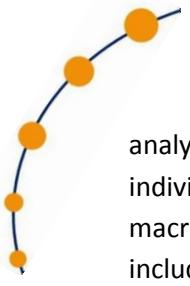
The analyses conducted in work package 2 refer mainly to the six partner countries of the MOVE consortium (Luxembourg, Germany, Romania, Hungary, Norway, and Spain), but also the broader European perspective is taken into consideration including all 28² countries of the European Union (EU) and additionally three countries of the European Free Trade Association (EFTA). This enhanced sample of 31 country cases enables sound multivariate analyses of the compiled macro data, which exceeds basic case studies of the participating countries of the MOVE consortium.

1.1 Overall objectives of MOVE and work package 2

One central aim of MOVE is to provide evidence-based knowledge on mobility of young people in Europe as a prerequisite to improve mobility conditions, and to identify fostering and hindering factors of beneficial mobility. This aim will be pursued using a multilevel interdisciplinary research approach, aiming at a comprehensive and systematic analysis of the phenomenon „mobility of young people in Europe”. Therefore, different empirical work packages are linked with each other. Work package 2 is based on a quantitative secondary analysis of relevant national and European macro-datasets. Focusing on the macro-level, it refers to the body of national states constituting the European Union and EFTA. The set of therein included countries can – in a synthesised way – be regarded to as a zone of free movement of people. Although mobility has to be seen as an outcome of individuals’ personal preconditions, agency, and decisions, MOVE strives to extract explanatory power by

¹ Following the MOVE grant agreement and the theoretical framework of MOVE (see Annex 2, chapter III.1 in Deliverable 2.3) we are using the term “mobility” when talking about geographical cross-border movements of young people in Europe independently of the duration of the movement. Thus, the term mobility includes in our understanding short-term and long-term geographical movements as well as permanent movements that are known as migration. However, when referring to the theoretical macro-economic context of work package 2 also the term migration is used, when applying so in the respective literature. To put it in a nutshell: we are not differentiating between mobility and migration but will use the term mobility when possible.

² As work package 2 was in its final steps when the UK decided to leave the EU, it is still referred to the EU-28 countries.



analysing mobility additionally at the aggregated level of the European countries. Thus, besides the individual motivations, also structural, national, and other socio-economic conditions matter. These macro-conditions are not limited to the EU but have to be seen in the global context of national units including the EU and, thus, are more and more influenced by international economic and political processes, and as parts of a comprehensive, international society (Zolberg, Suhrke, and Aguayo 1989).

Hence, work package 2 serves as a basis for the micro- and meso-level approach of work package 4, where mobile youth is surveyed with an online questionnaire regarding their mobility experiences, institutional support, socio-economic background, etc. Additionally, the results of work package 2 fed into the development of the guides for the qualitative interviews with different types of mobile youth and experts in the respective fields of mobility within work package 3. The results of work packages 2, 3, and 4 are referred to each other to draw overall MOVE conclusions and policy recommendations in work package 5. Therefore, work package 2 targeted the following objectives:

- assembling and assessing relevant national quantitative, cross-sectional, and time-series datasets from all participating countries as a pre-requisite for studying factors of influence on youth mobility at the macro-level,
- gaining information and generating new knowledge on the causes of youth mobility through panel analyses within the EU-28 and EFTA countries (including the partner countries), under due consideration of fundamental determinants, i.e. macro-economic, institutional, social, and, in particular, educational variables,
- developing background models of youth mobility schemes based on quantitative empirical findings,
- striving for a better understanding of the impact of socio-economic factors on youth mobility and vice versa, analysing the interaction between both, and identifying factors hindering or fostering (incoming and outgoing) youth mobility,
- determining the effects (positive or negative) of youth mobility on macro-level socio-economic framework conditions, especially on national labour markets, by defining relevant performance indicators, and
- synthesising research results, publishing an open access report for the scientific community, and providing an overall MOVE-Scientific-Use-File.

Work package 2 intends to examine the processes of youth mobility and its effects on national and social macro indicators, and especially on the performance of economies on the basis of macro theory originating from neoclassical economics. This approach is suitable for the macro-perspective of work package 2. Further examinations at meso- and micro level in work packages 3 and 4 are based on the research of individuals and institutions, focussing amongst others on the theories of agency, transnationalism, and social networks. The macro-perspective of work package 2, however, covers different perspectives using sampled secondary macro-data on European youth mobility: 1) Using a descriptive perspective, different youth mobility indicators and mobility flows are analysed and interpreted on the basis of national framework conditions for youth mobility. 2) In addition, the macro-economic perspective focuses on the analysis of socio-economic causes of youth mobility, as well as on the effects of youth mobility on national labour markets and other social and state-related factors. These perspectives were implemented by an interdisciplinary research team collaborating in work package 2 deriving from, sociology, macro-economics, and statistics (P3, P4 & P5).

1.2 Design and methods of the secondary macro-analyses

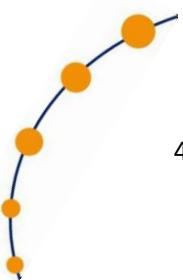
The data-base for this report is a macro-data workfile which was compiled and published as MOVE-SUF in work package 2 (Hemming, Tillmann, and Dettmer 2016). The MOVE-SUF was set up with data for all EU-28 and 3 EFTA countries (Switzerland, Island, and Norway) with a total of 31 country-cases and covers a period of 10 years (2004-2013). Thus, it provides a unique database for youth mobility in Europe.

The MOVE-SUF was set up with reliable and comparable macro-data from the following institutions: ESA, Eurostat, OECD, UNO, and World Bank. The macro-indicators for causes of youth mobility were available via open access; this also applies to the macro-data on European students' mobility. However, no open access data on other kinds of youth mobility were available. Hence, different indicators for incoming and outgoing youth mobility were aggregated by P3 for all EU-28/EFTA countries using micro-data-sets from the European Labour Force Survey (EU-LFS, yearly files, 2004-2013) which were provided by Eurostat³. The yearly datasets were aggregated for people holding the citizenship of EU-countries aged 15-29. The aggregated mobility indicators were also included in the MOVE-SUF. More detailed information about the database and the included indicators can be found in the users' manual accompanying the MOVE-SUF (Hemming, Tillmann, and Dettmer 2016).

After the compilation of the data-base, an advanced strategy for secondary macro-data analyses in work package 2 was developed consisting of four major steps:

- 1) **Descriptive analysis of aggregated youth mobility indicators:** As the data compilation at the beginning of work package 2 revealed that no open access data on youth mobility was available, different mobility indicators were aggregated out of the EU-LFS datasets. Thus, a descriptive analysis of this unique compilation of youth mobility indicators for Europe for 2004-2013 was a first central aim of the analysing strategy.
- 2) **Causal Modelling with Panel Analyses:** One of the main objectives of MOVE was to identify "hindering and fostering factors of youth mobility", e.g. push- and pull-factors on the national level based on panel analyses. Therewith national macro-causes of youth mobility were analysed, as well as the effects of youth mobility on national labour markets and other socio-economic indicators from a macro-economic and demographic perspective. The statistical modelling also included time lag and cluster analyses as preparatory steps for panel modelling.
- 3) **Mapping mobility:** Following the title of the MOVE-project, a third analysing step referred to the mapping of mobility flows between the sampled European countries for the observed period. Additionally, differences in mobility ratios between the identified country clusters of the aforementioned step will be mapped. For this analysing step also the mobility scoreboard indicators, which were presented in a report on Conditions for Learning Abroad in Europe (European Commission/EACE/Eurydice 2013) were being considered in an excursus.

³ The responsibility for all conclusions drawn from the EU-LFS data lies entirely with the authors. When using EU-LFS datasets, strict guidelines of usage and publication had to be abided by. Thus, the EU-LFS datasets were tested following the Eurostat guidelines for holding: a) confidentiality threshold (up to 3 observation results must not be published) and b) reliability threshold (see Tab.A.1 in the annex). However, for some indicators data was not available for all countries or years of observations. This applies especially to Romania (not an OECD-member-state) and Norway (not a member of the EU). For more information on EU-LFS see http://ec.europa.eu/eurostat/statistics-explained/index.php/EU_labour_force_survey



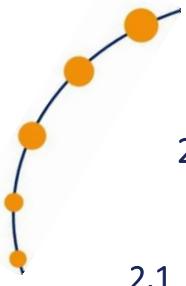
- 4) **National country case studies:** As a fourth step, the compilation of national country case studies was included into the analysing strategy. The case studies comprise detailed analyses of country specific mobility topics (e.g. students' mobility in Luxembourg or mobility from Romania to Spain) and/or are using additional national mobility data (e.g. from the national statistical offices in Germany, Norway, and Luxembourg). Thus, the case studies add the national dimension of the macro level analysis, to the European one (explained with panel modelling).

1.3 Overview of the presented results

The current report was compiled to give an overview of the main results achieved in work package 2. Each chapter refers to a specific task worked on in work package 2. The introduction (chapter 1) presents a summary of the main objectives of the work package, as well as the overall objectives of MOVE, and an outline of the methods used. Subsequently a brief overview of the framework conditions for youth mobility on a macro level is given in chapter 2 for the partner countries and the EU, followed by descriptive analysis of the development of youth mobility indicators over the period of 2004 to 2013 in chapter 3. Therein a focus is laid on the differentiation between general and students' youth mobility, and also between incoming and outgoing youth mobility.

Following this, the macro-economic theoretical background for explaining causes and effects of (youth) mobility is described in chapter 4. The theoretical background and respective state of the art were compiled on the basis of a heuristic theoretical model. Out of this heuristic specified background models were deduced for explaining causes and effects of different kinds of youth mobility on a macro-economic perspective, accompanied by respective hypotheses for the relationships between social, economic, and state-related macro-indicators and youth mobility. Chapter 5 presents the condensed results of the complex statistical analyses of the specified background models. Using time lag, cluster, and panel analyses, the causes and effects of youth mobility and economic, social, and state-related macro-indicators are analysed. For interpretation, the results are linked to the theoretical background and deduced background models.

Afterwards, the analyses on mapping mobility flows are reported in chapter 6 including net-balances of mobility flows, an illustration of mobility ratios for the identified country-clusters, and a supplemental excursus on the relationship between the mobility scoreboard indicators and out-going youth mobility. In chapter 7 additional national country case studies are presented for 1) Youth mobility to and from Hungary, 2) Student mobility in Luxembourg, 3) Incoming mobility to Germany, Norway and Luxembourg, and 4) Youth mobility from Romania to Spain. Overall conclusions of the results and deduced policy recommendations are presented in chapter 8.



2. National and European Framework conditions for youth mobility for the period of 2004-2013

2.1 European framework conditions for youth mobility for the period of 2004-2013 (Ute Karl and Emilia Kmiotek-Meier)

Between 2003 and 2014 there have been several educational, economic, and social factors that have had an effect on all European member states and their youth mobility. These framework conditions will be divided into social, economic, and political changes, followed by a chronological exploration of European mobility programmes and their development during the relevant timeframe. The following information is based especially on research by Karl and Kmiotek-Meier (2015) who compiled the discourse on youth mobility from the year 2000 onwards.

Political framework conditions:

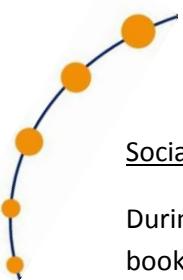
In 2001, the European Parliament and the Council launched an adopted recommendation on trans-national mobility within the community of students, persons undergoing training, volunteers, teachers, and trainers (EC 613 2001). A special role of the young Europeans in the shaping of 'the future Europe' without borders was stressed in the White Paper of the European Commission "A New Impetus for European Youth" (COM 681 final 2001). The Action Plan on Skills and Mobility (COM 72) referred to the obstacles to labour market mobility. One of three main problems addressed in this document was low geographic mobility of EU residents. As a follow-up to a 2004 report, the European Parliament and Council underpins that "comprehensive strategies to facilitate and actively promote mobility are rather the exception than the norm, and results in many fields, including the removal of administrative and legal obstacles, fall short of what is actually needed." Thus emphasis was put on "comprehensive and better coordinated approaches at national level" (COM 21 final 2004). One significant political change that has affected youth mobility was the Bologna reform in 1999, which aimed to unify higher educational systems across Europe by aligning degree structures.

Economic framework conditions:

Following Benton and Petrovic (2013, 1) free movement in the European Union has seen three main stages:

1. Prior to the 2004 and 2007 enlargements, when most movements were small-scale and regional.
2. Following the 2004 enlargement, when large numbers of eastern Europeans moved to the west.
3. The period since the economic crisis, where an initial decline in east-west labour mobility was followed by a boost in movements of workers from countries affected by the crisis in the south to more prosperous countries in the north.

Other relevant economic changes include the introduction of the Euro in Slovenia (2007), Malta and Cyprus (2008), Slovakia (2009), and Estonia (2011).



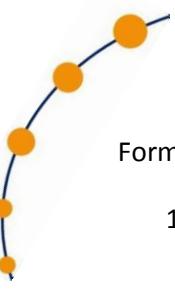
Social framework conditions:

During the relevant timeframe, continuing technical development including social networks, online booking, usage of online platforms and search engine effectively supported an increase in cross-border youth mobility. Additionally, the introduction of sharing-platforms (e.g. couch surfing, Airbnb) may have also had a fostering effect on youth mobility. Another social factor in this timeframe was the development of the Arab Spring since 2010 which lead to ongoing large-scale discourse conflicts and therewith may have increased incoming mobility for many European countries. Also, the rising number of terrorist attacks and political crisis in Europe and its close neighbour countries may have had effects on youth mobility rates, as the feeling of security is a major aim in young people's life courses.

European mobility programmes:

Karl and Kmiotek-Meier (2015) described EU-actions (programmes) that have been launched to counteract negative developments in intra-EU mobility, as well as to support and enable mobility of young Europeans.

1. **The European Charter of Mobility** (2006) (EC 961 2006) set out to improve the quality of mobility for educational and training purposes for the individual (e.g. equal access to information and guidance, language training, etc.)
2. **The Youth Action Programme** (2007-2013) aimed to promote young people's active citizenship and included goals for fostering mobility in Europe and developing intercultural exchange.
3. **The mobility of young volunteers** was subject of the Council recommendation of the 20th November 2008 (2008/C 319/03 2009) and aimed to strengthen cross-border voluntary activities, and to find ways to recognise these activities amongst youth.
4. **Youth on the Move** brings together policy initiatives and different programmes on education and employment for young people on a regional, national, and European level. (C 199/01 2011; COM 477 final 2010)
5. **The Youth Opportunities Initiative** (YOI, 2012-2013) addressed more disadvantaged young people who left school or training without having achieved upper-secondary education.
6. Since 2014 the new **ERASMUS+** programme integrates former measures, integrating existing programmes into one framework that covers education, training, volunteering, and youth sectors' activities. It was set for 7 years (2014-2020). It is set for 7 years (2014-2020).
7. **Your first EURES job** (2012-May 2015 as a pilot) aimed especially at work and employment of young people (age 18-35). Support was based on national employment services in regard to information, job search, recruitment, and funding. Since 2014, it is financed under the EU Programme for Employment and Social Innovation (EaSI). The aim is to fill vacancies in certain sectors or geographical areas by supporting mobility for traineeships, apprenticeship or to find a job.
8. **Youth Guarantee** schemes (2013) were adopted to address problems linked to the transition into work among young Europeans (25 years or below). Here, mobility is seen as a chance to gain access to more employment opportunities.



Former EU-programmes were:

1. **Sokrates** (first phase 1995-1999; second phase 2000-2006): replaced by LLP and focused eight activity areas – four focusing learning mobilities.
2. **Lifelong Learning Programmes (LLP)**, 2007-2013: replaced by ERASMUS+ with four subprogrammes that focused mobility within EU: Comenius (schools), Erasmus (higher education), Leonardo da Vinci (VET), and Grundtvig (adult education).

2.2 Framework conditions in Luxembourg for youth mobility for the period of 2004-2013 (Ute Karl, Emilia Kmiotek-Meier and Volha Vysotskaya)

Political framework conditions:

Compared to other member states, Luxembourg was similarly affected by the Bologna reform. Unlike other nations, however, Luxembourg has an extremely high rate of university students' mobility (nearly 100%). It has to be mentioned that the University of Luxembourg was founded only in 2003, and there are still some subjects which can only be studied abroad. Additionally, the University of Luxembourg – unlike other European universities – has introduced an obligatory stay abroad for undergraduates. There is also a high rate of inward students' mobility, with students coming mainly from other EU-countries. It is important to distinguish between degree mobility (those from Luxembourg who decide to study at universities abroad) and credit mobility (those who have to spend a semester abroad as a part of their degree). These are clearly different, and their rates in Luxembourg are significantly higher than in the rest of Europe. The financial help for students have constantly been revised since 2000. However, these scholarships unfairly excluded children of cross-border workers, an issue that was raised and solved in favour of those families by the EU Court. As a result, the act of 19 July 2013 modified the law of 2000 on state financial support⁴. The financial help can be composed now by different forms of help, amongst others a basic support, a supplement for studying abroad and a social component, addressing economically disadvantaged people. Furthermore, it can also include loans.

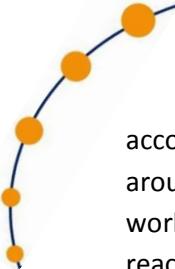
Economic framework conditions:

Luxembourg has a high percentage of cross-border workers, as well as a high percentage of non-nationals living in the country. Almost half (46% in 2015, STATEC⁵) of all people living in Luxembourg do not hold the Luxembourgish citizenship. 85,9% of the foreigners are citizens of another EU country (STATEC, 2016⁶). Contrary to this, it has a rather low weight of naturalisation (19th place in 2014

⁴ Memorial A - N° 168, 13 septembre 2013: Republication rectifiée, suite à une erreur matérielle, de la loi du 19 juillet 2013 modifiant la loi modifiée du 22 juin 2000 concernant l'aide financière de l'Etat pour études supérieures (<http://www.legilux.public.lu/leg/a/archives/2013/0168/a168.pdf#page=8>) and Loi du 24 juillet 2014 concernant l'aide financière de l'Etat pour études supérieures (<http://www.legilux.public.lu/leg/a/archives/2014/0139/2014A2188A.html>).

⁵ Source: STATEC: Population par sexe et par nationalité au 1er janvier (http://www.statistiques.public.lu/stat/TableViewer/tableView.aspx?ReportId=12853&IF_Language=fra&MainTheme=2&FldrName=1).

⁶ Source: STATEC: Population par sexe et par nationalité au 1er janvier (http://www.statistiques.public.lu/stat/TableViewer/tableView.aspx?ReportId=12853&IF_Language=fra&MainTheme=2&FldrName=1).



according to Eurostat⁷). Immigrants living in Luxembourg and cross-border employees constitute around 72,0% ⁸of the work force of the country in 2015⁹. Since 1985 the number of the cross-border workers, who live in one of the border countries but work in Luxembourg, has been rising and has reached now the level of around 171.100 people in 2015 (out of that around 50% from France, 25% from Belgium and 25% from Germany)¹⁰. An analysis of the consumption behaviour of cross-border commuter households residing in Belgium, France and Germany and working in Luxembourg showed that around 925 Mio. Euro is spent by these households in Luxembourg every year.¹¹ Between 2004 and 2013, Luxembourg's unemployment rate has ranged from 4% to 6% with an increase from 4,8% in 2011 to 5,9% in 2013 (Eurostat¹²). However, the youth unemployment rate is much higher and was in 2013 16,9%, rise in 2014 to 22,3% and dropped in 2015 16,6% (Eurostat¹³). Luxembourg's average real GDP growth rate from 2004 to 2013 is 2,2%, with the lowest growth rate in 2009 at -5,3% and the highest in 2007 at 6,5% (Eurostat¹⁴).

Social framework conditions:

Despite the fact that Luxembourg has, for example, a long tradition of students going abroad, long-distance mobility is not common: about two thirds of those who participate in EU funded programmes do not go further than 200km away from home.

2.3 Framework conditions in Germany for youth mobility for the period of 2004-2013 (Paul Schlüter und Christin Warkentin)

Political framework conditions:

In the relevant timeframe Germany introduced legislation significantly affecting systems of education. The Bologna reform, starting in 1999, aimed to introduce uniform Bachelor and Master's degrees within Europe, while the First Training Pact (2004) aimed to create apprenticeship training po-

⁷ Source: Eurostat: Naturalisation rate (acquisition of citizenship per 100 resident foreigners), (http://ec.europa.eu/eurostat/statisticsexplained/index.php/File:Naturalisation_rate_%28acquisition_of_citizenship_per_100_resident_foreigners%29,_2014.png).

⁸ For keeping a consistent standard in D.2.4 regarding the format of numbers: the notation of decimals was done with commas, notation of thousands was done with periods.

⁹ Source : STATEC : Emploi salarié intérieur par lieu de résidence et nationalité (http://www.statistiques.public.lu/stat/TableViewer/tableView.aspx?ReportId=12916&IF_Language=fra&MainTheme=2&FltrName=3&RFPPath=92).

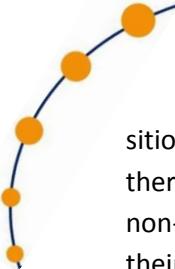
¹⁰ Source: STATEC: Travailleurs frontaliers occupés au Luxembourg selon la résidence et la nationalité (http://www.statistiques.public.lu/stat/TableViewer/tableView.aspx?ReportId=12928&IF_Language=fra&MainTheme=2&FltrName=3&RFPPath=92).

¹¹ Matha, Thomas Y., Porpiglia, Alessandro, & Ziegelmeyer, Micahel (2014). *Cross-border Commuting and Consuming: an empirical investigation*. Cahier d'études working paper, n°89, Luxembourg: Banque Centrale du Luxembourg.

¹² Source: Eurostat: Unemployment rate (http://ec.europa.eu/eurostat/statisticsexplained/images/4/45/Table_2_Unemployment_rate%2C_2004-2015_%28%25%29.png).

¹³ Source: Eurostat: Youth unemployment (http://ec.europa.eu/eurostat/statisticsexplained/index.php/File:Table_1_Youth_unemployment,_2015Q4_%28%25%29.png).

¹⁴ Source: Eurostat: Real GDP growth (http://ec.europa.eu/eurostat/statisticsexplained/index.php/File:Real_GDP_growth,_2004%28%9314_%28%25_change_compared_with_the_previous_year:_average_2004%28%9314%29_YB15.png).



sitions as well as motivate youths to seek out these apprenticeships transregionally. In the same year there was a change in school law §15; its goal was to develop integration of young migrants with non-German origins. In 2005 legislation was introduced to allow apprentices to complete a part of their training abroad, followed by the Second Training Pact (2007 to 2010), which aimed especially to aid youth with migration background. Measures regarding residence laws for education at universities and vocational training for migrants were also put in place in 2007. In 2009 the EU Blue Card allowed people from non-partner countries to apply to study and/or work in Germany, which came into effect in 2012. The Third Training Pact was introduced in 2010, further promoting transregional mobility of apprenticeships. New laws regarding the recognition and identification of individual foreign professional qualifications were passed in 2012, with the aim of legitimising migrant workers' education and qualifications.

Economic framework conditions:

Between 2004 and 2013 there was a total reduction in unemployment rate from 10,5% to 6,9%. However, this process was not linear. From 2004 to 2006 the unemployment rate rose from 10,5% to 12%. Through the following years it first declined to 9% before stagnating around 8% until 2011, at which point it reached 7,1%. Between 2011 and 2013, it remained fairly stable (6,8% to 7,1%). In 2005 a new welfare system was implemented ("Hartz IV-laws"), which aimed to provide unemployment compensation as well as general compensation for covering basic needs of the unemployed. In the same year gross wages also fell by 0,2%. In 2008 Germany reached the highest inflation rate since 1993 at 3,3%, causing prices of food and energy to rise by an average of 7%. In the following year Germany's GDP dropped by 2,5%. This brief downturn was discontinued by an increase in GDP of 4,1% in 2010.

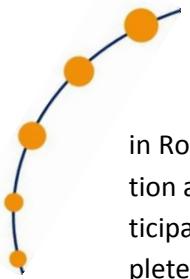
Social framework conditions:

In Germany, going abroad as part of school or university education is not uncommon. School exchanges with other European countries (specifically fostered through partnerships between cities across Europe) are normal for children, especially in higher secondary education, and often seen as opportunity to learn other languages. At university, the ERASMUS programme is popular and supports many students who want to study abroad for at least one semester. These are all parts of exchange programmes that create both incoming and outgoing youth mobility. The usage and implementation of mobility funds and programmes is fostered through a wide network of counselling offices in different areas of the educational system (e.g. DAAD, mobility counsellors at VET schools, Erasmus counsellors at universities, offices for voluntary services). Despite Germany's agenda for creating class equality in education, there is still a strong bias towards an implicit socio-economic class structure that affects the extent of education youths receive, as well as their future job prospects and thus also prevents youth with lower socio-economic background from going abroad.

2.4 Framework conditions in Romania for youth mobility for the period of 2004-2013 (Daniela Marinescu and Ioana Manafi)

Political framework conditions:

Romania was also affected by the Bologna reform, ensuring introduction of Bachelor and Master degrees until 2010 across all its universities. But unlike other European countries such as Luxembourg,



in Romania there are no requirements for Bachelor or Master students to spend part of their education abroad. Also, there is a lack of national financing for exchange programmes. However, when participating in a PhD or Post doc programme funded by the EU one of the requirements is to have completed at least one month research stay at an abroad EU-university. The most popular exchange programme for students in general is ERASMUS+. However, other programmes like Youth in Action, ASSE's (American Scandinavian Student Exchange), CEEPUS, and Lifelong Learning etc. are used for studying and/or working abroad as well. A hindering factor for working mobility is the fact that only some of the vocational training certificates are accepted in other EU countries.

Economic framework conditions:

In 2007, Romania was admitted to the European Union. In 2009, the International Monetary Fund and other lenders agreed to provide Romania with a rescue package worth 20 billion Euros. The fluctuating economic growth that characterised a painful economic transition period until 2010 was accompanied by severe disequilibria on the labour markets, a crisis that remains ongoing. In the context of this, outgoing mobility reduced the burden of unemployment on the Romanian government. Especially for some rural regions, this removed pressure as well as the burden of social welfare for the unemployed. In 2010, legislation was passed that decreased the wage levels in the public sector by 25% as well as pensions. An increased rate of unemployment (especially amongst young people) due to the economic crisis was accompanied by high migration of employees in the medical field, as well as maintenance of a low minimum wage. In the same year, 22% of Romania's population was considered at-risk for poverty, despite the liberalisation of the EU labour market for Romanian workers. The GDP in Romania expanded 1,6% in the first quarter of 2016 over the previous quarter. GDP Growth Rate in Romania averaged 0,7% from 1995 until 2016, reaching an all time high of 5,4% percent in the first quarter of 1996 and a record low of -6,2% in the first quarter of 2009.

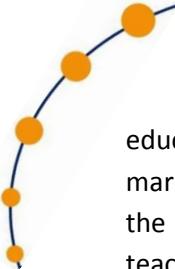
Social framework conditions:

During the first stage of free movement of Romanian workers, existing member states were able to apply restrictions on free movement without notifying the European Commission of their intention to do so. Ireland decided to apply restrictions, which meant that Romanian workers were subject to the employment permit requirements that applied before they joined the EU. However, workers from Romania and Bulgaria had preference over workers from non-EEA states. Ireland continued their restrictions until 2011, since then Romanian workers enjoy full rights to free movement in 15 of 25 member states. The remaining states typically require Romanian workers to have a work permit. In 2012, an attempted political coup d'état took place, which was manifested in the intense politicisation of administration, discretionary law-making, and favouritism in public resource allocation. The constitutional court declared the referendum about the abdication of the former president Băsescu as invalid later in the year.

2.5 Framework conditions in Hungary for youth mobility for the period of 2004-2013 (Klaudia Horváth and Zsuzsanna Dabasi-Halász)

Political framework conditions:

Hungary faces challenges in improving students' basic skills, reducing the impact of socio-economic background on educational outcomes of disadvantaged students, and offering quality and inclusive



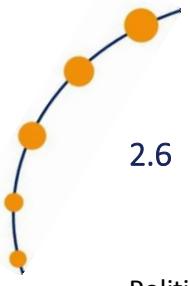
education for all. Another key issue is making education and training more responsive to labour-market needs. Since 2013, a public school funding institute allocates grants to public schools from the budget of the Ministry of Human Capacities. The funding responsibilities include salaries of teachers, staff who directly support teaching and maintenance staff, as well as the costs of transportation, construction, extensions and renovations. Public and private higher education institutions offer state-funded and fee-paying places for applicants. Evidence shows that part-time students rely mainly on self-earned income to finance their studies, whereas more than 60% of full-time students rely mainly on financial support from their families. About 9,4% of Hungarian students report that they rely mainly on grants or student loans. The economic crisis affected Hungary heavily, resulting in a 7,8% decrease of public funding for education between 2011 and 2012. As a result, statutory teacher salaries were frozen, and some restrictions were applied to allocation of family allowances by creating closer links between these allowances and participation in education. At the same time, subsidies for student transport have increased.

Economic framework conditions:

From 2004 to 2014, Hungary's average GDP growth rate was 1,3% according to the World Bank, with the lowest rate at -6,5% in 2009 and the highest at 4,9% in 2004. Since 2009, the growth rate has been increasing with a temporary recession in 2012 at -1,7% and is at 3,6% as of 2014. The unemployment rate was 6,1% in 2004, increased to 11,4% in 2011 and 2012, and declined to 10,2% in 2013. In the early 2000s, the government re-established a previous welfare system, which is considered to be unsustainable given the country's state. Consequences such as indebtedness, low employment rate, serious regional imbalances, and a high inflation rate have been attributed to it. Economic stability has been declining in Hungary due to the economic crisis, leading to Hungarian youth exploring their options abroad.

Social framework conditions:

The main obstacle to mobility in Hungary is the lack of support for people who move back to villages, accompanied by issues related to housing regulations and the real estate market. These leave people moving to a new place in a disadvantageous position, because the risk of mobility is irrationally high. Hungary also experiences economic centralisation, where people move from less economically developed regions to more developed ones. Most of the people moving choose the capital as a new permanent or temporary residence. Between 2003 and 2014, the number of foreign immigrants in Hungary has decreased by several thousands, most of which were citizens of other member states. Life expectancy in Hungary has increased from 2004 to 2014, although Hungary is still worse off than other member countries. Countries with higher life expectancy tend to be more appealing to Hungarian emigrants. Poverty is rampant in Hungary, with more than 10% of the population being permanently excluded from society and almost one third of young people between 18 and 24 years of age are at-risk of poverty and social exclusion. Social equality for Hungary is at 28/100, which is below the EU average. In September 2015, every sixth worker in public was younger than 25. The average income level of a public worker is about 75% of the minimum wage. Often the public work programme is the only choice for young Hungarians so they are pushed to leave the country.



2.6 Framework conditions in Norway for youth mobility for the period of 2004-2013 (Tuba Ardic, Roger Hestholm and Jan Skrobanek)

Political framework conditions:

In 1999 Norway also implemented the Bologna reform. In 2003 the “quality reform” (Kvalitetsreformen) was introduced with the important goal of internationalisation, which manifested itself through the alignment with European and American degree systems and ECTS. Since then indicators show that higher education institutions have increased their efforts towards internationalisation, without further legislation from the government.

Economic framework conditions:

In 2009 Norway experienced an economic downturn driven by the oil crisis, which led to increasing pressure on the labour market with significant regional disparities, increase in temporary jobs (especially for young people and people with lower education), and increases in unemployment among migrants, women as well as young people. Amidst ongoing developments since 2000, Norway simplified government procedures and introduced structural reforms regarding the public, educational, and general employment sectors. Part of this was, for example, the centralisation and merging of regional government municipalities, higher education institutions, and agrarian reform. Since 2006, the Norwegian government has introduced laws to liberalise the educational and labour market, as well as increasing the qualification requirements for teachers. Additionally, there was an increase in outcome-oriented measurement policy, as well as a standardisation of indicators for internationally comparable outcome measures. Since 2010, there has been a continuation of outsourcing of the central public administration, and in 2011 the statutory retirement age was raised.

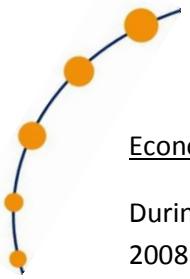
Social framework conditions:

In general Norway follows almost all EU regulations although it is not a member state. National regulations have gradually been replaced by European standards (Sejersted 2008). With regard to youth mobility this means that Norway is just as open to all kinds of European mobility as full EU members.

2.7 Framework conditions in Spain for youth mobility for the period of 2004-2013 (Cristina Cuenca García and Lorenzo Navarrete Moreno)

Political framework conditions:

Despite being part of the Bologna reform, Spain's universities adapted a slightly different degree structure: four years for a Bachelor and one year for a Master instead of three and two years respectively. Thus, Spanish students may have difficulty in Master programmes, especially when it comes to fulfilling academic requirements for Master programmes across European universities. Hence academic exchanges at this level of study are difficult for Spanish students. This difference might have also effects on decreasing European incoming exchange students whose study plans might not be compatible with the one-year Master schedule. On the other hand, educational reforms related to a change in the government composition may be expected.

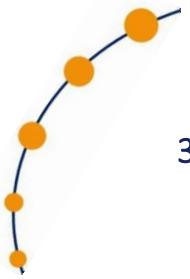


Economic framework conditions:

During the relevant time frame, Spain was severely affected by the economic crisis in 2009. From 2008 to 2011 labour regulations were changed, giving companies opportunity to reduce workers compensations for terminations of employment. 2009 marked the first year of recession after 15 years of above-average economic growth. In 2011, Spain was officially “bank-rescued” and obliged to reduce its public deficit, affecting public services such as education, health, and social services. In the same year further labour regulations were put in place, clearing obstacles to “cheap layoffs”, which in turn created a larger unemployment rate, with half of all young people being without work. Spain had to take on more debt in 2012 and saw more companies expanding abroad, which further negatively influenced the national economy and the labour market. In 2013, the economic growth rate increased slightly, yet the unemployment rate stayed around 25%.

Social framework conditions:

Combining the fact that 50% of those under 25 years of age were unemployed in 2011 with the lack of international compatibility of Spanish university degree structure and the general consensus that Spain is a “reluctant outgoing” country, it appears that the social framework for youth mobility is not ideal in Spain, although in 2011 youth emigration significantly increased as it was the best option to find a job linked to their background and experience. Incoming mobility originates mostly from Latin American and Eastern European countries.



3. Development of European youth mobility within the period of 2004-2013 in the six partner countries compared to the average of EU-28/EFTA countries (Karen Hemming and Frank Tillmann)

In the current chapter descriptive results of youth mobility indicators over the period of 2004-2013 are presented for the six partner countries in comparison to all EU-28/EFTA countries. The development of these mobility indicators is analysed descriptively and illustrated with figures. The data beyond the figures are reported in the annex (Tab.A.2 and A.3). Data for the mobility indicators derived from two sources:

- 1) Aggregated incoming and outgoing youth mobility indicators from the European Labour Force Survey (EU-LFS; for further information see chapter 1.2)
- 2) Incoming and outgoing student mobility indicators from Eurostat

The descriptive results will be interpreted taking into account the framework conditions of the partner countries and the EU, reported in chapter 2.

3.1 Short-term incoming youth mobility

Short-term incoming mobility refers to the youth who live in the respective partner country for up to three years but do not hold citizenship of that country. They moved from EU-28/EFTA countries to the respective partner country and are therewith classified as “incoming youth”. The reasons for moving were not captured in the EU-LFS.¹⁵ The short-term incoming youth mobility indicator is illustrated in Fig.3.1. As the reported period of stay in the respective country is limited up to three years, conclusions referring to current social and economic developments on national level can be drawn.

The general trend of incoming youth mobility within Europe was increasing until 2008 (2004 9,2/1.000 to 2013 14,4/1.000). One of the reasons might be the EU enlargement in 2004, which was the largest single expansion of the European Union in terms of territory, number of states, and population given the rights of free movement within the EU also to youth from Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, and Slovenia. Another reason could be the Bologna reform and the implementation of EU-mobility programmes (e.g. Sokrates) fostering a lot of learning mobilities. From 2008 onwards, the mean incoming mobility ratio remained stable with a slightly decreasing trend until 2013 (12,9/1.000). This trend could be ascribed to the economic crisis, which affected all EU/EFTA countries on different levels.

Luxembourg is the smallest of the partner countries. Taking its multilingual and multicultural characteristics into consideration, the high ratio of incoming youth is not surprising. For short-term incoming youth mobility Luxembourg reveals the highest levels among the sampled EU-28/EFTA countries with approximately 10% (sevenfold of the mean ratio). But the data has to be treated cautiously due

¹⁵ Applied variables of the EU-LFS were: 1) Years of residence in this country, and 2) Nationality. The reference group for the aggregation consisted of all respondents aged 15-29 with EU/EFTA-citizenship living in the respective partner country at the moment of data observation. For confidentiality reasons the citizenship of the respondents was not published in the available EU-LFS data sets. Hence the results could not be differentiated by the country of origin but only by citizenship of EU/EFTA-countries. Data for Luxembourg is available only for 2011-2013 (with limited reliability threshold), for Romania only for 2006-2007, Norway has data for 2004-2013 but with limited reliability threshold.

to limited reliability threshold (see Tab.A.1). Besides a comparison of the Luxembourgish incoming ratio with the Luxembourgish migration data from the national statistical office revealed an overestimation of the data (see chapter 7.3). However, even the lower ratios of the registration offices were much higher compared to Germany and Norway. Reasons for this high incoming ratio can be seen in different framework conditions: a) new eastern EU-members in 2004 caused a rising number of incoming young people, b) crisis in Portugal (and Spain) influenced the rising number, c) Luxembourg has a high incoming student mobility in general and fosters incoming mobility further through the implementation of new study programmes for master and/or doctoral degrees, and d) more young people followed the “older” waves of migration, e.g. from Portugal to try finding a job.

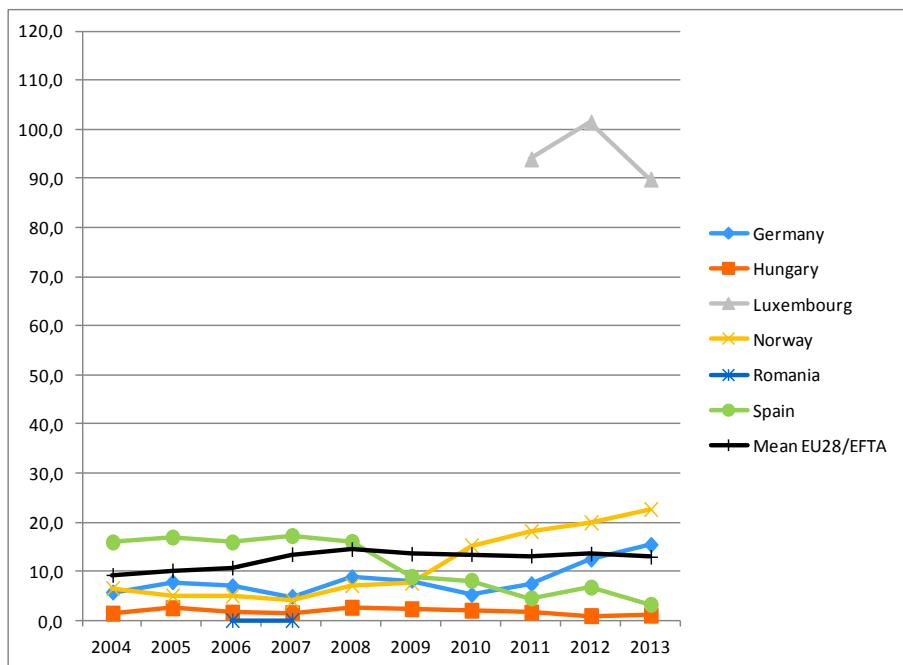


Fig.3.1: Short-term Incoming youth mobility from EU-28/EFTA countries to the six partner countries and EU-28/EFTA countries (up to 3 years; ratio per 1.000; reliability threshold: limited reliability for LU 2011-2013, NO 2004-2013; source EU-LFS; for data see Tab.A.2)

Germany as the largest country in the EU also has the strongest economy and survived the economic crisis with only minor damages. Moreover, Germany benefitted from the economic and financial crisis in the southern European countries through an enormous rise of incoming youth-mobility from 2010 onwards (from 5,4/1.000 to 15,4/1.000), reaching a ratio above the EU-28/EFTA-average in 2013. The country case study of Germany, Norway and Luxembourg in chapter 7.3 revealed an underestimation of the incoming indicator for Germany compared to the German registration data. So the actual incoming youth mobility might still be higher. The most relevant pull-factors could be the strong economy, good job perspectives, and a low youth-unemployment rate combined with the worldwide highly valued German dual system of vocational training, which was further improved for youth with migration background with the implementation of the three “Training Pacts” (2007-2010). Hence Germany seems to be an attractive “receiving country” for young Europeans.

Romania is one of the youngest member states of the EU. It therewith does not count as a typical receiving country and almost no short-term incoming youth mobility was captured. As data is only available for 2006 and 2007 no developments can be reported. Thus, the effects of the economic crisis followed by the EU admission could not be displayed with the results.



Hungary, as a relatively new country within the EU, is not a typical “receiving country” either, which is confirmed by the comparably low rate of incoming youth mobility. The ratio remained more or less stable over the observed period with an average of 1,7/1.000 (0,2%) and a slightly declining tendency since 2008, despite an increasing economic growth rate since 2009. The main obstacles for youth mobility to Hungary are: 1) the lack of support for people who move to areas outside the capital, 2) ongoing poverty especially among the young people, 3) high unemployment rate, and 4) the high level of social inequality.

Norway is not a member of the EU. Nonetheless it is an attractive receiving country for youth from other European states which is reflected in the comparably high and rising incoming ratio. The rising tendency is still ongoing (from 4,0/1.000 in 2007 to 22,6/1.000 in 2013); the Norwegian ratio outstripped the EU-28/EFTA mean in 2010. The data has to be interpreted cautiously because of limited reliability threshold (Tab.A.1). However, when looking at the migration data which was used for the country case study of Germany, Norway and Luxembourg in chapter 7.3, the incoming youth mobility based on registration information is declining slightly since 2012. Nonetheless, the overall trend between 2004 and 2013 is still rising. The comparison in chapter 7.3 also revealed that the EU-LFS incoming indicator for Norway is underestimated. The development is fostered by a growing economy and a decreasing youth unemployment rate, and also by a well-developed system of social security in Norway. Norway also profited from the economic crisis in the southern European countries. Not being part of the EU, Norway supported youth mobility independently with a national programme for internationalisation of education since 2003.

Spain was significantly affected by the economic crisis since 2008; the negative effects reached not only the Spanish economy and its labour market, but also the ratios of incoming youth mobility. The negative effects of the financial and economic crisis and the high youth unemployment rate (50%) are reflected by the strongly declining number of incoming youth from other European countries from 2008 onwards. The ratio fell rapidly from 17,2/1.000 in 2007 to 3,2/1.000 in 2013, falling behind the EU-28/EFTA mean since 2009. This result is also reflected in the cluster analysis (5.3.2), where Spain changed from being a centre-receiving country to a periphery-sending country after the economic crisis.

3.2 Long-term incoming youth mobility

In a second step only long-term incoming youth mobility from EU-28/EFTA countries were analysed, including those living in the respective country for more than three years but not holding citizenship.

¹⁶ The results are illustrated in Fig.3.2.

Long-term incoming youth mobility can be divided into two main groups: 1) Youth who accompanied their parents/family to the respective partner country some years ago and still live there, but do not hold citizenship of the country yet. This group is not targeted by the MOVE-project but has to be considered to be part of the long-term incoming sample as well. 2) Youth who decided to move to one of the partner countries on their own and still live there without holding citizenship. These movements are of interest for MOVE, because in these cases short-term mobility became long-term mobility. These developments could be fostered and/or determined by national framework conditions. Thus,

¹⁶ For more information on the data source see footnote 3.

the following interpretations only focus on the second group taking into account that a differentiation of both groups regarding the available data was not possible.

Compared to short-term incoming rates, one can see the effects of current national, economic, and social developments in this analysis with a certain delay. Hence, the decline of the long-term incoming rate in Spain started in 2011. The strong rise of long-term incoming mobility to Norway also started in 2011. As for Luxembourg (data only available for 2011-2013), being a typical and attractive “receiving country”, a rising tendency was observed from 2011 onwards. The results for Germany reveal a rising tendency of long-term incoming youth-mobility until 2010. From 2011 onwards, the ratio declined slightly. For Hungary there is a peak of long-term European youth-immigration in 2011 followed by a decline in 2012 and 2013. In Romania minor youth-immigration can only be stated since 2011 (0,1/1.000). The observed delay in comparison to trends of short-term incoming mobility could also be interpreted as a consequence of an advanced state of establishment in the hosting country which possibly leads to a later revision of residential decisions.

Overall, a general trend of rising “long-term” incoming youth-mobility is seen in most of the partner countries (except Romania and Hungary), and also in the mean ratio of all sampled European countries. So the conditions for “staying” in the respective target country seem to be more and more suitable for young people. On the individual level, often combined mobilities in a specific target country lead to a more permanent stay there. Hence, a further interesting question for analysing long-term mobility would be the point from which on youth mobility turns into long-term mobility/migration, and what could be the relevant driving factors.

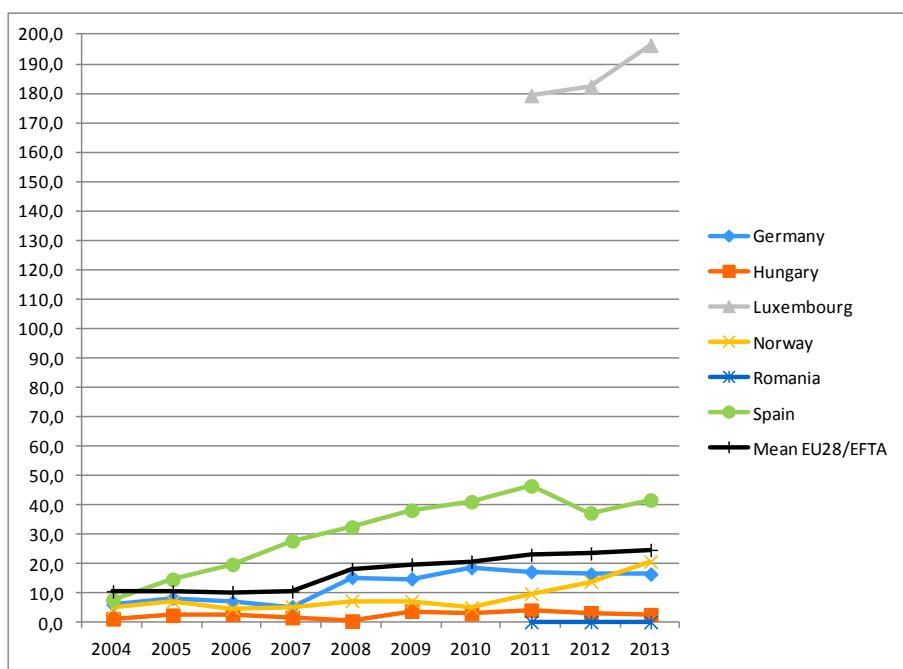


Fig.3.2: Long-term Incoming youth mobility from EU-28/EFTA countries to the six partner countries and EU-28/EFTA countries (more than 3 years; ratio per 1.000; reliability threshold: limited reliability for LU 2011-2013, NO 2004-2013; source EU-LFS, for data see Tab.A.2)

However, a reason for an increasing number of long-term youth mobility could be also seen in the decreasing number of youth in the countries, because a declining number of youth could also lead to a rising ratio of incoming mobility (without an actual rising number in incoming mobile youth). In Spain, Romania, and Hungary the total number of youth has a strongly decreasing tendency (2005-

2013: Spain 9million to 7,5million; Romania 5,2million to 3,7million; Hungary 2,2million to 1,8million). In Germany only a slightly decreasing trend was found between 2005 and 2013 (2005 14,4million to 2013 14,0million). Whereas Luxembourg and Norway showed increasing numbers of youth (2006-2013: Luxembourg 82.000 to 105.000; Norway 0,8million to 1,0million). The overall trend of youth in the European countries is also decreasing in the observed period of 2005-2013.

3.3 Incoming students' mobility

Incoming students' mobility was captured by Eurostat individually for each partner-country as total number of incoming students from people holding the citizenship of EU-28, EFTA or candidate countries (Fig.3.4).¹⁷ For a better understanding and interpretation of this indicator, a ratio was calculated: total number of incoming students compared to the total number of students in the respective country (Fig.3.3). As the information is based generally on students holding the citizenship of another European country the numbers and ratios might be overrated (see chapter 7.2). When looking at students' mobility, one has to take into consideration that EU-mobility programmes also foster mobility in times of economic crisis. Thus, programme-mobility within the EU should not be directly affected by the economic crisis and other labour market conditions.

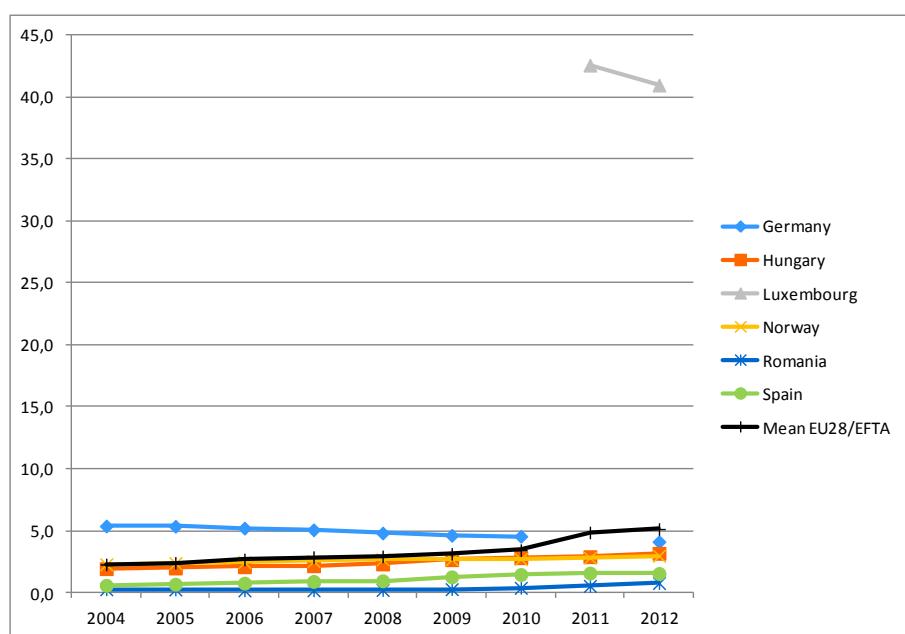


Fig.3.3: Incoming students' mobility inflow (ISCED 5-6) from citizens of EU-28, EFTA, and candidate countries (ratio of incoming students/total students*100; source Eurostat, for data see Tab.A.2)

The ratio of mobile students increased during the observed period in most European countries, which can be seen in the total numbers as well as in the ratios for the partner countries and the mean ratio for all EU-28/EFTA countries. However, except Germany and Luxembourg, the partner countries stayed below the European average. The overall rising trend illustrates the positive effects of the Bologna reform which has been implemented in 47 European countries since 1999 and is still ongoing. Beside the Bologna reform, students' mobility is rising because of the increasing general internationalisation (built up of international cooperation etc.) of universities in Europe as well as their

¹⁷ For more information:

<http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tps00064>;
http://ec.europa.eu/eurostat/cache/metadata/EN/educ_mo_esms.htm

enhanced international cooperation with business (Allinson et al. 2015). Therewith combined is the fact that more and more universities are offering English and/or international Master programmes as well as English courses.

The ratio of incoming students' mobility in Luxembourg is 10 times higher than in the other partner countries, with students most likely to be from Germany, Belgium, France, or Portugal¹⁸ (for detailed analyses on student mobility into Luxembourg see chapter 7.2). Student mobility in Luxembourg is also fostered through the successive implementation of Master programmes in English at the University of Luxembourg, which is the only university of the country. The high ratio is indicative once more of the typical multicultural and multilingual characteristic of the country. The teaching languages at the University of Luxembourg are German, French and English (depending on the study programme), which makes it especially attractive for youth speaking those languages; thus, for youth from neighbouring countries.

Germany is the only country with a decreasing trend in the ratio of students' mobility. However, the total number of incoming students has been rising again since 2008, reflecting the positive effects of the Bologna process which was implemented in Germany with a slight delay. The delay could be the reason for the declining total numbers of students from other European countries between 2004 and 2008. Taking into consideration the steadily rising number of students in Germany in general due to the educational expansion, the decreasing trend of incoming student mobility has to be put into perspective, at least from 2008 onwards. Being an attractive country with high educational standards, Germany has the second highest ratio of incoming students following Luxembourg. The ratio was also above the European average until 2010, though it has dropped slightly below the average since then.

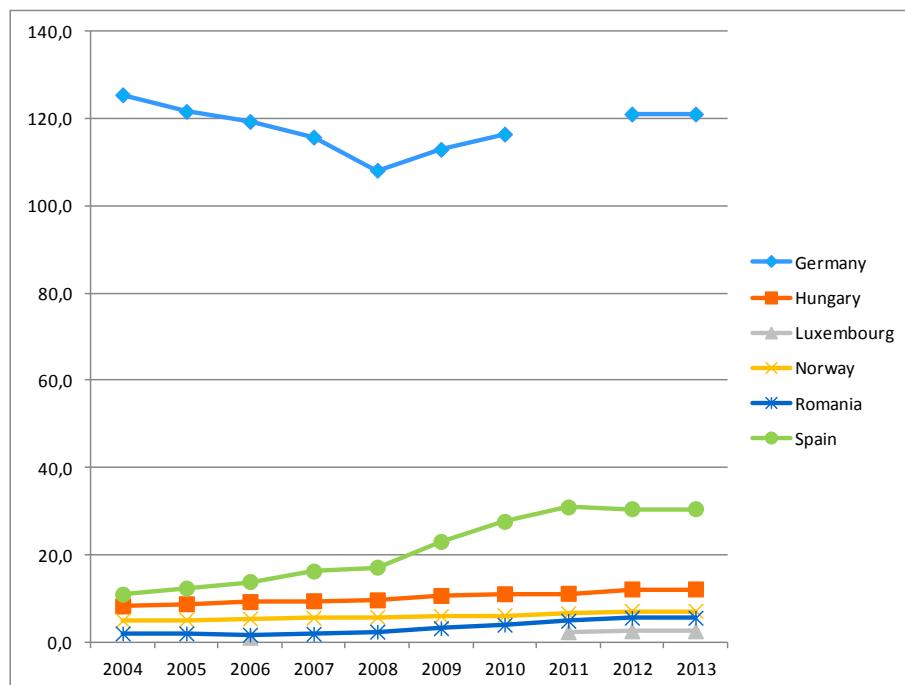
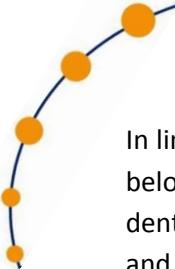


Fig.3.4: Incoming mobility of students to the six partner countries: inflow of students (ISCED 5-6) from citizens of EU-28, EFTA, and candidate countries (total number of students in thousands; source Eurostat; for data see Tab.A.2)

¹⁸ International students from Portugal in Luxembourg are mostly educational residents, who obtained the school-leaving certificate in Luxembourg but do not hold Luxemburgish citizenship (see chapter 7.2).



In line with the general incoming mobility, the incoming student mobility ratio in Romania is also far below the European average, but with an increasing trend almost reaching the Spanish incoming students' ratio in 2012. The increasing trend started in 2008 directly after the Romanian EU admission and is visible in the total numbers of incoming students as well as in the ratio. Having comparably low costs of living, Romania can also be seen as an attractive target country for European students.

A similar development to Romania is visible in Hungary: a steadily rising ratio of incoming students from 2004 – the year of its EU-admission – onwards. The development of the currency could also be a pull factor for students when choosing the target country for their studies. Thus, Hungary with its low currency value seems to be an attractive target country. The ratio of incoming students is comparable to the one of Norway.

Additionally to the implementation of the Bologna reform, Norway is fostering student mobility with a national programme for the internationalisation of education since 2003. The Bologna process and the quality reform serve together as an explanation for the rising tendency of incoming students' mobility in Norway. However, the Norwegian ratio of incoming students is growing more slowly than the European average ratio.

Despite Spain being a rather attractive country in terms of language, culture, and countryside, the ratio of incoming students seems to be comparably low, only slightly above the ratio of Romania. One of the reasons could be the different Bachelor/Master system having a four-year Bachelor and a one-year Master which might cause difficulties for exchange students. However, the ratio steadily increased from 2004-2012, which can specifically be seen in the total numbers from 2008 onwards. Taking into consideration the fact that EU-programmes also foster mobility in times of economic crisis the bad economic situation in Spain was not an obstacle for receiving foreign students.

3.4 Finished outgoing/returning youth mobility

The term "Finished outgoing/returning mobility" applies to youth who have been abroad exactly one year before the survey. Thus, the indicator covers only "finished" mobilities as the surveyed young people had to be returned to their home country for answering the questionnaire for the EU-LFS. So the information given by the provided indicator is limited. Important mobility related topics like the "brain drain-issue" and work-mobility because of unemployment or poverty cannot be enlightened by the used data corpus. Also, the relationship between economic, social, or political framework conditions and these finished mobilities is doubtful.¹⁹ The ratios of outgoing youth from the six partner countries and the EU-28/EFTA-mean are illustrated in Fig.3.5.

The figure shows low ratios for all partner countries and the European average. But considering the characteristic of the indicator to include only finished mobilities, the ratios seem to be realistic. Given the small numbers, continuity within the data for the individual countries is missing. However, the

¹⁹ The data lying beyond this indicator derives from aggregated micro-data of the yearly data-sets of the EU-LFS (see chapter 1.2). The applied variable of the EU-LFS was: "Country of residence one year before survey". The reference group for the aggregation was: all people aged 15-29, holding the national citizenship and currently living in the respective partner country. For Norway the variable "country of residence one year before survey" was only available for 2004 and 2005. The results for Germany 2006, Hungary 2011, Luxembourg 2004-2010, and Norway 2004 cannot be published due to confidentiality reasons. Also, because of confidentiality reasons the finished outgoing mobility could only be analysed in general (no differentiation by work and or/education reasons was possible).

results also reveal some tendencies, and the European average appears stable with 2,2/1.000 (0,22%). The ratios of all partner countries are below the European average, with the exception of Luxembourg.

Although the observed time frame for Luxembourg is small (2011-2013) a comparably high outgoing/returning mobility ratio is visible, again reflecting the characteristics of the country, especially: 1) the common multilingualism (most of the Luxembourgish people speak Luxembourgish, French, German and English), 2) the obligatory stay abroad when studying at Luxembourg University, 3) the small size of the country, and 4) the multinational composition of the resident population.

The German outgoing/returning youth mobility ratio is slightly increasing, reaching the European average in 2011 and 2012. The good economic and labour market situation in Germany seems to provide a secure base for gaining short-term mobility experiences in other European countries.

Compared to the partner countries Romania shows a relatively high ratio of outgoing/returning youth mobility – yet it still remains below the European average. The Romanian curve has its peak from 2008 to 2010, directly following EU-admission. Romania as an eastern European country is a typical “sending-country”, wherefrom a lot of young people move to western and southern EU-countries, especially to Spain.

Hungary is a member of the EU since 2004. Thus, Hungary shows a slowly but steadily rising ratio of outgoing/returning youth mobility for the observed period of time. However, compared to other partner countries the ratio is low and remains below the European average. Just as Romania, Hungary can be characterised as a “sending-country”.

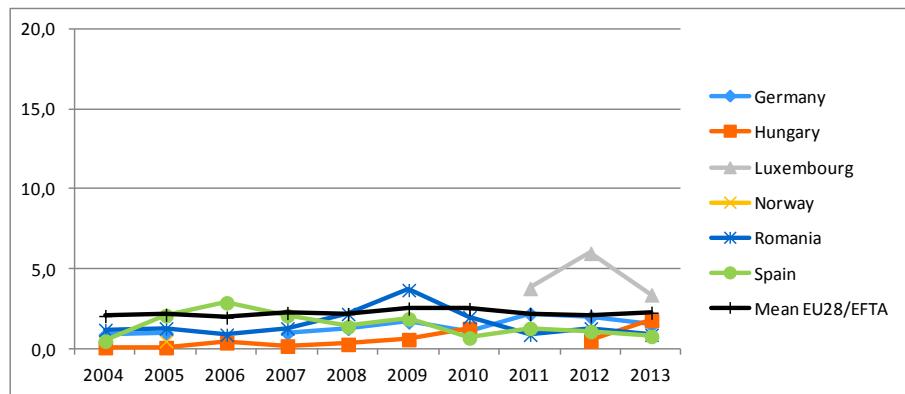
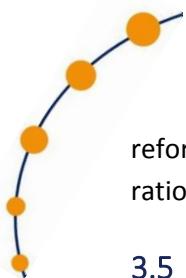


Fig.3.5: Finished outgoing/returning youth mobility from the six partner countries to EU-28/EFTA countries, one year before survey (ratio per 1.000; reliability threshold: limited reliability for LU 2011-2013, NO 2004-2013; source EU-LFS; for data see Tab.A.3)

Spain revealed an increasing outgoing/returning youth mobility ratio until 2006, reaching a level above the European average. Yet a decreasing trend can be stated from 2007 until the last captured year 2013. Mobile people need a financial basis and a secure background, both of which can be negatively affected by the economic crisis and thus lead to decreasing outgoing mobility rates and reduced funding for students. Again, it has to be stressed that no long-term emigration movements were captured with this indicator. As one can assume, these long-term movements would have increased, pushed by the economic crisis and the high youth unemployment rate in Spain.

For Norway, data on outgoing/returning youth mobility is only available for 2004 and 2005. In both years the outgoing ratio was comparably low (0,4/1.000). One would assume that with the quality



reform of higher education in 2003 and the general fostering of internationalisation in education, the ratio would have risen higher.

3.5 Outgoing students' mobility

The indicator "outgoing students' mobility" captures all students leaving for other EU-28, EFTA and candidate countries. It is presented as the number of outgoing students (Fig.3.8), as net balance (Fig.3.7)²⁰ and as ratio of total students (Fig.3.6). The data for the indicators derives from Eurostat.²¹ As it is based on the same information as the incoming students the numbers and ratios might be overrated (see chapter 3.3 and 7.2).

The outgoing student mobility has, like the incoming student mobility, a rising tendency, which can be seen in both the ratios and the total numbers. Reasons for the rising trends are the same as for the incoming students' mobility: the implementation of the Bologna Reform in all European countries and the general increase of internationalisation at European universities. Additionally, the EU east enlargements could be a fostering reason for the rising trend.

The ratio of outgoing students for Luxembourg climbed above 100 from 2011 to 2012, illustrating the fact that more students from Luxembourg study abroad than in their home country. This could be due to: 1) the long tradition for Luxemburgish youth to study abroad, 2) the obligatory stay abroad when studying at the undergraduate level at the University of Luxembourg, and 3) the situation of having only one university in Luxembourg, which does not cover all study areas and programmes (for detailed analyses on outgoing students from Luxembourg see chapter 7.2). However, the total numbers of outgoing students remained relatively stable over time, whereas the net balance showed a slight increasing trend, reflecting the rising number of outgoing students compared to number of incoming students.

²⁰ When contrasting the total numbers of outgoing students with the total number of incoming-students the net balances of mobility flows can be illustrated (Fig.3.7). They were calculated as incoming minus outgoing number. Hence, if the net balance is positive, the country is a "receiving country". If the net balance is negative, the respective country is a "sending country" – only related to students' mobility.

²¹ For more information:

<http://ec.europa.eu/eurostat/tgm/table.do?tab=table&plugin=1&language=en&pcode=tps00064>;
http://ec.europa.eu/eurostat/cache/metadata/EN/educ_mo_esms.htm

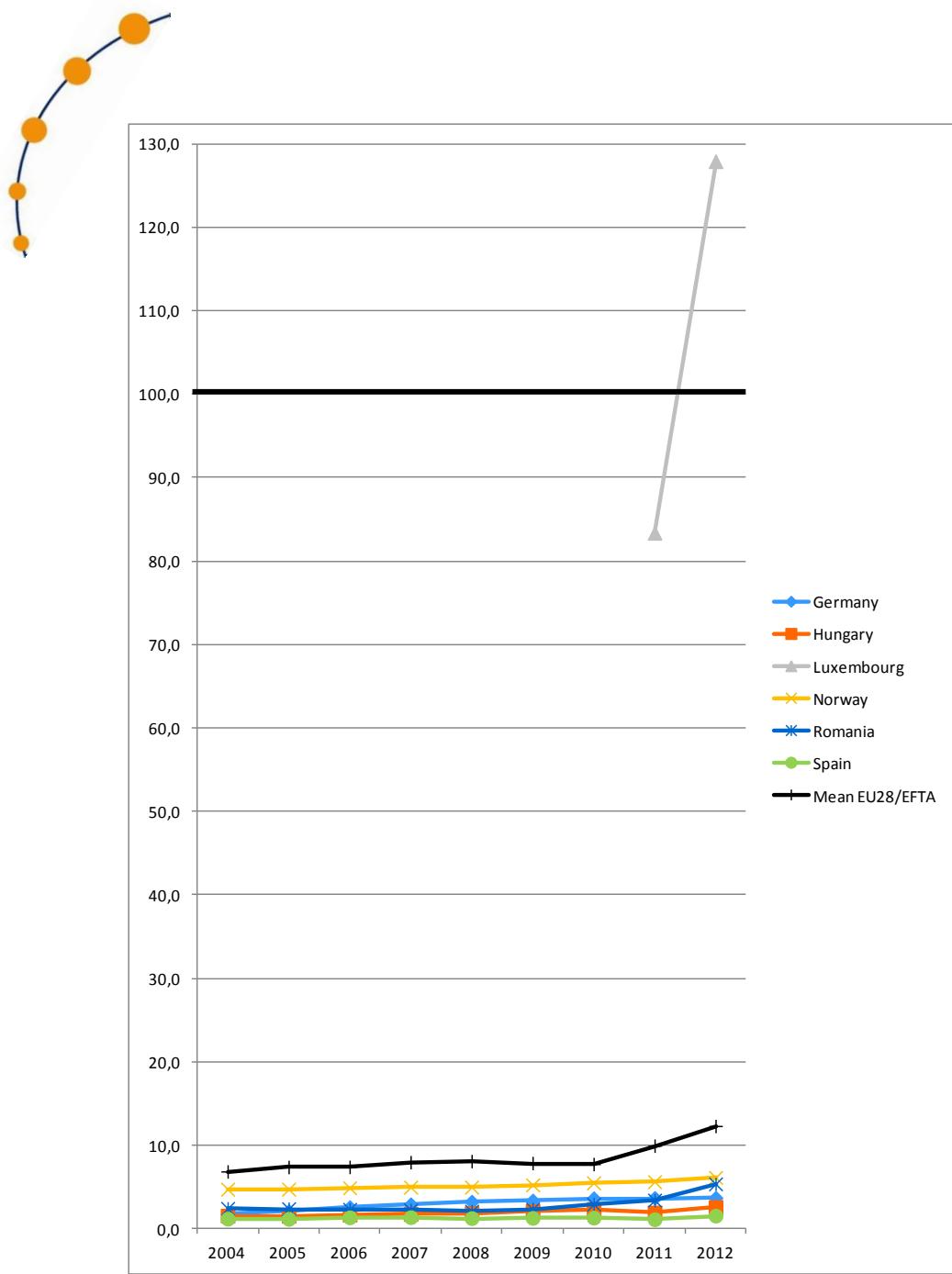


Fig.3.6: Outgoing students' mobility outflow (ISCED 5-6) to EU-28, EFTA, and candidate countries (ratio of outgoing students/total students*100; source Eurostat; for data see Tab.A.3)

The strongest rise in total numbers was found for Germany (40.800 in 2004 to 107.200 in 2012) where student mobility is common and fostered by different programmes and advising institutions. Furthermore, the implementation of the Bologna Reform in Germany finally made the degrees, achievements, and courses comparable within the EU, although with a slight delay. With the former German "Diploma" and "Magister" studies the comparison and approval of achievements used to be very difficult. However, the ratio reveals only a slight increasing tendency, which could be explained by the enormous rise in the total number of students in Germany in general, fostered by educational expansion in the last decades. Regarding the net-balance, Germany changed from a receiving country to a more neutral/balanced country within the period of 2004-2012. However, besides having a rising number of outgoing students it still has more incoming students.

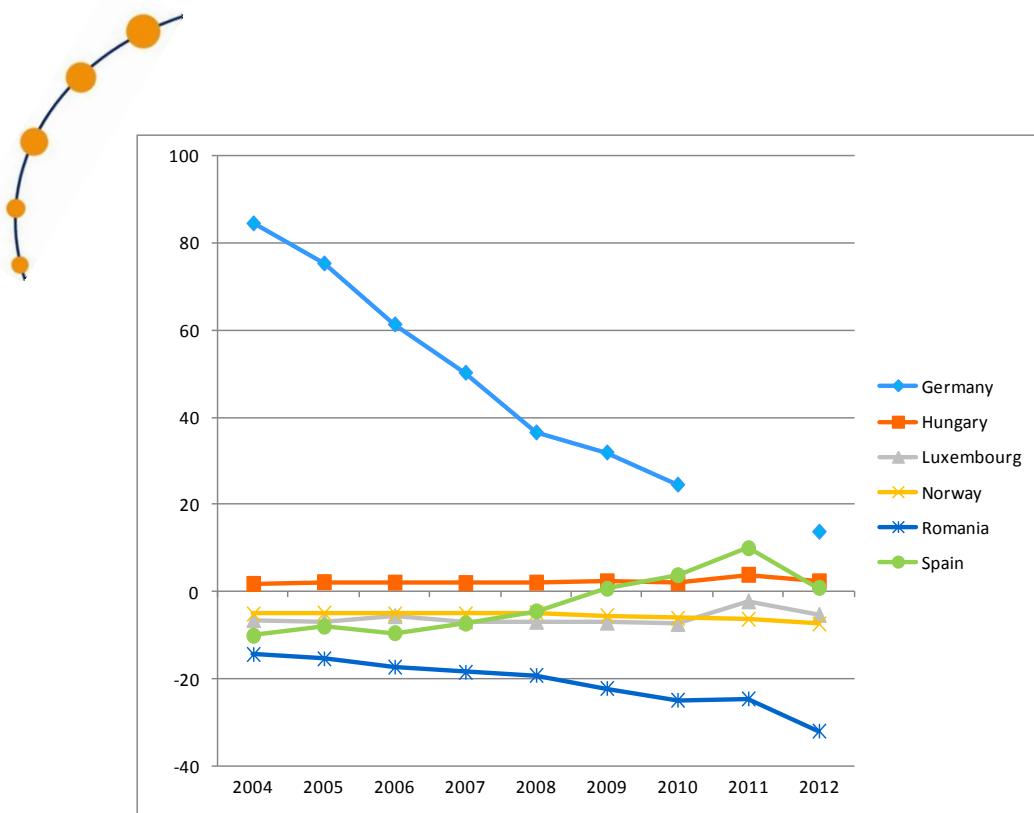


Fig.3.7: Net balance of Incoming/Outgoing mobile students in the partner countries (calculation out of total incoming students and total outgoing students; source Eurostat; for data see Tab.A.3)

Romania has a strong rising tendency in outgoing students' mobility to other European countries. With the admission to the EU in 2007 outgoing mobility of Romanian students rose and therewith the net balance declined strongly within the observed period. Regarding students' mobility Romania is the strongest "sending country" among the partner countries reflecting a current trend of moving abroad when studying. This development was possibly fostered by the introduction of Erasmus programmes after the EU admission. However, the ratio remained still far below the European average.

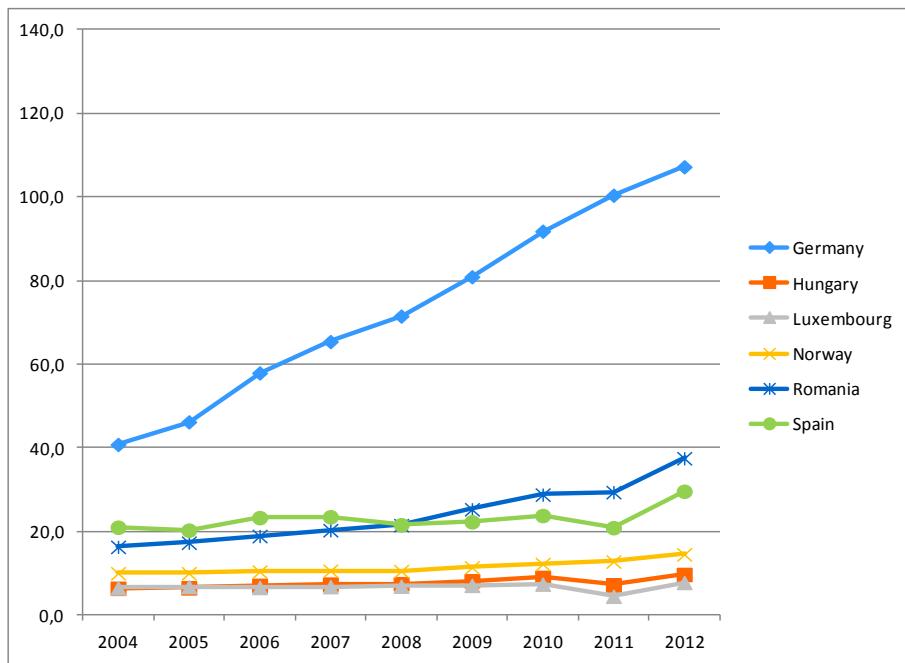
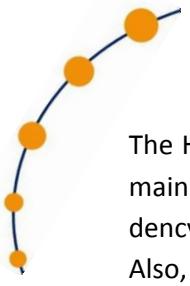


Fig.3.8: Outgoing students' mobility outflow (ISCED 5-6) to studying in another EU-28, EFTA, or candidate country (total number of students in thousands; source Eurostat; for data see Tab.A.3)



The Hungarian development of the ratio of outgoing students is comparable to that of Romania, remaining below the European average over time but having a slightly, yet steadily increasing tendency. The total number of outgoing students appears relatively stable during the observed period. Also, the net-balance remained stable, reflecting the fact that the incoming students' mobility also had a slightly increasing tendency. Since the increasing trend is steady since 2004 it seems to be pushed by both the EU admission and the Bologna reform.

Compared to the partner countries (except Luxembourg) the outgoing students' ratio in Norway is higher with an ongoing, slowly rising tendency. The rising trend is also illustrated in the total numbers. Thus, the negative net-balance is slightly decreasing; hence Norway appears to be a sending country regarding students' mobility, in line with Luxembourg and Romania.

In Spain one can see a stagnation of the total number of outgoing students within the years of the economic crisis (2008-2011). In 2012 however, a rise of outgoing student mobility can be seen again. This rise in 2012 is also reflected in the ratio, which remained stable beforehand. Spain developed from a more sending country to a more receiving country within the observed period of 2004-2012 (small trend). The development within the Spanish students' mobility could be explained with the eastern EU-enlargements and the attractiveness of Spain in terms of language and cultural reasons for European students. Also, due to the economic crisis, national education grants were reduced since 2009, which is reflected in the decreasing outgoing trend.

3.6 Summary and conclusions

Although the given numbers refer to different sources and types of mobility, an overall rising tendency of youth mobility within Europe during the reported period of 2004 to 2013 is visible, fostered by the EU-enlargements, the Bologna reform, and a growing internationalisation in different areas. In addition, country specific developments especially for Luxembourg were captured. The negative effects of the economic crisis were also reflected upon. Considering the fact that student mobility might mainly merge in short-term mobility, one can assume that beside tertiary education purposes youth mobility today is much driven by threatening economic conditions within the sending countries.

Regarding the development of outgoing mobility especially students seem to benefit from new opportunities of foreign academic learning experiences in the recent years.

Thus the results reveal the ambivalent character of youth mobility. On the one hand, young people gain rich experiences with their abroad mobilities, and can use them for a successful entrance into their home country's labour market. On the other hand, sending countries in particular are faced with risks of losing their young qualified people because of "brain drain". This indicates a discrepancy of interests between young people willing to move abroad and national states.

As the results are only descriptive the drawn relations to the framework conditions could only be hypothetical. However, some developments as the economic crisis and the implementation of the Bologna reform could be clearly seen in the data. The upcoming analyses of the causes and effects of youth mobility in Europe will shed more light into the discussed connections.

The data basis for the analyses has to be discussed critically. The data-set was compiled out of available European secondary macro data. Publicly available secondary data are accompanied by numer-



ous disadvantages. The mobility information captured with the presented data-set is limited. For incoming mobility only ongoing mobility is included without knowing the country of origin and the reason for being mobile. Regarding the outgoing youth mobility, only finished mobility experiences that took place exactly one year before the survey were included. As the numbers for the outgoing mobility were too small, a differentiation regarding the mobility reasons was not possible.



4. Theoretical perspective and background models: (Youth) mobility in relation to national, social and economic macro-indicators

In this chapter the theoretical perspective of (youth) mobility in relation to national, social and economic macro-indicators will be described and discussed. Therefore, a heuristic macro-model for explaining causes and effects of youth mobility was developed and will be presented in chapter 4.1, accompanied by the most important relevant theoretical approaches included in the model. In chapter 4.2 a broader overview of the used theoretical macro-economic perspectives will be given, including the (neo-)classical economics approach of push- and pull factors, the Principal-Agent Model and economic mathematic modelling in chapter 4.2.1 as well as an introduction into the institutionalism model of social analysis in chapter 4.2.2. Subsequently, a summary of the current state of the art regarding causes and effects of youth mobility is given in chapter 4.3. In chapter 4.4 deduced and specified theoretical background models²² explaining causes and effects of different kinds of youth mobility will be presented accompanied by respective hypotheses.

4.1 Heuristic causal mobility model based on macro-indicators (Frank Tillmann, Jan Skrobanek and Karen Hemming)

In accordance with neo-classical economics mobility evolves on the macro level as aggregated behaviour of economically rational agents who follow rational expectations of maximising personal utility (Friedman 1957) by pursuing mobility. On the one hand, EU member states function like communicating systems in terms of labour and education markets. Thus, based on neoclassical migration theory, youth mobility should be regarded as a form of “optimal allocation of production factors”, which serves both, the interests of sending and the receiving countries. Todaro (1969) examines the issue from the perspective of „balanced growth” and considers mobility as a kind of migration that is a prerequisite for economic growth. Investigating mobility-related decisions, neoclassical economic schools – based on the marginal productivity concept – come to the conclusion that the supply of resources shows a significant difference in each country; and mobile resources are transferred to places where they can be used in a more profitable way (without state intervention; Boyer and Smith 2001). Nevertheless, national labour markets have to be regarded as non-walrasian systems (Ribhagge 1987), whereas supply and demand of labour cannot be balanced out in an endogenous equilibrium and the coordinative performance of labour markets is fairly limited (Hall 1998). This assumption matters when youth mobility is interpreted as also resulting from an exit option of inappropriately balanced national labour markets.

As there is a lack of a comprehensive models of migration, taking all reasons and consequences into consideration (Hárs 2009), a heuristic causal mobility model (Fig.4.1) was developed at the beginning of work package 2. On the one hand, the model provides a set of potentially relevant macro-indicators which were taken into account for the compilation of the MOVE-SUF (Hemming, Tillmann, and Dettmer 2016). On the other hand, the heuristic model serves as a basis for the development of background models explaining causes and effects of youth mobility which will be statistically tested using econometric modelling. It therefore structures the potential predictors into three different levels: the level of sectors, a second level that covers a set of dimensions, and the level of relevant indi-

²² Economic modelling can be defined as “an academic research work that is supported by the use of different theories as well as quantitative or qualitative models and techniques, to analytically evaluate the causes and effects of any economic phenomenon that affect on society, anywhere and anytime.” (Ruiz Estrada 2011)

cators. This structure was applied by taking into consideration macro-economic, institutional, social, and educational variables as potential push- and pull-factors for European youth mobility.

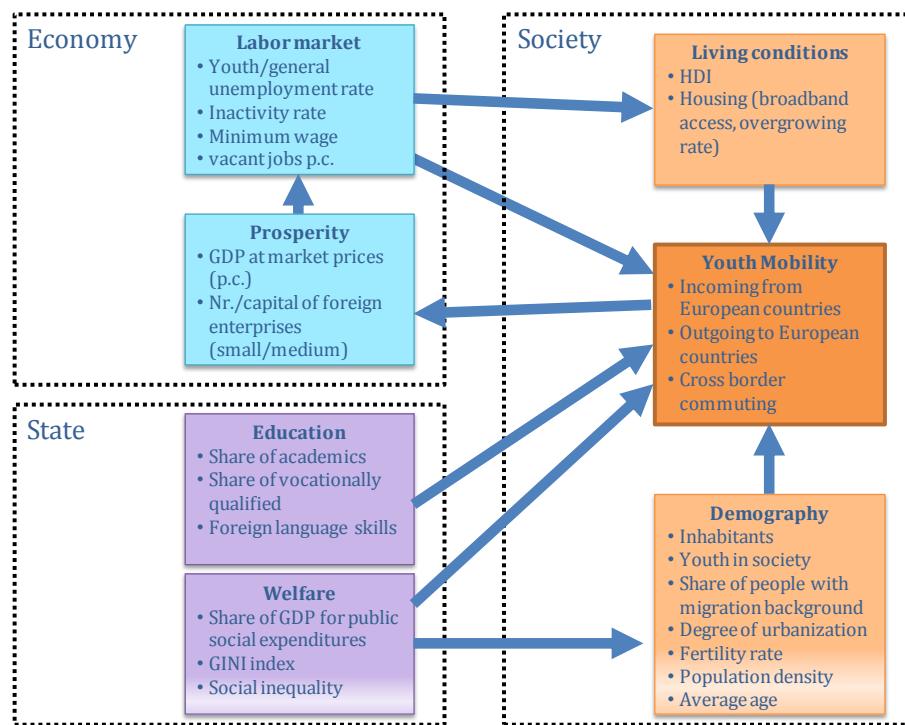


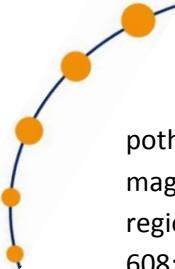
Fig.4.1: Heuristic causal model on youth mobility in Europe

The heuristic model was developed on the basis of a neo-classical macro-economic approach (chapter 4.2). However, other approaches have also been considered, deriving from a range of developed theories on migration over the last decades (Massey et al. 1993). These theories mainly differ regarding their focus on either macro-, meso- or micro-factors explaining migration and/or mobility. The following paragraphs give an overview about the applied approaches:

According to Lee (1966, 49) "migration is defined broadly as a permanent or semi permanent change of residence." In his classical work on push and pull factors of migration Lee discusses a range of factors explaining migration (ibid.). One of the key assumptions is that people are pushed from a certain area while being pulled to another, based on the specific characteristics of each. Without any assumptions regarding meso- or micro-conditions, Lee supposes that the interplay of push/pull factors are sufficient for explaining migration/mobility, although he acknowledges that 'personal factors' also play a role in the migration/mobility process.

One of the best-known and investigated push/pull factors to explain migration are "geographic differences in the supply and demand of labour" (Massey et al. 1993). At the core of the theory lies the assumption that differentials in wages cause workers from low-wage countries to move to high-wage countries. Over the time, the range of push/pull factors has expanded (Todaro 1980). In his "Todaro Migration Model" – initially developed for internal migration – he extends the focus on wage differentials by other macro-factors that influence migration/mobility. He especially points to general characteristics of the economic, social as well as political system (Todaro 1980).

Based on these kinds of general macro-theoretical thoughts and conceptions, a number of specific hypotheses have been developed over time, amongst others the "welfare magnet" hypotheses (Borjas 1999), the "global education" hypotheses (Haas 2011), the "demography differential" hy-



potheses (Muenz 2013), and the “gravity model” (Amirault, Munnik, and Miller 2013). The “welfare magnet” hypotheses assume that differences in the access to quality and amount of welfare between regions (local, regional, national, and supranational) are a central cause for migration (Borjas 1999, 608; Giulietti and Wahba 2012, 8-9). Hence, immigrants are more attracted to regions with generous welfare systems; thus migrant flows are more likely toward regions with higher odds of welfare participation. Although empirical evidence is rather mixed (Giulietti and Wahba 2012), this assumption has become quite popular among the public, political, and scientific debate over the last decade.

The “global education hypotheses” focus on the role of macro differentials in the global education market as determinants of migration (Haas 2011). Access to education as a key possibility for increasing human capital is seen (beside other factors) as a structural driver of migration processes (ibid. 32), both for receiving and sending countries. In this view, the major factor of migration/mobility is the unequal distribution of opportunities for improving/acquiring skills with a high return/pay off (Dustmann and Glitz 2011). Countries which promise educational opportunities and high return on educational investment/investment in human capital will face significantly higher immigration rates than countries with less promising opportunities (Waters 2006).

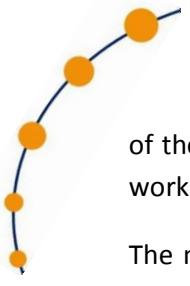
A third important factor for migration are the demographic disparities between regions and the challenges, which have risen from them (Muenz 2013). While population shrinking becomes especially apparent in countries of the Northern Hemisphere, other countries and regions experience rapid population growth (ibid. 3). This is related to special demands of the economic, social, and cultural sphere of regions. In the sense of classic push-pull-theory a demographic spill over in one and demographic shortage in another region will stimulate a migration flow from regions with population surplus/increasing population to region with a population deficit/shrinking population. Especially the linkage between demography and the demand-supply-relation of work force is at the core of the hypotheses, since highly developed countries (mostly caused by population aging) are forced to ensure a sufficient supply of labour through immigration (ibid. 2). The Gravity Model of migration (Amirault, Munnik, and Miller 2013; Zipf 1946) also plays a role here in terms of explaining migration/mobility, since it assumes, that “gross migration is positively related to the size of the populations in the origin and destination, and inversely related to the distance between them.” (Amirault, Munnik and Miller 2013, 22)

The origins of migration could also be linked to the structure of the global economy respective the global labour market (Wallerstein 1974). According to this theory poor countries – under the ruling of capitalist/neo-capitalist forces – serve as supplier for materials, labour, selling markets, etc. for the demands of the wealthy countries. It accounts for historicity of regions, i.e. it takes into account past events which may have an influence on actual migration flows. This kind of reasoning allows reflecting migration in global context. Thus, it goes far beyond of a micro- or meso-understanding of migration. However, induced by the theory’s scope the testing of its empirical assumptions are rather difficult.

However, our macro-approach in work package 2 does not take into account the huge range of meso-²³ and micro-explanations²⁴, which have been introduced into the debate over the last 60 years. The meso- and micro-level approaches to youth mobility will be used in work package 3 and 4

²³ Like the dual labour market theory, migration network theory, institutional theory, migration system theory.

²⁴ Here especially neoclassical economical micro theory, like value expectancy theory and rational choice theory as well as new approaches regarding processes of individualisation and agency in migration.



of the MOVE-project. The results of the three approaches in MOVE will be linked with each other in work package 5.

The model (Fig.4.1) consists of three sectors: economy, state, and society, whereby the latter one comprises the relevant dimension of youth mobility. Altogether the potential relationships between causes of youth mobility appear as a complex causal constellation which has to be tested empirically. At the same time, it has to be considered that, to some extent, feedback effects from youth mobility to the sending as well as to the receiving countries could emerge, which will be captured with the "backwards" models explaining the effects of youth mobility.

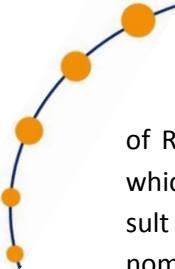
The heuristic model serves as a basis for the development of specific background models explaining both causes and effects of youth mobility on the basis of the neoclassic macro-economic perspective. For the theoretical modelling different types of mobility were differentiated: general youth mobility and student mobility. For other mobility types (e.g. employment mobility, mobility during vocational training) no data on macro-level was available, thus no theoretical models were developed. A further differentiation was applied referring to the direction of the mobility: Whether it is incoming or outgoing mobility. The effects of incoming mobility were modelled separately for indicators of all three sectors. We developed four models for explaining the causes of different kinds of youth mobility and six models for explaining the effects of incoming youth mobility (and also in one model international emigration) on the sectors economy, state and society.

The deduced models will be described in detail in chapter 4.4 after a broader presentation of the neo-classic economic approach (chapter 4.2) and the respective state of the art (4.3).

4.2 Theoretical introduction to the macro-economic analysis of youth mobility (Zsuzsanna Dabasi-Halász, Ioana Manafi and Daniela Marinescu)

4.2.1 Classical and neo-classical theories

Based on the well-known theory of Ravenstein (Ravenstein 1885b; 1885a) we use the terms of *push and pull factors* when analysing mobility on the macro-level, knowing its limitation due to leaving out predictors on the meso- and micro-level. According to his concept, unfavourable living conditions in a place of residence "push" people away, while conditions in places abroad supposed to be more favourable "pull" them or become a criterion of attraction (Anacka, Matejko, and Nestorowicz 2013). European youth mobility is motivated by various needs at a higher level. Regarding different kinds of voluntary mobility – which are typical in Europe these days – pull factors of the target countries dominate in cases of study-, employment- and entrepreneurship mobility. If a young person cannot get a job, set up an enterprise, or be eligible to social benefits, they will become less motivated to move to the target country. Analysing mobility-related decisions, neoclassical economic schools of thought come to the conclusion that the supply of resources is different in each country and thus mobile resources are transferred to places where they can be used in a more profitable way (Boyer and Smith 2001). This explanation seems to be simple and acceptable, so the public way of thinking and also political and economic decision-makers are influenced by it. It is often thought that allocation of resources leads to spontaneous balancing of factors levelling the differences in productivity and wages thus ensuring optimal efficiency. The following example will help understanding the different approaches: according to classical economists it is Robinson's work that defines the value of cheese whereas according to marginalists it is the value margin of the cheese that defines the value

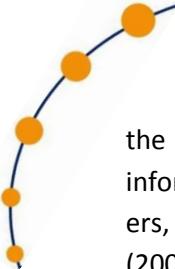


of Robinson's work. The enormous effect of marginalism on economics is due to its wider scope, which goes well beyond individual cases. Taking this approach into consideration, migration is the result of the voluntary and rational calculations of the individual who intends to improve their economic situation. The migration process is the sum of these individual decisions. Workers move towards employment facilities that promise the most possible profit and where their economic employment prospects are better (Onçu 1990). As stated before (chapter 4.1), Harris and Todaro (1970) designed a model that developed the push- and pull factors approach further. Their model combined economic logic with sociological and geographical aspects. Also, being an "old" model, it is still used in current studies: Kahanec and Zimmermann (2010) stated for example that high rates of youth mobility should be explained by a complex set of push and pull factors, including the economic situation in both sending and receiving countries, policy measures referring to migration, geographic, language, and cultural proximity, as well as the migrant networks across Europe.

- ➔ *The push- and pull factors approach will be used for analysing the causes of different kinds of youth mobility (chapters 4.4.1, 5.4, and 5.6.1).*

Another approach in this line is the *Principal-Agent model* (Akerlof 1970; Ross 1973). The model is defined as a relationship between two or more parties when one, designated as the Agent, acts for, on behalf of, or as a representative of the other, designated the Principal, in a particular domain of decision problems. In the model, the problem is selecting a compensation system that will produce behaviour by the agent consistent with the principal's preferences. Thus, it is important to determine the nature of the incentive system and the contracting system that guides the distribution of those incentives, as well as the conditions of risk and information that influences the choices of the actors (Mitnick 2006). George Akerlof (1970) demonstrated that sometimes employers pay employees more than they should to attract the labour they need, and employees often reciprocate by working harder or more carefully than they otherwise would (this is called "gift exchange"). To be an agent means to be capable of exerting some degrees of control over the social relations in which one is enmeshed, which in turn implies the ability to transform those social relations to some degree (Sewell 1992). The central idea behind the Principal-Agent model is that the Principal is a firm that want to hire an Agent. The Principal is not able to monitor the Agent at all times because it would be too cost-intensive, thus the Principal tries to motivate the Agent. An easy solution is to offer incentive contracts, basically meaning a cash payment for a measured outcome. The main value of the model is analysing abstract concepts such as reward, effort, and incentives in terms of more concrete model elements such as production, contract, and payoffs to the Agent and to the Principal.²⁵ More recently

²⁵ For a better understanding we will give an example: Let the Principal be a firm who wants to hire an immigrant (being the Agent) that should attend a language course. The cost of the course will be paid by the Principal. If the Principal would hire a native or an agent who knew the language, then he could invest this saved amount in production. In symmetric information the Principal wants to maximise his profit when the Agent received at least the statutory minimum wage. The Agent could be highly skilled (or he could be native in a language from the same linguistic family) or lower skilled. Also, the language courses could be basic or advanced. The cost for the basic one is lower than the cost of the advanced one. With asymmetric information the Principal could not distinguish between the Agents but he could assume with a probability that this is highly skilled or lower skilled. The solution of the Principal-Agent model with this assumption is that the lower skilled agent will follow the basic language course while the highly skilled agent will receive a greater wage level than the statutory minimum wage level and the lower skilled agent will receive the statutory minimum wage level. The wage received by the highly skilled agent is greater with asymmetric information. Thus, the decision to migrate being based on personal beliefs is not always necessarily based on strict economic conditions, but also on the easiness of integrating in a new country.



the Principal-Agent model is used in mobility and migrations research. The existence of asymmetric information in EU's labour market generates a wide variety of implications for both firms and workers, for sending and receiving countries, and also for policy makers in the field of migration. Stetter (2000) argued that the Principal-Agent approach constitutes a superior tool in analysing and making sense of dynamics in externalising of immigration policy. Menz (2015) demonstrated that the Principal-Agent model provides superior insight for the externalisation of migration control policy development.

- ➔ *The Principal-Agent model will be use for the country case study of youth mobility from Romania to Spain (chapter 7.4).*

Borjas (1987) followed the neo-classical path and tried to use *mathematical methods* to describe the reasons for migration, making attempts to calculate the net profit that might be gained by the participant of the migration process. He considered migration to be a form of human capital investment. The main point of his method was to examine not only the available wages in the target country in itself, but also to take the availability of jobs into consideration. Borjas also cited John Hicks when listing causes of migration in his economic model. He is in line with other migration studies referring to Hicks, who said that economic advantages, especially higher wages, are the main causes of migration (Hicks 1963). Borjas further argued that an employee weighs options and costs (e.g. travel) in the labour market and chooses the option which offers maximal life-long net value. In his later work Borjas (2000) tried to support the economic efficiency of labour force mobility mathematically. In his investigations, he creates a model in which a country has two regionally separated labour markets: a northern and a southern one, where both employ a similarly qualified labour force. His model has been tested on the labour market of the United States. It supposes that the wages are higher in the north market than in the south. Thus, people from the south moved to other parts of the country and were followed by others later on. This resulted in a decrease in wages in the north and an increase in the south which led to the levelling of wages in case of an open labour market. This phenomenon has a significant regional impact on the economic efficiency of labour. As the marginal product of labour is the same among workers with the same qualification, there is an efficiency allocation which maximises national income. This model is a significant step forward in proving that labour force allocation directly influences the productivity and performance of a country. This theory serves as a further basis for our research. Youth mobility has direct consequences on labour market and indirect ones on macro-economic performance. The model has some shortcomings, the most significant of which is that it relies on classical theories and presupposes rational individuals and open markets.

- ➔ *Borjas' approach will be used for analysing the effects of youth mobility on national labour markets (chapters 4.4.2, 5.5.1, and 5.6.2).*

4.2.2 New economic theories based on institutionalism

For the macro-analysis in work package 2 we also apply the theoretical framework of the “New institutionalist school”. As the MOVE-project combines micro-, meso and macro-levels it goes beyond individual decisions. Thus, causes of mobility will be analysed in MOVE in a complex way focusing on not only one of the levels. According to the theorists of this school (most well-known ones are North and Williamson) market behaviour cannot be analysed only on the behaviour of individual actors. Thus, it is assumed that institutions act on the market as independent factors, they have their particular purposes; and their roles modify the market equilibrium and its features. Institutions unite various groups of economic actors along different interests and purposes. As institutions function in

different ways it is impossible to explain their market behaviour on the basis of a general rule. North (1990) interprets the term “institution” widely saying that it is a framework within human interactions take place. The term also implies cultural, social and cognitive processes that provide norms for human interactions. Also, he highlights the significance of relations and interactions between three pillars of the institutional system and their connection with economic performance: formal rules (legal system), informal rules (behavioural norms) and the rules of their enforcement. For connecting the different micro-meso and macro level within MOVE the analytical framework of Williamson (2000) is applied, which is embedded in the theory of institutional economics (Fig.4.2). Williamson describes four level of social analysis. The first level is the level of embeddedness, where customs, norms, traditions, and religion are located. The changes on this level require a lot of time, even centuries, so economists treat it as a constant. The second level is constituted by the institutions: legal environment, political environment, and property rights. Changes in the institutional environment take 10-100 years to happen and are examined by economic theories of property rights. Other important constituents of this level are the financial system, migration, trade, and the rules of foreign investments. The macro- analysis of MOVE examines socio-economic predictors of youth mobility in the past decade on this level. On the third level there are the governmental structures (company, market, hybrid forms). They might change within shorter time, in one to ten years. The theoretical explanation of the changes is provided by the transaction costs theory. The fourth level can be described by the standard neoclassical theory, the resource-allocation decisions are made on this level. MOVE uses e.g. the agency theory on the micro-level.

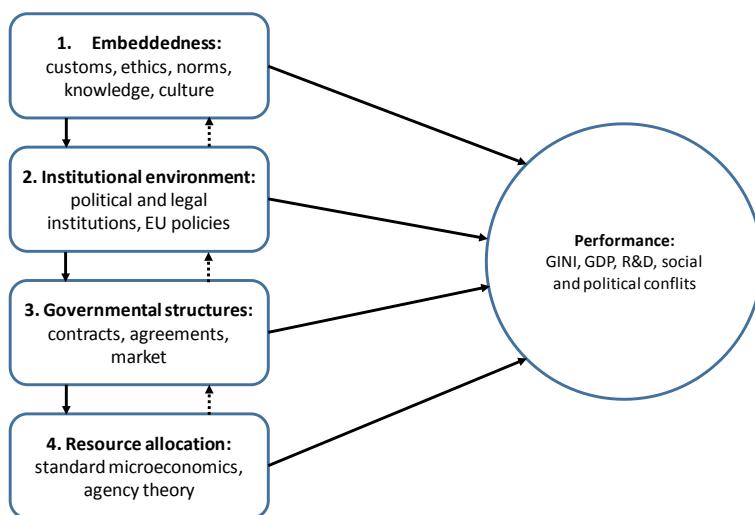
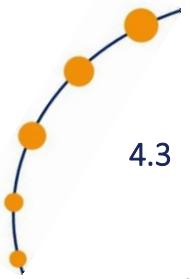


Fig.4.2: Four levels of social analysis (Williamson 2000)

The levels are in interaction, but the extent of influence they exert on each other is different. The fast changing levels have less impact on the levels underneath. Each level has its effect on different aspects of economic performance; on production, distribution, technological and structural innovation, and in a wider sense even on poverty and social or political conflicts. The research in work package 2 is based on this analysing framework while analysing the effects of socio-economic environment on youth mobility and also analysing the consequences of this complex interaction.

- ➔ *The model will serve as a basis for linking the macro-results of work package 2 with the meso- and micro-results of work packages 3 and 4 towards the end of the MOVE-project in work package 5.*



4.3 State of the art regarding causes and effects of youth mobility (Zsuzsanna Dabasi-Halász, Ioana Manafi and Daniela Marinescu)

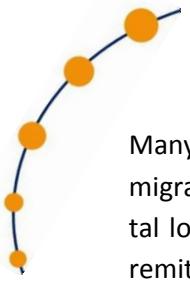
The following research on the state of the art focuses mainly on migration studies in general, due to the lack of relevant youth migration studies. As most of the international migration is induced economically (about 90% in 2000, Noin 2003), the review focuses mainly on economic phenomena related to mobility and migration. Main issues will be the “brain drain” effect and effects of mobility on labour markets and prosperity. Additionally, effects of mobility on welfare systems and demography will be explored. Finally, the conjunctive centre-periphery approach will be explained.

4.3.1 “Brain Drain” – mobility/migration and education

The relationship between education and migration is very complex and there are various points of view regarding the nature of it: some studies (Donato 1993; Stark and Taylor 1991; Yang and Guo 1999) highlight the positive effects of educational attainment on the tendency to migrate, while other papers (Massey and Espinosa 1997; Quinn and Rubb 2005) argue the opposite. D’Hombres and Nunziata (2016) found that higher levels of education generate a smaller exposure of natives to the negative effects of migration. They also suggested that education, as a policy instrument, can increase social cohesion in societies that are subject to large immigration flows. Recent papers on student mobility and skilled migration show evidence that international students are likely to stay in the country where they studied after completing their studies (Dreher and Poutvaara 2011; Rosenzweig 2008; Tremblay 2001). In this context, Rosenzweig (2008) showed that for international students the probability of finding a job in the destination country is higher than in their home country. Ten years later Levatino (2015) analysed the relationship between enrolment in TNE (transnational higher education) and skilled migration into the country of the institution providing educational services, finding that developing countries should act with caution when opening the education market for foreign providers.

Another point of view when discussing the relationship between mobility and education is the issue of “Brain drain”. So called “Brain drain” is part of a larger phenomenon: labour migration. Through brain drain countries lose their most educated and talented workers to other countries because of migration (Docquier and Rapoport 2012; Dodani and Laporte 2005). This trend is an issue mostly affecting developing countries, due to significant labour migration of highly skilled workers to developed countries based on a variety of pull factors which are positive characteristics of the target country, e.g. higher paid jobs, better quality of life, modernised educational systems, intellectual freedom, etc. Other factors such as ecological conditions and family reunification play a less important role (Kazlauskienė and Rinkevičius 2015). Other push factors affecting brain drain are negative characteristics of the home country such as unemployment, political instability, employment discrimination, poor working conditions, lack of freedom, the absence of research facilities, etc.

The intensity of brain drain was much stronger in Eastern Europe, where the fall of communism favoured external movement and hence fostered the appearance of a wave of emigration to Western Europe. Statistics show that over the last two decades highly skilled immigrants are more welcome in destination countries (Docquier and Marfouk 2006), affecting the labour force market both in the origin and destination countries.



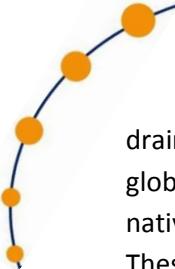
Many theoretical and empirical studies have addressed the determinants and effects of skilled labour migration, focusing on topics such as education investment in view of future migration, human capital loss and gain, the magnitude of brain drain, temporary and return migration of skilled workers, remittances and their impact on the receiving country, the circulation of knowledge, etc. Beine, Docquier and Rapoport (2001) argue that brain drain merely represents human capital loss. Some research also postulates that brain drain only produces negative effects for the migrant sending country (Wong and Yip 1999; Bhagwati and Wilson 1989). But Cinar and Docquier (2004) found some advantages in the long run, such as remittances sent by migrants to their countries of origin. Brain drain could have positive effects through extra knowledge and skills brought back to the country of origin by returnees (Santos and Postel-Vinay 2003). One long-term effect of brain drain could be an increase in trade by creation of new trade and business networks (Dustmann and Kirchkamp 2002; Mesnard and Ravallion 2001). New concepts such as *brain drain*, *brain gain*, *brain waste* were introduced in the literature, emphasising the importance and the complexity of these phenomena, while a new field of research known as “new economics of brain drain” (Docquier and Rapoport 2004) has emerged. Migration also changes the composition of human capital (Clemens 2007; Gibson and McKenzie 2011). Di Maria and Stryszowsky (2009) showed that the possibility of migration, which leads to an increase in the level of human capital, produces the wrong type of skill composition and impedes economic development in the origin countries. Gibson and McKenzie (2010) showed that there are high levels of emigration and of return migration among the highly skilled people. There are large benefits to migration in terms of postgraduate education, while most high-skilled migrants from poorer countries send remittances, but direct involvement in trade and foreign direct investment is a rare occurrence. Following the previous work of Di Maria and Stryszowsky, Di Maria and Lazarova (2012) studied the effects of skilled emigration on human capital formation (both in its level and composition) and on economic growth in a sample of developing countries. They concluded that these effects are related to the level of technological development of the sending country.

→ *The brain drain issue will be used for the analyses of the causes of youth mobility (chapters 4.4.1, 5.4, and 5.6.1) and the effects of youth mobility on labour markets and prosperity (chapters 4.4.2, 5.5.1, and 5.6.2).*

4.3.2 Effects of mobility/migration on labour market and prosperity

The literature presenting the effects of migration on labour market is extensive and rapidly evolving. The majority of studies, using macro-economic models of aggregate supply and demand for labour, show that migration affects wages and employment (Battisti et al. 2014; Borjas 2015; Docquier, Ozden and Peri 2014; Ottaviano and Peri 2012). Using empirical analysis other authors argue that natives feel threatened by the migrants’ competition on the labour market (Scheve and Slaughter 2001; Mayda 2006). D’Hombres and Nunziata (2016) found that migrants and uneducated natives could be viewed as complementary, rather than substitutes in the destination labour market.

Marr and Siklos (1994; 1999) tested the relationship between immigration and unemployment rate (in Canada), and found that changes in immigration rates could not be explained with changes in unemployment rates. Konya (2000) studied the bidirectional relationship between migration and long-term unemployment in Australia in the period 1981–1998, finding an inverse relationship based on Granger causality. Altonji and Card (1991) found that immigration only influences unemployment rates of less skilled natives. Fan and Stark (2007) showed that “educated unemployment” is caused by the prospect of international migration, that is, by the possibility of brain drain. Another important result was that a developing country may end up with more educated workers despite brain

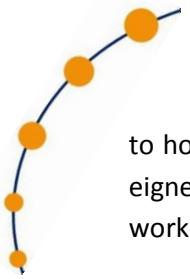


drain and educated unemployment. Fromentin, Damette, and Zou (2016) studied the effect of the global economic crisis in European countries. They showed that immigrant labour forces' effects on native-born worker employment rates have been persistent but weak throughout the business cycle. These effects are globally positive, and immigrant origins do not appear to change the nature of their impact. When moving from east to west youth mobility may be seen as a "choice" to "exit" native labour markets experiencing difficult economic conditions or as a "brain overflow," where younger cohorts have benefited from increased access to tertiary education, but these qualifications do not fit well with the structure of the labour demand in their own countries (Weber et al. 2007).

Morley (2006) found evidence demonstrating long-run Granger-causality running from GDP per capita to immigration (in Australia), though it did not prove to support causality in the opposite direction. Boubtane, Coulibaly, and Rault (2013) found that growth positively caused immigration in four countries (France, Iceland, Norway, and the United Kingdom), whereas immigration did not cause growth in any of them. Baláz, Williams, and Kollár (2004) studied the implication of youth brain drain for the countries of origin starting with the case of Slovakia, proving a substantial loss of graduate workers from the labour force through migration, accounting for a potentially significant proportion of Gross Domestic Product (GDP) growth. Several papers show that international migration also affects aggregate demand for goods and services in the receiving and sending countries, this effect being known as market size effects of migration (Irango and Peri 2009; Di Giovanni, Levchenko and Ortega 2015). Migration has further been shown to affect the scope of the market volume in both destination and origin countries (Düll and Vogler 1999).

Simulations from a general equilibrium model by van der Mensbrugghe and Holst (2009) suggest that reducing migration will not necessarily result in higher wages for native workers in receiving countries, since lower levels of migration will also lower the relative return to capital, which in turn creates downward pressure on wages. Düll and Vogler (1999) detailed the effect of migration and mobility on the economy. Locally, lowering the wage rate in the target country will lead to a reduction in local workforce, and the income earners will benefit from unchanged marginal productivity of labour. Ruhs and Vargas Silva (2015) suggested that immigration has a small impact on average wages of existing workers, but more significant effects in terms of wage-distribution: low-wage workers experience losses, while middle- and higher-wage earners experience growth.

Becker (1970) defined remittances as a benevolent act which promotes well-being and equality across the extended family. León-Ledesma and Piracha (2004) empirically proved that the impact of remittances on unemployment depends on its effect on productivity growth and investment. Adams and Page (2005) proved that both international migration and remittances significantly reduce the level, depth, and severity of poverty in the developing world. The estimations of the determinants of remittances are either based on household surveys that include remittance-receiving households (Gubert 2002), or specific surveys of the migrants themselves, either in the home country (Amuedo-Dorantes and Pozo 2006) or the destination country (Holst and Schrooten 2006). Holst and Schrooten (2006) studied German immigrants and determined a non-linear positive relationship between their probability to remit and marriage, years of education, and employment. Vadean (2007) also found that citizenship status is an important factor for the determination of international household



to household remittance flows, if the country of origin restricts the acquisition of real estate by foreigners. Olney (2015) proved that an increase of the remittances depresses the wages of native workers.

- ➔ *The research will be used for the analyses of the effects of youth mobility on labour markets and prosperity (chapters 4.4.2, 5.5.1, and 5.6.2).*

4.3.3 Effects of mobility/migration on welfare system and demographic changes

A paper by De Giorgi and Pellizzari (2009) addresses the issue of welfare migration across the countries of the pre-enlargement EU. Their results suggest that besides labour market conditions, the generosity of the welfare state could act as a migration pull factor across European Union countries.

In most of the European countries the populations are growing at different rates, thus there is a possible role for migration to play between high growth and low growth population rates. The migration tends to be age specific, the highest mobility rates correspond to young working ages. It is well known that countries with high rates of youth emigration are losing persons from these age groups and tend to register low growth population rates, while the receiving countries gain young working and high reproductive people, which contribute to an increase in total population. Philipov and Schuster (2010) studied the impact of cumulated net migration on population size and age composition in 21 member countries of the EU. They showed that estimating future migration is challenging because movement of people across countries is dependent on government policies and international events that could change suddenly. Many migrants follow economic opportunities; migration patterns are also dependent on changing economic conditions. Some interesting results were drawn within the project DEMIFER (ESPON 2013): migration contributes to population change not only by increasing/decreasing the number of individuals in the destination country at a given time (this is the direct contribution), but also affects rates of births and deaths or natural change (indirect contribution). The researchers highlighted the idea that the most important force behind European population change is international migration. They analysed the impact of migration on population structure and labour force at regional level in the period 2005-2050, using three different scenarios: status quo (the demographic regimes from 2005 remain unchanged until 2050), no migration scenario and no extra-Europe migration scenario. Heleniak and Canagarajah (2013) found that youth migration affects both young and old persons left behind. The consequences are complex, context specific, and subject to change over time.

Using a dynamic model, Razin and Sadka (1998) showed that because of immigrants' positive influence on the pension system, migration could be beneficial to all income and age groups. Using error correction models and time series data on European countries, Han (2013) showed that the inflow of youth migrants eases demographic and fiscal problems, especially the pressure on public pension systems, in the destination countries.

Weber et al. (2007) found that people with more education are more likely to move. More education is a path out of poverty: people with more education are less likely to be poor. Education reduces risk of poverty for both those who migrate and those who do not; people with more education are less likely to be poor, regardless of whether they move.

- ➔ *The research will be used for the analyses of the effects of youth mobility on social and national indicators (chapters 4.4.3, 5.5.2, and 5.6.3).*

4.3.4 The “centre-periphery” approach in international mobility/migration

Previously discussed relationships between macro-indicators and mobility/migration are linked together in the “centre-periphery” approach. The notions of *centre* and *periphery* were used by Wallerstein (1979) and Pierre and Wallerstein (1991) in their analysis of the modern world economy. In the target countries of world migration we can see the strengthening of information economy and the significant concentration of highly-qualified human capital. Several economic and technical activities remain in the central countries such as research and development, activities determining global business policies, information technology related activities and also higher education activities (Hannerz 1992). Study-purpose migration shows clearly visible centre-periphery situations. The process can be described geographically, it concerns certain countries and certain cities and campuses within these countries (Salt and Miller 2006; Rédei 2009). A similar pattern can be seen in the case of financial transfers: money is transferred home to the periphery countries from the centre countries. Those people who live in the centre temporarily or permanently send a share of their income home. The amount of these transfers is the same as the FDI and creates a global network. The money transfer means a continuous link between the home country in the periphery and the central country.

→ *The centre-periphery approach will be used for the interpretation of the cluster analysis (5.3.2) and the interpretation of the results of the panel analysis (chapters 5.4-5.6).*

4.4 Specific Background models on drivers of youth mobility and on effects of youth mobility on national, economic and social indicators (Zsuzsanna Dabasi-Halász, Ioana Manafi, Daniela Marinescu)

In the following chapter the deduced specific theoretical background models will be described and illustrated. The theoretical background models will be tested statistically with panel modelling in chapter 5.

4.4.1 Theoretical background models on macro-level causes of youth mobility

For analysing the causes of youth mobility different types of mobility have to be considered. The most fundamental differentiation is the one between incoming and outgoing youth mobility. Although the potential indicators could be similar, the proposed direction of effects is mostly opposite. Different indicators were also assumed to affect either incoming or outgoing youth mobility in some cases. A further important differentiation refers to the reasons for being mobile. Thus, four background models were developed for explaining the causes of: 1) short-term incoming youth mobility, 2) outgoing youth mobility, 3) incoming students’ mobility, and 4) outgoing students’ mobility (Fig.4.3-4.6).

There has been a lot of research with different foci on causes of migration in the past; macro-economic aspects of migration were studied by Massey and Taylor (2004), Straubhaar (2002), also defining the potential of migration (Haas 2010; Borjas 2000; Hönekopp 2000; Wallace 1998). However, the macro-economic relationships between the causes of migration for a specific layer of the society have not been defined yet. Thus, our models for analysing the causes of youth mobility have been created based on the aforementioned research (chapters 4.1-4.3). We are especially using the push- and pull factors approach (chapter 4.2.1; e.g. Lee 1966; Massey et al. 1993; Todaro 1980) and the “brain drain” issue (chapter 4.3.1; e.g. Docquier and Rapoport 2012; Dodani and Laporte 2005). Other approaches leading to our assumptions are the welfare magnet hypothesis (chapter 4.1; Borjas



1999), the global education hypothesis (chapter 4.1; Haas 2011), the “demography differential” hypotheses (chapter 4.1; Muenz 2013), and the “gravity model” (chapter 4.1; Amirault, Munnik, and Miller 2013). As it can be seen from the heuristic model, economic, social, and state related aspects are assumed to influence youth mobility.

Model Causes 1: Causes of incoming youth mobility (Fig.4.3)

When examining the effects of the labour market NEET rate, youth unemployment rate and real minimal wage were taken into consideration. According to (neo-) classical economics the main cause of migration are wage differences between regions and countries. The international definition, which interprets unemployment very narrowly and gainful employment very broadly, can underestimate the extent of the problem in particular with respect to young people. Therefore, European labour market research and political decision-makers are focusing also on the NEET indicator²⁶ as a supplement to the youth unemployment rate (Eurofound 2011). The increase in NEET rate might influence willingness to participate in youth mobility (Gracey and Kelly 2010; Krause and Liebig 2011). Economics of migration have furthermore revealed several connections between gross domestic product (GDP)²⁷ and foreign direct investments (FDI)²⁸ and migration potential which will be analysed with the dimension prosperity.

For the sector state the models includes the dimensions welfare and education. Following the welfare magnet hypothesis (Borjas 1999) and the global education hypothesis (Haas 2011) the welfare- and educations system in a country can be both a push and a pull factor for young people. Regarding education foreign language proficiency indicators were included into the model. For the welfare dimension, expenditure of social protection, income inequality (GINI²⁹) and poverty rate were included.

For the sector society we considered the dimension of living conditions with the Human development Index³⁰ and the dimension of demography with the ration of urban population in a society following the “demography differential” hypotheses (Muenz 2013).

²⁶ This indicator presents the share of young people who are not in employment, education or training (NEET), as a percentage of the total number of young people in the corresponding age group. Young people in education include those attending part-time or full-time education, but exclude those in non-formal education and in educational activities of very short duration. (<https://data.oecd.org/youthinac/youth-not-in-employment-education-or-training-neet.htm>)

²⁷ Gross domestic product (GDP) at market prices is the expenditure on final goods and services minus imports: final consumption expenditures, gross capital formation, and exports less imports. "Gross" signifies that no deduction has been made for the depreciation of machinery, buildings and other capital products used in production. "Domestic" means that it is production by the resident institutional units of the country.

(<https://data.oecd.org/gdp/gross-domestic-product-gdp.htm>)

²⁸ Foreign Direct Investment (FDI) stocks measure the total level of direct investment at a given point in time, usually the end of a quarter or of a year. The outward FDI stock is the value of the resident investors' equity in and net loans to enterprises in foreign economies. The inward FDI stock is the value of foreign investors' equity in and net loans to enterprises resident in the reporting economy. FDI stocks are measured in USD and as a share of GDP. FDI creates stable and long-lasting links between economies. (<https://data.oecd.org/fdi/fdi-stocks.htm>)

²⁹ The GINI coefficient is based on the comparison of cumulative proportions of the population against cumulative proportions of income they receive, and it ranges between 0 in the case of perfect equality and 1 in the case of perfect inequality. (<https://data.oecd.org/inequality/income-inequality.htm>)

³⁰ The Human Development Index (HDI) is a composite statistic of measuring living conditions and well-being with life expectancy, education, and income per capita indicators, which are used to rank countries into four tiers of human development. A country scores higher HDI when the lifespan is higher, the education level is

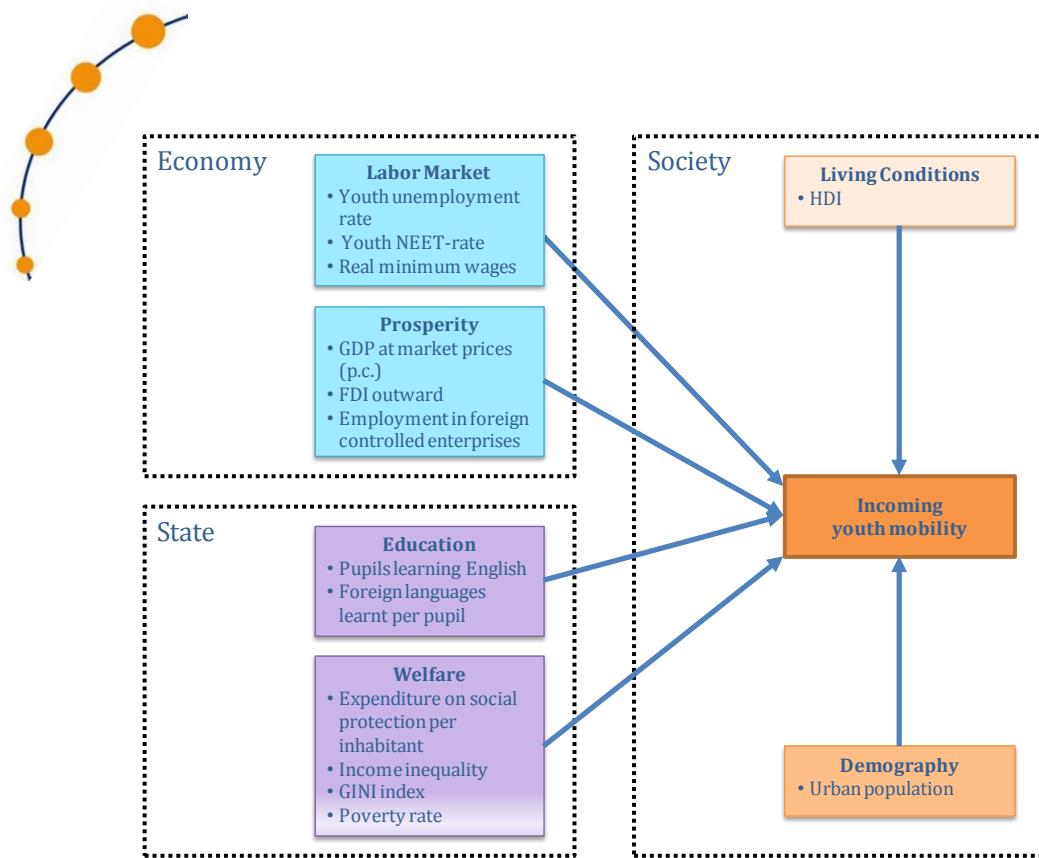


Fig.4.3: Causes 1 - Background Model for causes of incoming youth mobility

For explaining the causes of (general) incoming youth mobility we suppose that a prosperous labour market (especially regarding the transition from school to employment and prosperity), good opportunities for young people in the educational market (regarding first of all educational opportunities for achieving requested skills), thereby influenced living conditions, and demographic challenges can foster incoming youth mobility.

Model Causes 2: Causes of outgoing youth mobility (Fig.4.4)

For explaining out-going youth mobility similar predictors were considered for the three sectors but with some exceptions.

Regarding the economic sector the included indicators are similar to those of the incoming youth mobility model with the exception of foreign enterprises and the related employees which are not assumed to affect outgoing youth mobility. However, the direction of the assumed relationship is opposite compared to the incoming model as for outgoing mobility the indicators would work as push factors pushing the young people out of the country due to bad economic situations.

For the sector state the included indicators changed a bit more: the adult education level and the level of students in vocational training were included. Following the global education hypothesis (Haas 2011) education can foster mobility. For the welfare dimension only the poverty rate was included.

Within the sector society we considered additionally the foreign population ratio, given the proven fact that young migrants tend to be more mobile than non-migrants.

higher, the GDP per capita is higher, the fertility rate is lower, and the inflation rate is lower.

(https://en.wikipedia.org/wiki/Human_Development_Index)

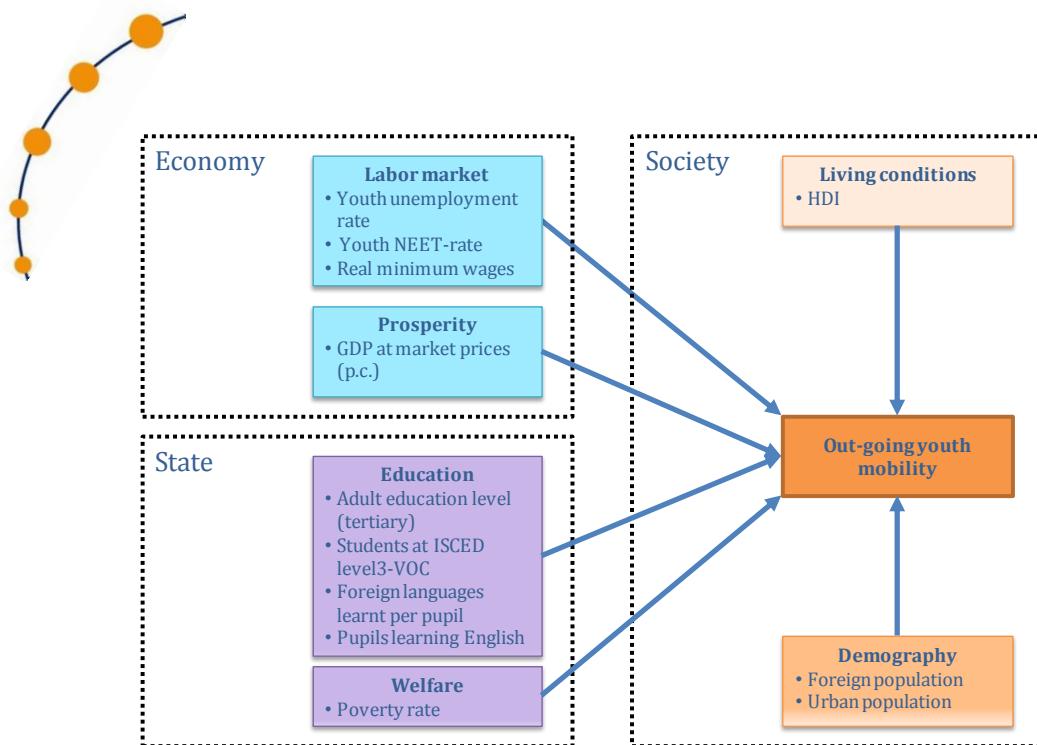


Fig.4.4: Causes 2 - Background Model for causes of outgoing youth mobility

Thus we assume that bad labour market conditions and a low prosperity, higher education level combined with higher foreign language proficiency, lower living conditions, and a higher ratio of immigrants in a country as well as a lower level of urbanisation can foster outgoing youth mobility.

Model Causes 3&4: Causes of incoming and outgoing students' mobility (Fig.4.5 & 4.6)

When looking at the current state of the art, little attention has been paid to student mobility in migration and mobility research (King and Ruiz-Gelices 2003; van Mol and Timmerman 2014). It is surprising as student mobility is an important element for European mobility being the best educated part of the society (King and Ruiz-Gelices 2003). Therefore, student mobility should differ a lot regarding its causes compared to general youth mobility, as it is not so closely connected to socio-economic push- and pull-factors (for more details see chapter 7.2).

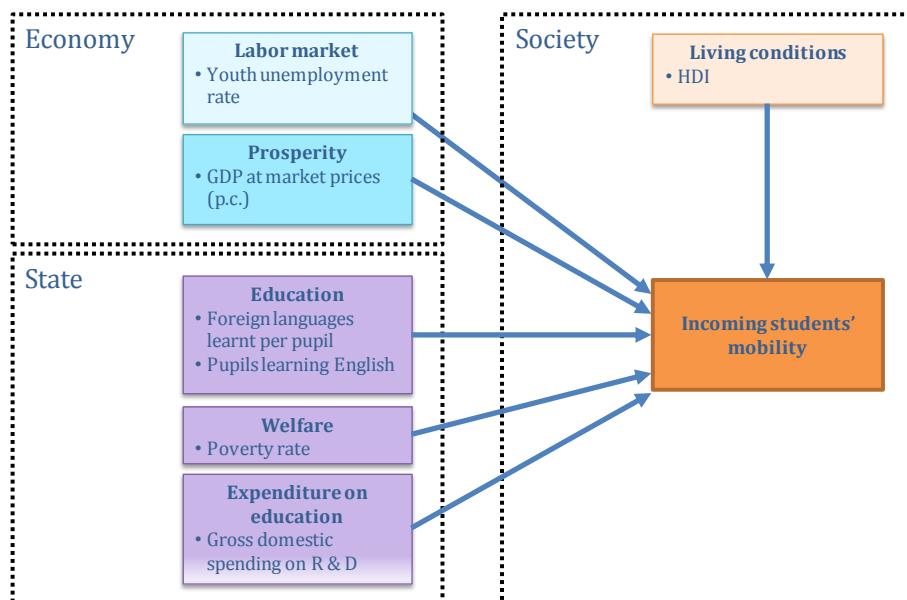


Fig.4.5: Causes 3 - Background Model for causes of incoming students' mobility

The two models (explaining causes of incoming and outgoing students' mobility) are rather congruent, though assuming opposite directions for the relationships. Relevant economic indicators are youth unemployment and prosperity of a country. In the sector state the gross domestic spending on research and development (R&D), foreign language proficiency and the poverty rate were considered; for outgoing students' mobility also the adult education level. The living conditions captured with the HDI are considered for the sector society.

We assume that a prosper labour market, high foreign language proficiency, high spending on R&D, a low poverty rate and good living conditions can foster incoming students' mobility. Regarding outgoing students' mobility we assume that a high ratio of youth unemployment and a low prosperity in a country, a high foreign language proficiency, low spending on R&D, a high poverty rate and a lower level of living conditions can foster outgoing students' mobility.

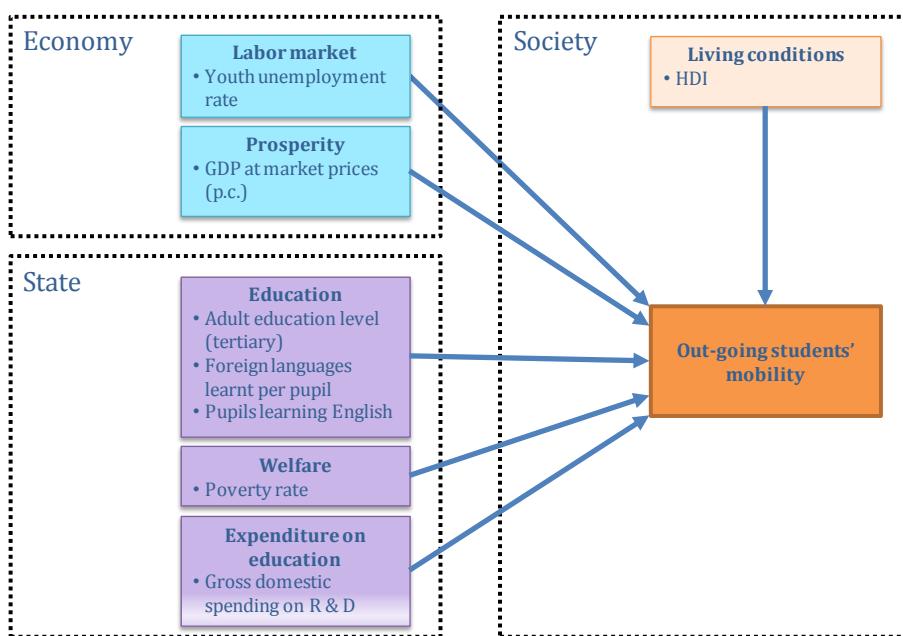
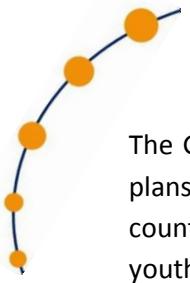


Fig.4.6: Causes 4 - Background Model for causes of outgoing students' mobility

4.4.2 Theoretical background models on effects of youth mobility on economic macro-indicators

The background models for the effects of youth mobility on national economies are deduced from the aforementioned (neo-) classic economic approaches: Borjas mathematical modelling (1987, 2000; see chapter 4.2.1), the “brain drain” issue (chapter 4.3.1; e.g. Docquier and Rapoport 2012; Dodani and Laporte 2005) and the compiled research on effects of mobility on national labour markets and prosperity (chapter 4.3.2; e.g. Battisti et al. 2014; Borjas 2015; Docquier, Ozden and Peri 2014; Ottaviano and Peri 2012).

According to classical economic logic, immigration increases unemployment, as it increases the number of the population de facto. However, modern migration research shows that it is possible to decrease unemployment in times of immigration. Youth unemployment is a special burden on economy, as human capital is the only production resource that depreciates when not in use. Youth unemployment has an effect on the employment attitude of the population (Liem and Liem 1988). Schaufeli and van Yperen (1992) exhibited the neurotic effects of unemployment on young job entrants. In addition to youth unemployment, the inactivity rate is defined as the ratio of those who are outside the labour market deliberately or due to some forcing factors. Competitiveness of the labour market is significantly limited by low labour supply partly caused by inactivity.



The GDP growth is an essential indicator for measuring the effective implementation of prosperity plans both for national policymakers and the EU. This indicator shows the economic progress of a country. When we analyse mobility processes, changes in GDP might indicate the extent to which youth mobility contributes to economic and social development.

The Human Development Index (HDI) was created to include living conditions of people in a country for assessing its development, in addition to economic growth. The HDI is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable, and having a decent standard of living.

Thus the effects of youth mobility are examined on two subsystems of the economy: effects of mobility on the labour market and on economic growth (prosperity). When analysing the effects, the models will control for further educational and social indicators.

The potential influence of incoming mobility on labour market characteristics depends on whether incoming youths have skills, abilities, and knowledge that are substitutes or complements to those of the native employees. If the skills, abilities, and knowledge are substitutes, incoming workers will increase labour supply and therefore cause a decline wages in the short run. Increased labour supply can increase unemployment and inactivity if existing workers do not want to accept the lower wages:

- If the skills, knowledge, experience, and ability of the existing and incoming workers are complementary, competition in the labour market will not increase, but productivity will rise, leading to the rise of the wage rates (Borjas 1995; Ruhs and Vargas Silva 2015). Increased productivity will lead to increase in economic growth (GDP).
- If the increase of short-term incoming youth mobility in Europe increases youth unemployment rate, controlling for economic (GDP, FDI, real minimum wages) as well as national and social indicators (urban population, adult education level), the implication is that the skills of existing workers and incoming workers are mainly substitutes.
- If, however, the increase of short-term incoming youth mobility increases GDP at market prices controlling for economic (FDI) as well as national and social indicators (urban population, adult education level, HDI), this leads to the assumption that the skills of existing workers and incoming workers are mainly complementary.

Models Effects 1 & 2: Effects of youth mobility on youth unemployment and prosperity

It is therefore assumed that incoming mobility does not increase unemployment in the case of the young generation, but increases prosperity (GDP). Moreover, the hypothesis is that mobility is circular with regards to youth. It strengthens the fact that skills of the incoming youths and skills of the existing workers are mainly complementary, i.e. complementary skills outweigh substituting skills (Fig.4.7 & 4.8).

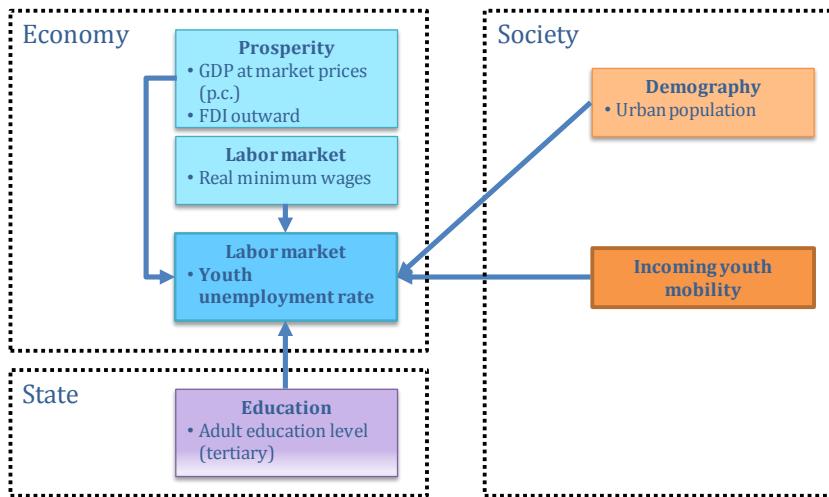


Fig.4.7: Effects 1 - Background Model for effects of incoming youth mobility on youth unemployment

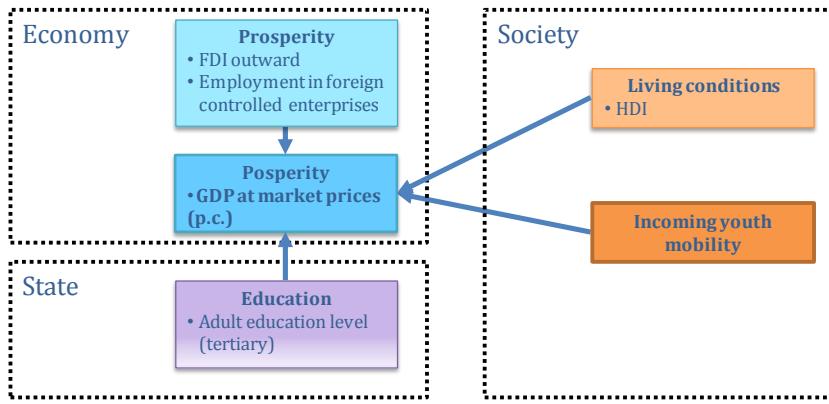


Fig.4.8: Effects 2 - Background Model for effects of incoming youth mobility on GDP

4.4.3 Theoretical background models on effects of youth mobility on social and state-related macro-indicators

The impact of incoming youth mobility on indicators from the sectors “society” and “state” have different faces and can be analysed from many different perspectives. The deduced background models are mainly based on the research described in chapter 4.3.3.

Model Effects 3: Effects of incoming youth mobility on ratio of youth population

It is well known that Europe experiences slow demographic growth with declining working age populations. While the classical theory (see chapter 4.2.1) suggests that the demographic change is a global phenomenon resulting from two almost universal trends – declining fertility rates and increasing life expectancy. Recent papers highlight the consequences of mobility on the size of various age groups (Muenz 2007; Zaiceva and Zimmermann 2014; Philipov and Schuster 2010). Current migration data also shows that the directions of the migrants’ flows are asymmetric within the European countries. Incoming youth mobility in some countries remains strong from 2004 to 2013, while some

other countries lose young people. Thus, our analysis focuses on the possible contributions of incoming youth mobility to the demographic change and the structure of population.

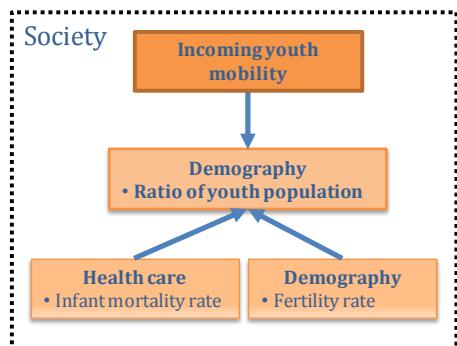


Fig.4.9: Effects 3 - Background Model for effects of incoming youth mobility on ratio of youth population

The hypothesis to be tested with model “Effects 3” is that a higher level of Incoming youth mobility is accompanied by an increasing level of youth in the society. We consider the ratio of young people in total population as dependent variable and the incoming youth mobility as independent variable. The following control variables will be used: infant mortality rate (a higher rate of infant mortality yields to a lower ratio of youth population) and fertility rate (a higher fertility rate yields a higher ratio of youth population).

Model Effects 4: Effects of incoming youth mobility on ratio of foreign population

In their paper, Kerr and Kerr (2011) argue that the majority of mobile youth try to improve their welfare and well-being, their access to education, or their personal security. At the same time, beyond personal achievements, their actions contribute to the welfare of the receiving countries. Hawthorne (2008) views international student mobility as an industry in many developed countries, designing new policies to attract and retain international students as potential skilled labour force.

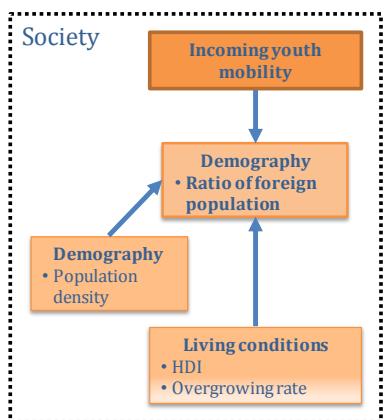


Fig.4.10: Effects 4 - Background Model for effects of incoming youth mobility on ratio of foreign population

Thus the hypothesis to be tested with model “Effects 4” is that the ratio of foreign population is positively influenced by incoming youth mobility. Therefore other possible independent variables were included: population density (a country with a low density population is more attractive as destination country, so the ratio of foreign population is higher in such a country); Human Development Index (it is more likely to find foreign people in a country with a higher HDI; it makes the corresponding country more attractive as destination country), and overgrowing rate (a high rate could impede the

foreigners to come and live in the corresponding country, so the ratio of foreign population is smaller).

Model Effects 5: Effects of incoming student mobility on students' ratio

Many European countries are registering low fertility rates, but at the same time some of them report the highest life expectancy in the world. These two aspects combined increase the relative size of the dependent population, raising important distributional questions. In some EU member states the public system also plays an important role in transferring the real resources from workers to retired persons. In the last years, within the context of enlargement of EU, international migration combined with the free mobility of labour force could be viewed as a solution, as some authors have argued (Razin and Sadka 1998; Han 2013).

The hypothesis to be tested with model "Effects 5" is that the students' ratio is affected by student-mobility: a high level of incoming students' mobility leads to a higher ratio of students in total population. The model generates some other insights when adding the following control variables: ratio of young people in total population (the higher the ratio of young population is, the higher the number of students enrolled); infant mortality rate (a high infant mortality rate lowers the ratio of students); youth unemployment rate (it could affect negatively the ratio of students; a high unemployment rate corresponds to a high ratio of students because young people who cannot find a job prefer to complete their studies before acting on the labour market); average wage (a higher average wage could be more attractive to young people who could postpone the completion of the education and so the ratio of students would decrease; at the same time a lower average wage could act as a signal for young people to become more educated in order to find better jobs, with higher wages such that the ratio of students would increase); at-risk-for-poverty-rate (in a country with a high rate of poverty, the welfare is low, thus people cannot afford to spend money and time on education such that education could be less attractive to young people, so the ratio of students is lower); expenditure on education (a country with a high expenditure on education reflects a high accessibility for young people to study, so the ratio of students is higher in such a country); adult education level (a higher value of this index leads to a high competition on labour market, therefore the young people's desire to study is higher).

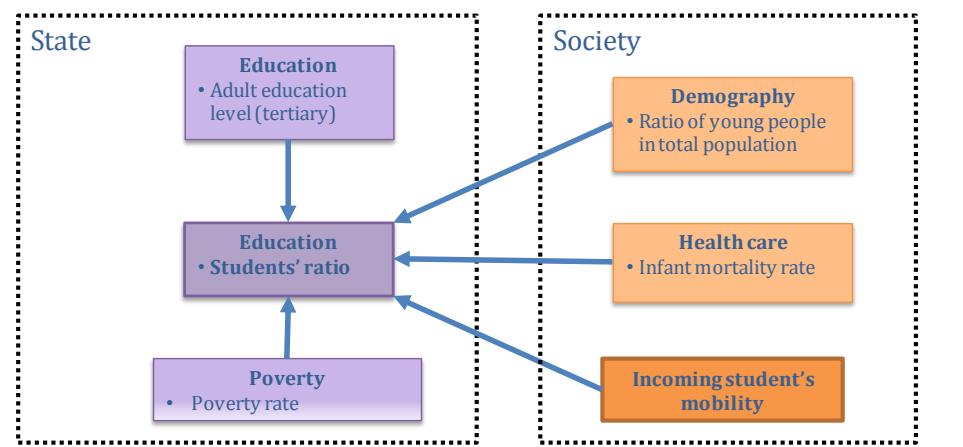


Fig.4.11: Effects 5 - Background Model for effects of incoming student mobility on students' ratio

Model Effects 6: Effects of international emigration on expenditure on pensions

The hypothesis that will be tested with “Model Effects 6” is that the pension systems are affected by International emigration: a high level of emigrants leads to a higher pressure on the pension system. The model defines the expenditure on pensions in percent of GDP as the dependent variable. It also includes the potential influence of some other socio-economic variables on the dependent variable: infant mortality rate (a high infant mortality rate leads to a higher expenditure on pensions in percent of GDP); hospital beds (a high number of hospital beds makes the health system more efficient, yielding an indirect increase of the expenditure on pensions); HDI (it is more likely to find old age people in a country with a higher HDI, thus the expenditure on pensions is higher); the ratio of young people in total population (a large ratio of young people in total population decreases the pressure on the system pension and also decreases the expenditure on pensions); median age of population (a lower median age means a higher active population and a reduced number of old persons, meaning a lower expenditure on pensions); inactivity rate (it could positively affect the expenditure on pensions; the lower the inactivity rate is, the higher the number of old active people is, thus the expenditure on pensions could be lower); average wage (a higher average wage could be more attractive also to old people who could postpone their retirement from work, thus the expenditure on pensions would decrease); GDP at market prices (in a country with a high GDP, the pressure on the pensions system is low); expenditure on social protection (a country with a high expenditure on social protection education reflects a high well-being of members’ society and a higher median age; the expenditure on pensions is higher in such a country); GINI index (a higher value of this index could lead to a high number of old persons, therefore the expenditure on pensions could be higher); adult education level (with more persons completing their education without working, the contribution to the pension funds is lower, thus the pressure on the pensions system is higher. Also, more educated people remain active for a longer period of their live, postponing their retirement; therefore, the expenditure on pensions decreases).

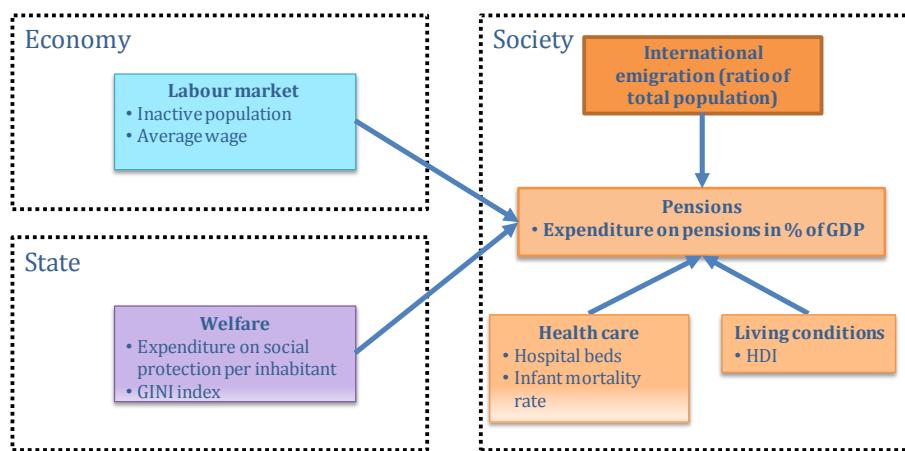
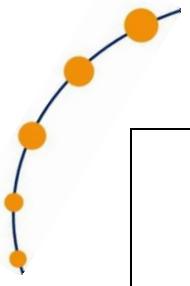


Fig.4.12: Effects 6 - Background Model for effects of international emigration on expenditure on pensions



- ✓ *The list of ten deduced background models and accompanying hypotheses will be tested using panel analysis in the following chapter 5.*
- ✓ *The secondary macro-analysis however, will be carried out within the boundaries of economic paradigms. That is, the various economic theories cannot clearly define either the direction or the extent of the youth mobility processes but they have an explanatory power that can be taken into consideration for conclusions and policy recommendations.*
- ✓ *In the next chapter empirical results are presented to underpin the statement that the describing processes of the competitiveness and growth of modern economies are in interaction with international youth mobility processes. Based on the empirical results we will formulate our conclusions and recommendations in chapters 5.6 and 8.*



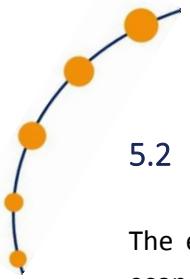
5. Statistical secondary macro-data analyses on causes and effects of youth mobility

5.1 Introduction (Zsuzsanna Dabasi-Halász)

One central aim of MOVE is to develop best practice models for how mobility can be good within the European Union. Therefore the statistical modelling in work package 2 analyses the causes, effects, and thus the motivations and hindrances of youth mobility on macro-level for 2004-2013. The macro-economic analysis which is presented in this chapter aims to highlight factors that can contribute to the sustainable development of the EU, and also to provide additional macro-data for linking with research on individual mobility decisions, carried out in other work packages of MOVE (qualitative case studies and online-survey). Thus, the macro-results will add explanatory power to the micro- and meso-level results as well as enable policymakers to have access to information on the mobility-related processes of the past decade. Furthermore, the macro-results will contribute to the development of Human Resource Development (HRD) by the European Union (Tan 2008). When factoring youth mobility into computations, HRD planners should be aiming to maximise social and economic returns from the in- and outflow of youth mobility, with special attention being paid to circular mobility. This means providing guidance to would-be mobile young people, as well as assisting them financially and otherwise, in order to enable them to invest in the acquisition of skills that promise the highest returns. To achieve this, examinations are necessary, which are carried out in the following chapter. European decision makers are attempting to maximise the social returns to investment in human capital of the population as a whole. There are private (both economic and non-economic) and social returns to the investment. Private returns that consist of monetary and non-monetary gains from the investment are most visible. There is enjoyment to be gained from the possession of knowledge, and there are benefits to be derived from the ability it offers to make life choices, and to further develop the knowledge acquired. Thus, the presented analyses will show the connections between prosperity, labour market and youth mobility.

The following econometric analysis will answer the question whether the causes and effects of youth mobility defined by classical and neo-classical economics can be considered valid for 21st century youth mobility in the European Union (see chapter 4.1 and 4.2; e.g. Bowell and Geddes 2011). We will further analyse whether the centre-periphery theory can be used to describe European youth mobility (see chapter 4.3.4). Based on different theoretical approaches presented in chapter 4.1 and 4.2 possible causes and effects of mobility were modelled theoretically (see chapter 4.4). The models will be tested statistically not only for the total macro-sample but also for different country clusters which will be explored before and which can provide a basis for further research. The predictors within the logically developed background models are tested for direction and strength of causes and effects of youth mobility in Europe. The outcome of the following analyses will prove that macro-economic factors and social circumstances influence mobility decisions on macro level, and that mobility processes also have an impact on sustainable development in a wider sense (Stiglitz, Sen, and Fitoussi 2009).

The novelty of our analysis lies in the fact that we investigate both the socio-economic causes and effects of youth mobility for 31 EU/EFTA-countries with complex statistical modelling for the special group of young Europeans aged 15 to 29.



5.2 Analysing strategy (Eszter Siposné Nandori, Ioana Manafi and Daniela Marinescu)

The effects and causes of youth mobility are analysed using the econometric methodology. The econometric analyses include mathematical examination of economic phenomena, in addition to analyses that either justify or deny the validity of economic theories through the use of empirical research. Tools of econometric analyses are borrowed from mathematics and statistics (Samuelson 1954). In our research theoretical approaches for explaining causes and effects of youth mobility (see chapter 4), mathematical equations, and statistical methods are used to understand and mathematically explain social and economic macro-data (Thomas 1996). Several economists have attempted to prove the connection between the volume of production and migration (e.g. Grossman 1986; Jorgenson, Christensen, and Lau 1973). Most of them used human capital theories. Either the level of the earlier accumulated human capital (Nelson and Phelps 1966; Romer 1990), or the human capital level of the given period is assumed to be responsible for economic growth (Lucas 1988).

For the following analysis an econometric software package (GRETl) was chosen, because it is free and can effectively be used for different kinds of statistical analyses, from simple ones to complex panel analyses. In addition the Statistical Package for Social Sciences (SPSS) was used.

Analysing strategy step-by-step:

1. **Time lag analysis:** Modern econometric calculations (Bell and Jones 2014; Browne and Draper 2006) always begin with analysing time delays, because temporality is an important issue for socio-economic indicators. There is always a time delay in the interaction between socio-economic variables. If this delay is not considered in the analysis, it may negatively affect the results of the statistical models. The aim was to define the kind of interdependence which exists between mobility and socio-economic indicators. One pillar of our macro-economic approach is the Keynesian idea (see chapter 4.2), according to which demand of labour has a derivative character as it basically depends on maximal profit. Besides, we also stress the role of the prosperity-cycle. Prosperity is the most important independent variable for prices and forming price-level. Thus, in the presented analyses, the time lag was analysed specifically in a first step.
2. **Cluster analysis:** In econometrics several defined country-clusters are theoretically discussed, such as the centre-periphery approach, and – in case of mobility – sending and receiving countries (see chapter 4.3.4). In this analysing step we intended to identify clusters empirically which can contribute to the description of youth mobility in the 21st century. Based on theoretical approaches presented in chapter 4.3 EU/EFTA countries are assumed to show different patterns for youth mobility and socio-economic indicators. Thus, we will test, if the countries can be grouped into clusters so the general conclusions can be extracted more accurately to the respective countries.
3. **Correlation analysis:** For the panel regression model, the analysis of the bivariate relationship between the indicators was needed. Thus, bivariate correlations were carried out for the included indicators. The coefficient of Pearson's correlation is a method of investigating the statistical relationship between two continuous variables using the covariance methods. It gives information about the magnitude of the association as well as the direction of the relationship between two variables.

4. **Regression examination with panel analysis:** We aimed to analyse cause-effect relationships between the mobility of young people and socio-economic indicators based on theoretical assumptions presented in chapter 4.4. Our main aim was to define the explanatory power of each indicator in a complex setting. Therefore the theoretical models were tested with the method of panel regression analysis. We developed two separate kinds of regression models to examine both mobility as a dependent and mobility as an independent variable.

5.2.1 Time lag analysis

As described earlier in this chapter time lag analysis serves as a basis for further analyses on the one hand and determines the delayed effect of the examined indicators on the other. We hypothesise that youth mobility reacts fast not only as an effect, but also as a cause of socio-economic processes. The time lag analysis will be carried out using a broader set of possible indicators in order to be able to determine the optimal time lag more general. Thus, some of the time lag models will include more indicators as described in the theoretical models (chapter 4.4).

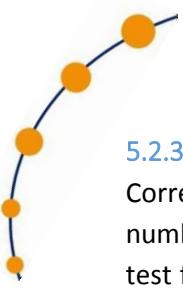
In statistics, ordinary least squares (OLS) or linear least squares is a method for estimating the unknown parameters in a linear regression model, with the goal of minimising the differences between the observed responses in a dataset and the responses predicted by the linear approximation of the data. The following terms are relevant for the analysis:

- **Dependent variable:** response variable represents the quantity we wish to explain variation in, or the thing we are trying to explain
- **Independent variable:** explanatory variable/regressor, represents a quantity whose variation will be used to explain variation in the dependent variable
- **R^2 :** is the coefficient of determination indicating goodness-of-fit of the regression. This statistic will be equal to one if fit is perfect, and to zero when regressors have no explanatory power whatsoever. This is a biased estimate of the population R^2 , and will never decrease if additional regressors are added, even if they are irrelevant.
- **F-statistic:** tries to test the hypothesis that all coefficients (except the intercept) are equal to zero. This statistic has $F(p-1, n-p)$ distribution under the null hypothesis and normality assumption, and its p-value indicates probability that the hypothesis is indeed true.

5.2.2 Cluster analysis

Cluster analysis relies on a high-level descriptive method to form groupings of cases (i.e. countries) that are similar across a profile of variables (Gunderson, Pinto, and Williams 2008), so the selected variables are of important meaning. Cluster analysis is also known as segmentation or taxonomy analysis and is used in data mining. It attempts to identify homogenous groups of cases (observations, participants, respondents). The goal of clustering is therefore descriptive, where the aim of classification on the other hand is predictive (Veyssieres and Plant 1998). Being an explorative analysis, it does not make any distinction between dependent and independent variables.

In many of the econometric software packages there are often three clustering methods, namely K-means cluster, hierarchical cluster, and two step cluster. The following analysis is based on K-means cluster – a method to quickly cluster large data sets. However, the number of clusters should be specified in advance. This is useful to test different models with a different assumed number of clusters.



5.2.3 Correlation analysis

Correlation is one of the most common and most useful bivariate statistics. A correlation is a single number that describes the degree of relationship between two variables. Correlations were used to test for multicollinearity of the independent variables in a first step and for interpreting the final results. Between variables considering that one variable increases it is possible to find: 1) a positive correlation - the other variable has a tendency to also increase; 2) a negative correlation (the other variable has a tendency to decrease); or 3) no correlation (the other variable does not tend to either increase or decrease). Evans (1996) described the strength of correlation for the absolute value of the calculated coefficient: 0,00-0,19 "very weak", 0,20-0,39 "weak", 0,40-0,59 "moderate", 0,60-0,79 "strong" 0,80-1,0 "very strong".

5.2.4 Regression panel analysis

When doing statistical analysis a question is often raised: in case of stochastic relationships, how the information gained from one or more entities can be used to explain the values of other entities. One of the methods to describe cause-effect relationships is regression analysis, which uses an equation to connect different variables. The output of the regression analysis shows which variables were used in different functions in the model.

Panel data (also known as longitudinal or cross-sectional time-series data) is a dataset in which the behaviour of indicators is observed across time. In our case, numerous socio-economic macro-indicators were measured for 31 different countries for 10 years. To examine panel data, there are two methodologies: the fixed effects and the random effects model. The fixed effects (FE) model is useful when only the impact of variables changing over time is analysed. FE explores the relationship between predictors and outcome variables within an entity (such as a country, person, or company). Each entity has its own individual characteristics that may or may not influence the predictor variables. When using FE, it is assumed that something within the individual may impact or bias the predictor or outcome variables, which needs to be controlled for. This is the rationale behind the assumption of the correlation between an entity's error term and predictor variables. FE removes the effect of the time-invariant characteristics so one can assess the net effect of the predictors on the outcome variable. Another important assumption of the FE model is that the time-invariant characteristics are unique to the individual and should not be correlated with other individual characteristics. Each entity is different, therefore the entity's error term and the constant (which captures individual characteristics) should not be correlated with others. If the error terms are correlated, FE is not suitable since inferences may not be correct and that relationship would need to be modelled (probably using random-effects), this is the main rationale for the Hausman test.

The equation for the fixed effects model:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + u_{it}$$

Where:

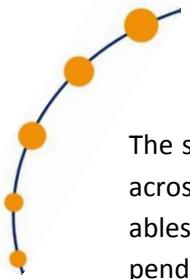
α_i is the unknown intercept for each entity

Y_{it} is the dependent variable (i: entity, t: time)

X_{it} represents one independent variable

β_1 is the coefficient for that independent variable

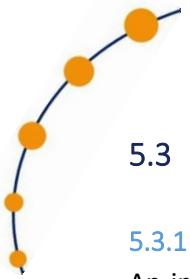
u_{it} is the error term



The second methodology is the random effects model (RE). Unlike fixed effects model, the variation across entities is assumed to be random and uncorrelated with the predictor or independent variables. If there is a reason to believe that differences across entities have some influence on the dependent variable, then the RE model can be used. RE assumes that the entity's error term is not correlated with the predictors, which allows for time-invariant variables to play a role as explanatory variables. To decide between fixed or random effects, the Hausman test can be used, where the null hypothesis is that the preferred model is the random effects model, while the alternative hypothesis states that the fixed effects model is the preferred one (Greene 2008). It basically tests whether the unique errors (u_i) are correlated with the regressors. The null hypothesis states that they are not (Torres-Reyna 2007).

When working with the panel results, the following strategies were applied:

- The assumptions for applying regression analysis were tested for each model. We have revealed that normality can be assumed. In all cases, the F significance in the pooled OLS model is $<0,05$. For all presented panel models, the significance of the Hausman test (less than 0,05) implied to use the fixed effects models, thus only FE models are presented in figures and tables.
- Multicollinearity in OLS regressions is tested with the variance inflation factor (VIF). It shows how much the variance of the estimated regression coefficient is increased due to collinearity. It compares the actual standard error to what it would be if the given independent variable were uncorrelated with the other predictor variables in the model. A rule of thumb is that multicollinearity is too high when $VIF > 10$ (Studenmund 2006, 258-259). Thus, all indicators with VIF higher than 10 were excluded from the panel models and the analyses were carried out again.
- For interpreting the results, significance levels (p-values) of t statistics are not considered because we do not use a random sample of the population, but a total of all EU/EFTA countries.
- For the panel modelling, the logarithm of the data is used, so that partial regression coefficients can be used as an “elasticity score” when interpreting the results. Thus, we focus in the interpretation mainly on the partial regression coefficients (β_i), which are the slope coefficients in a multiple regression model. The level of β_i shows that the dependent variable increases by β_i percent on average when the independent variable increases by 1% controlling for all other included independent variables.
- Besides the coefficients, we concentrated on R^2 when interpreting the results. R^2 expresses the total variance of the dependent variable explained by the included independent variables. It ranges from 0 to 1 and thus can be easily transferred into percentage, where 0 is 0,0% and 1 is 100,0%. Its value is usually higher in fixed effects model than in random effects model as the fixed effects model uses fix effects for each country in order to find a better fit.
- As the panel models were mainly affected by the within-country effects (as 10 datasets were included per country), the R^2 is expected to be rather high and its explanatory power has to be interpreted cautiously. However, as the panel models are calculated separately for the different clusters at least some of the country effects are controlled for.
- Missing data were not imputed as GRETL software can carry out the analysis without them.



5.3 Preparatory analysis and its results

5.3.1 Analysis of mediating time lag (Eszter Siposné Nandori and Csaba Ilyés)

An important statement of macroeconomics is that employment follows changes in economic performance. The fact that unemployment reaches its peak in times of economic crises seems to prove the statement. Similar correlations can be found between the rate of inflation and unemployment. If price increase accelerates, wages usually do not keep pace with it, thus real wages decrease. However, the consequent changes in unemployment rate need time to happen. These negative connections can often become obvious with a considerable time lag. Thus, before investigating causes and effects of youth mobility, we need to be informed about the time delays of these effects (Bell and Jones 2014). The aim is to reveal with how many years of delay social and economic conditions affect youth mobility, and vice versa. To examine time delays we used Ordinary Least Squares for Panel Data method with GRETl 7 for Windows software. We based the analysis on the following assumptions:

- Based on the Political Network Theory (Burt 1982), socio-economic conditions have an effect on incoming youth mobility with a smaller time lag than on outgoing mobility.
- The optimal time lag between socio-economic conditions and incoming youth mobility is independent of the kind of mobility (e.g. general mobility or students' mobility).
- The optimal time lag between socio-economic conditions and outgoing youth mobility is independent of the kind of mobility (e.g. general mobility or students mobility; (McCrindle and Wolfinger 2009)
- The labour market is a derived market (labour demand is not wanted for its own sake, but for what it can contribute to production), thus youth mobility has an effect on national labour market conditions with a longer time lag than national labour market conditions affect youth mobility (see Chapter 4.3.2).

Different models with different time delays have been calculated (1 to 5 years) for each theoretical background model (chapter 4.4). For each the model with the highest R^2 and the lowest p-value (significance level) was chosen to be the optimal time lag. For the calculations the maximum possible time lag was set at five years, because with that already only half of the dataset could be used and the dataset should not be shortened further. However, most of the chosen variables showed immediate effects on youth mobility. As stated before, some of the time lag models included more indicators than the theoretical models, to be able to determine the optimal time lag more general³¹. The related indicators for each background model are illustrated in chapter 4.4 and in the tables A.13 to A.22 in the annex.

When examining the datasets, Cyprus was identified as an outlier having 10 times higher mobility scores compared to the other countries, thus Cyprus was left out from all further calculations. Also, because of being an outlier and strongly modifying the final results, the indicator "Foreign languages

³¹ The following indicators were additionally included in the time lag models (for description see Tab.A.4 in the annex). Model "Causes 1": adult education level (St111), students at ISCED level-3 (St121), foreign population (So241), urban population (So251). Model "Causes 2": FDI (Ec221), employment in foreign-controlled enterprise (Ec224), average number of foreign languages learned per pupil at ISCED level 3, St132), urban population (So251). In the time lag analysis for Models Causes 3-4 and Effects 1-6 the indicators were included in line with the theoretical models.

learnt per pupil" (St131) was removed from this calculation (but was still used for the panel analysis). The results of the time lag analysis are presented in the Tab.5.1 and in more detail in the annex (Tab.A.5).

Tab.5.1: Optimal time lags for each model (causes and effects of youth mobility)

Model	R ²	p-value	Optimal time lag
Model Causes 1: Short-term incoming youth mobility (Mo313)	0,391	0,000	0
Model Causes 2: Finished outgoing/returning youth mobility (Mo322)	0,730	0,000	1
Model Causes 3: Ratio of incoming students (Mo317)	0,380	0,000	0
Model Causes 4: Ratio of outgoing students (Mo325)	0,368	0,000	1
Model Effects 1: Youth unemployment rate (Ec111)	0,216	0,000	0
Model Effects 2: GDP at market prices (Ec214)	0,699	0,000	0
Model Effects 3: Youth population (So222)	0,220	0,000	0
Model Effects 4: Ratio of foreign population (So241)	0,778	0,000	0
Model Effect 5: Student's ratio (St113/So211)	0,400	0,000	0
Model Effect 6: Expenditure on pensions in% of GDP (So412)	0,917	0,000	0

As a result, we can conclude that social and economic conditions affect short-term incoming youth mobility and incoming students' mobility immediately with no delay. Concerning finished outgoing/returning youth mobility the time lag is one year with high R². However, this time delay can be explained with the characteristics of the included indicator because the indicator captures mobility, that is "one year old" (see chapter 3.4). Thus, the actual time-lag for Model "Causes 2" is also "0 years". For the Model "Causes 4" explaining outgoing students' mobility the time lag is actually one year, so this model differs from the other ones explaining causes of mobility.

While testing the models for the effects of youth mobility, we found that the included indicators have lower R² values in general (Tab.5.1). However, in all effect models no time lag was found, which means that the effects of youth mobility on socio-economic indicators function immediately without delay.

The analysis reveals that there is no or only a very short time lag between the socio-economic predictors and youth mobility. Young people react immediately and within a short time period to changes in the economic and social characteristics of a country, which is in alignment with the theory of Bell and Jones (Bell and Jones 2014), (see chapter 4). Both directions of the mobility were analysed. For both incoming indicators, the best explanatory power was reached for the immediate effects models without time lag. In the case of outgoing mobility, however, a certain but small time lag of one year was found for both general and students' outgoing mobility. Regarding the finished outgoing/returning mobility the one year difference is due to the survey-design of the EU-LFS, where only former (1 year old) outgoing mobility experiences were captured. The results prove that there is no difference in terms of the kind of mobility, because the models showed more or less similar results of 0 and 1 year. For the examination of how mobility affects socio-economic and demographic indicators all results show a "0 year-" effect, which means that incoming youth mobility influences these indicators immediately. The results are not surprising, since the quick response time to socio-economic changes is accelerated due to the globalisation effects. In chapter 4.2 a change in mobility and migration is discussed, which refutes the classical theory of migration. This might be due to a different style of reaction which the young generation exhibit in relation to socio-economic indicators, the style of the youth is more immediate than ever. Young people grow up in a globalised world, thus quick responses are needed.

5.3.2 Cluster analysis (Ioana Manafi and Daniela Marinescu)

The starting hypotheses of the cluster analysis are in accordance with the centre and periphery model used by Wallerstein (1979) and Pierre and Wallerstein (1991; see chapter 4.3.4) and with Kahanec and Zimmermann (2010), who stated that high rates of youth mobility could be explained by a complex set of push and pull factors, including the economic situation in sending and receiving countries:

- Receiving countries will group in a cluster, offering similar socio-economic conditions for incoming mobility. These countries should be located in the centre of Europe.
- Sending countries will group in another cluster and are located at the periphery.
- The third cluster will consist of outliers (small countries, non EU countries).

The data basis for the cluster analysis was the MOVE-SUF (see chapter 1.2). Datasets of the following countries were not included in the cluster analysis: Cyprus (outlier values in mobility indicators, see chapter 5.3.1), Switzerland and Iceland were not included because of too many missing values in the data. The analysis was performed for selected years, reflecting the whole observed period: 2005, 2007, 2009, 2011, 2012, and 2013. For the cluster analysis the most relevant indicators of the sectors state, society, and economy that were also used for the background models (chapter 4.4) were considered. However, when choosing the specific indicators for the cluster analysis, some of the socio-economic indicators used for the background models had too many missing cells in the period of 2004 to 2013. They were thus excluded from the analysis to maintain comparability. Additionally, some of the variables that were initially investigated were found to be ineffective in determining the clusters (e.g. when the majority of the countries grouped in the same cluster), this applied for: youth population, in work at-risk-of-poverty rate, and the ratio of total emigration (for list of indicators see also Tab.A.4 in the annex). The final set of variables considered for the analysis derived from the three sectors economy, state and society: youth unemployment rate, GDP at market prices, expenditure on social protection, GINI index, at-risk-of-poverty, HDI, population in rural areas, fertility rates, population density, infant mortality rate, and expenditure on pensions.

The analysis was performed using the same indicators with standardised and un-standardised variables. A standardised z-score is a variable that has been rescaled to have a mean of zero and a standard deviation of one. Variables are standardised for contributing evenly to a scale when items are added together, or in order to make interpretation of the results of a regression or other analysis easier. The analyses were performed for different years: 2005, 2007, 2009, 2010, 2011, 2012 and 2013, in order to see if the clusters are persistent over time. The analyses were first performed for every two years, but as the economic crisis modified the clusters, the analysis was also repeated for 2010 and 2012. Furthermore, the analyses were performed both with and without small countries such as: Luxembourg, Malta, and Cyprus, in order to be able to test if the obtained results differed significantly from each other following the convention of macro-analyses in research on poverty.³² With un-standardised variables the clusters are more stable and the outliers are Luxembourg and Norway. With standardised variables the only outlier is Malta. If we exclude Luxembourg, Malta, Cyprus, and Norway (as small countries) the clusters are not affected by un-standardised variables, but the distances between clusters are. Therefore we chose to use the un-standardised cluster solution and to include the small countries (except Cyprus).

³² Macro-analyses on the national level should only include countries with a minimum of 2 million inhabitants to avoid a modelling bias caused by special conditions of small countries (Sachs 2005, 87).

The obtained clusters are persistent in time with some exceptions (see Tab.A.6). In 2010 Spain moved from the first cluster into the second because of the economic crisis, increased rates of youth unemployment, and a reduction in GDP per capita (Elteto 2011), this is in line with the development of the youth mobility ratios for Spain (chapter 3). Also, in other studies it was proven that Spain has changed recently a changed migration flow from a sending to a receiving country (e.g. Izquierdo, Jimeno, and Lacuesta 2016). For the years 2012 and 2013 the obtained results in both cases are more or less similar, thus we used the clusters defined by the analysis with un-standardised variables.

The obtained results are in accordance with the hypothesis and are illustrated in Fig.5.1. In the **first cluster** group the receiving countries which are characterised by low levels of youth unemployment rates, high levels of GDP per capita, high expenditure on social protection, low levels of GINI index, low rates for the risk of poverty index, low level of HDI, high population density, high fertility rates, and high expenditure on pensions. Geographically these countries are located in the centre of Europe and are highly economically and socially developed. Thus, the first cluster is labelled **EU/EFTA centre-receiving countries**. The cluster is persistent in time and none of the countries is grouped in other clusters.

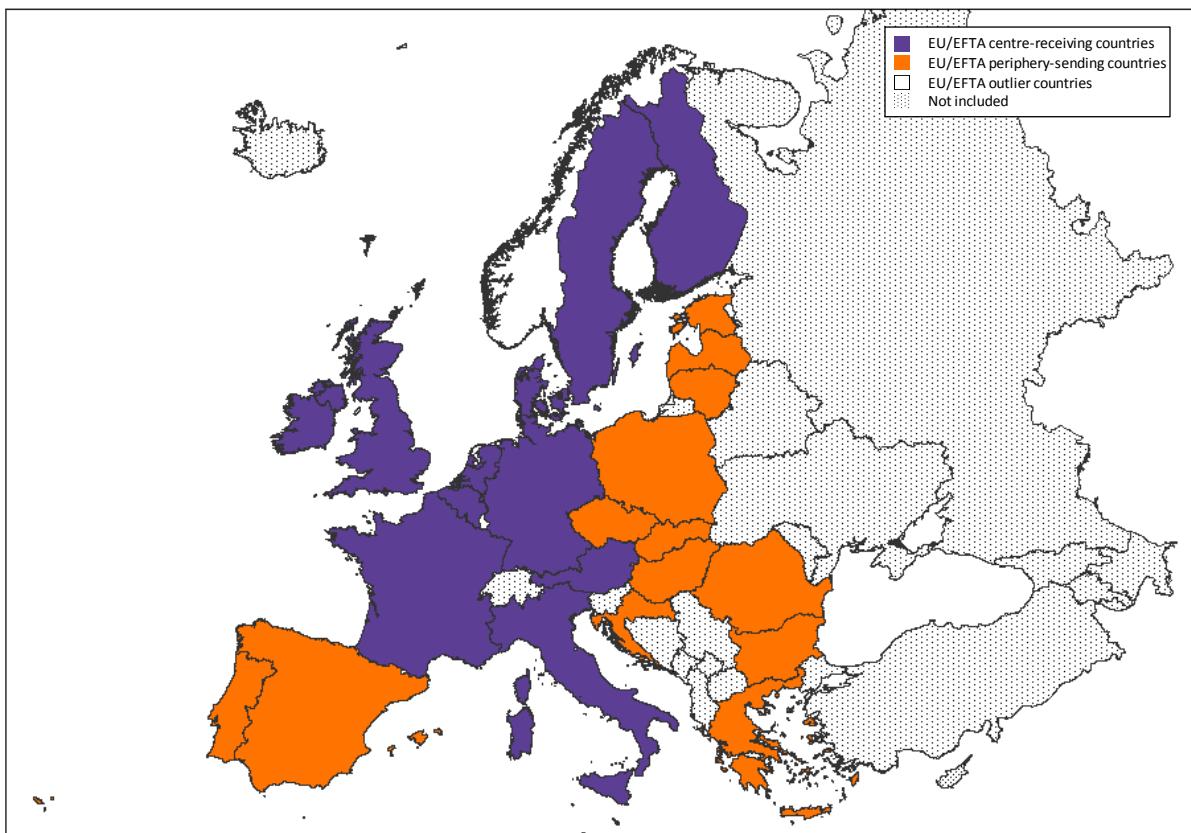
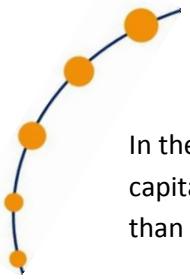


Fig.5.1: Solution with three clusters for EU/EFTA countries

For the countries in the **second cluster** the youth unemployment rates, the GINI index, and the share of people exposed at risk of poverty are higher, the GDP per capita, the expenditure on social protection, the population density, the fertility rates, and the expenditure on pensions are lower than in the first cluster. In this cluster, countries from Eastern Europe, as well as from Spain and Portugal are grouped together. Thus, the name of the second cluster name is **EU/EFTA periphery-sending countries**. With the exception of Spain, which grouped in this cluster from 2010 switching from the first cluster, all other countries grouped only in this cluster.



In the third cluster Norway and Luxembourg are grouped together, which are outliers with a GDP per capita almost 2,5 times higher than in the first cluster, and with youth unemployment rates more than 2 times smaller than in the second cluster. The third cluster name is **EU/EFTA outlier countries**.

Based on the first two clusters the causes of youth mobility and the effects of youth mobility on economic, social, and national indicators can be studied by differentiating between the two clusters and the total sample (chapters 5.4 and 5.5).

5.3.3 Correlation analysis (Daniela Marinescu and Ioana Manafi)

In the correlation analysis, the indicators used for the statistical modelling were included (see Tab.A.4). For the correlation analysis the data of the following three countries were not included: Cyprus (outlier values in mobility indicators, see chapter 5.3.1), Switzerland and Iceland were not included because of too many missings in the datasets. The analysis was performed for the same years of data as the cluster analysis (chapter 5.3.2): 2005, 2007, 2009, 2011, 2012 and 2013. The correlations are used for testing for multicollinearity of the macro-indicators and as a basis for the interpretation of the results of the panel analysis.

The Pearson's correlation coefficients were calculated using SPSS for the variables included in Tab.A.4.³³ The detailed results are displayed in the annex (Tab.A.7-A.12). The correlations between socio-economic indicators and mobility indicators are summarised in Tab.5.2. All the correlations are persistent in time for 2011-2013, but the intensity of the relationships varies from one year to the other. There are lots of correlations that are higher than 0,5 for 2011 to 2013. But for 2009, 2007 and 2005 the level of the correlations is smaller in general, although the direction is the same. As only bivariate relationships are calculated, the results can only give a first impression on the relationships between the socio-economic and mobility indicators.

In 2005 the finished outgoing/returning mobility correlated negatively with the inactive population ratio, GINI index, and poverty rate; and positively with foreign direct investment, foreign languages learnt per pupil, and gross domestic spending on R&D. For 2007-2013 there are no strong correlations for finished outgoing/returning mobility.

For short-term incoming youth mobility and incoming students' mobility the correlations are positively strong with real minimum wages, average wage, GDP at market prices, foreign direct investment, expenditure on social protection, and foreign population for the period of 2005 to 2013. This means that a higher youth and students' mobility comes along with higher real minimum wages, higher average wage, higher GDP at market prices, higher foreign direct investments, higher expenditure on social protection, and higher ratio of foreign population.

In 2011 and 2012 the ratio of out-going students strongly positively correlates with average wage, GDP at market prices, and foreign population. The ratio of out-going students' strongly correlates with Incoming students' mobility and short-term incoming youth mobility.

³³ For the following indicators no data was available for 2013: employment in foreign controlled enterprises as a share of total domestic employment, number of students, students at ISCED level 3-VOC, foreign languages learnt per pupil, pupils learning English, GINI index, and poverty rate (for indicators see Tab.A.4) in the annex.

Tab.5.2: Strong correlations in absolute value (Pearson >,50) between youth mobility indicators and relevant macro-indicators from the sectors Economy, State and Society (for indicators see Tab.A.4)

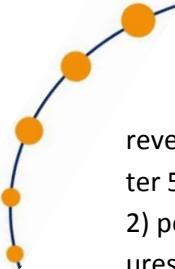
	Incoming youth mobility, short-term (Mo313)					Incoming students' mobility (Mo317)					Outgoing students mobility (Mo325)					Finished outgoing/returning mobility (Mo322)				
	2005	2007	2009	2011	2013	2005	2007	2009	2011	2012	2005	2007	2009	2011	2012	2005	2007	2009	2011	2013
Ec111									-											
Ec112																				
Ec132																			-	
Ec141				+	+	+								+						-
Ec142		+	+	+	+	+			+	+										
Ec214			+	+					+	+						+	+			
Ec221		+	+	+					+	+						+	+	+		
Ec224			+						+							+				
St111																				
St113		+																		
St121																+				
St131														-					+	
St133																				
St214			+	+	+	+	+	+	+	+										
St221														+						
St224														+						-
St231																				-
St233																				
St411					+															+
So111																				
So122														-						
So211															+					
So222							+									+				
So232		-	-																	
So241	+		+	+	+					+	+						+	+		
So252																				
So261																				
So271																				
So313																				
So321																				
So412																				-
So413																				
Mo325				+						+										
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Mo322																	+			

5.4 Analysis of macro-causes of youth mobility

(Eszter Siposné Nandori, Csaba Ilyés and Zsuzsanna Dabasi-Halász)

5.4.1 Introduction

The following panel analysis focuses on macro causes of four kinds of youth mobility. Thus, four panel models are analysed: 1) causes of short-term incoming youth mobility, 2) causes of finished outgoing/returning youth mobility, 3) causes of incoming students' mobility, and 4) causes of outgoing students' mobility. The theoretical framework for the analyses is described in detail in chapter 4. The specific background models for the analyses are described in chapter 4.4.1. For the panel modelling panel OLS regression analysis is used. 30 countries are included (Cyprus as an outlier was excluded) with data for 10 years (2004-2013) as described in chapter 5.2.4. On the basis of the time lag results (chapter 5.3.1), the models "Causes 1" and "Causes 3" will be calculated with cross-sectional datasets as for both the identified time lag was "0 years". The models "Causes 2" and "Causes 4" however are calculated with longitudinal datasets, including a "1 year" time lag. The cluster analysis



revealed two country clusters: centre-receiving countries and periphery-sending countries (chapter 5.3.2), thus each panel model are calculated in three versions: 1) centre-receiving countries, 2) periphery-sending countries, and 3) total sample. The results for each model are illustrated in figures (Fig.5.2-5.5) and in more detail in tables in the annex (Tab.A.13-A.16). The respective indicators for each model can be found in both figures and tables.

5.4.2 Model Causes 1: Causes of short-term incoming youth mobility

Based on the theoretical background model described in chapter 4.4.1, the following hypotheses for the causes of short-term incoming youth mobility were developed³⁴:

- A lower unemployment and NEET rate lead to a higher level of incoming youth-mobility.
- A high level of minimum wages leads to a higher level of incoming youth mobility.
- A higher GDP leads to a higher level of incoming youth mobility.
- A higher level of foreign direct investments (FDI) and a higher rate of employments in foreign enterprises lead to a higher rate of incoming youth mobility.
- A high level of urbanisation leads to more incoming youth mobility.
- A higher HDI leads to a higher level of incoming youth mobility.
- A high level of social protection fosters incoming youth mobility.
- A low level of poverty leads to a higher level of incoming youth mobility.
- A higher level of the GINI index leads to a smaller level of incoming youth mobility.
- The higher the rate of pupils learning English and the higher the number of languages learnt per pupil, the higher the incoming youth-mobility is.

When interpreting the results it is useful to keep the characteristic of the incoming youth mobility indicator in mind: Short-term incoming mobility refers to youth aged 15-29 who live in the respective country for up to three years but do not hold citizenship. They moved from EU-28/EFTA countries to the respective country and are therewith classified as “incoming youth”. The reasons for moving were not captured (chapter 3.1). The main results of the panel analysis for causes of short-term incoming youth mobility are illustrated in Fig.5.2 and in the annex (Tab.A.13). The model is calculated without time lag (chapter 5.3.1).

When looking at the results for the total sample, youth unemployment, GDP, employment in foreign controlled enterprises, pupils learning English and HDI are positively related to incoming youth. Whereas minimum wages, FDI outward, foreign languages learnt per pupil and GINI index are related negatively to incoming youth. The explained variance is very high with 90%. The most influencing factors are HDI, GDP and minimum wages, whereas a high HDI and GDP and low minimum wages foster incoming youth mobility. The indicators minimum wages has to be treated cautiously because of many missing values.

Considering the results for the single country clusters, the explained variance is even higher, reflecting the result that country differences matter. Also, the coefficients are higher for the differentiated models.

In centre-receiving countries youth unemployment rate, NEET rate, real minimum wages, pupils learning English, expenditure on social protection, income inequality, and HDI are positively related

³⁴ As not all relationships for explaining youth mobility have been analysed on macro-level yet, some of the assumptions are explorative, based on the described neoclassic economic approach.

to incoming youth mobility, whereas GDP, FDI, employment in foreign controlled enterprises, foreign languages learnt per pupil, poverty rate and urban population are negatively related to incoming youth. The most important indicators in the centre countries are HDI, urban population and minimum wages, whereas a higher HDI and a lower urbanisation and real minimum wages foster incoming youth mobility.

In the periphery-sending countries, youth unemployment, the NEET rate, GDP, employment in foreign controlled enterprises, pupils learning English, both inequality indicators, and HDI are positively related to incoming youth mobility, whereas real minimum wages, FDI, foreign languages learnt per pupil, expenditure on social protection, poverty rate and urbanisation are negatively related to it. The most relevant fostering factors in the periphery countries are lower urbanisation, higher HDI, and lower minimum wages.

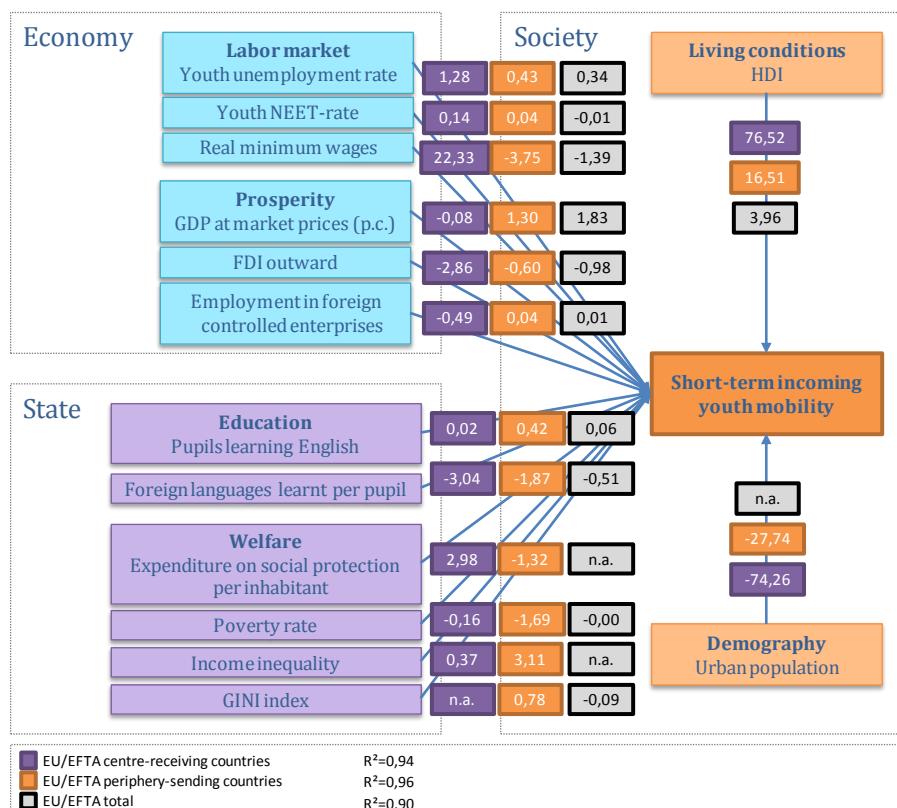
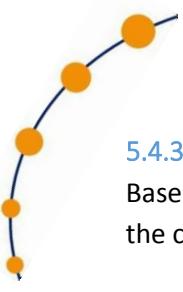


Fig.5.2: Panel analyses of Model "Causes 1" explaining the causes of "Short-term incoming youth mobility" for two clusters and total sample (cross sectional datatsets)³⁵

The following differences between the clusters appeared: With higher minimum wages, youth mobility rises in the centre countries, whereas it decreases in periphery countries. A higher GDP fosters mobility only in the periphery countries. With a higher expenditure on social protection incoming mobility is fostered in the centre countries and hindered in the periphery countries. The HDI has a much stronger fostering effect for youth mobility in the centre countries than in the periphery countries.

³⁵ Because of too high multicollinearity income inequality, poverty rate and urban population were excluded from the analysis of the total sample; and GINI index was excluded from the centre-receiving sample (Tab.A.13).



5.4.3 Model Causes 2: Causes of finished outgoing/returning youth mobility

Based on the theoretical background model described in chapter 4.4.1, the following hypotheses for the causes of finished outgoing/returning youth mobility were developed³⁶:

- A high youth unemployment rate and a high NEET rate lead to a higher level of outgoing youth mobility.
- A low level of minimum wages leads to a higher level of outgoing youth mobility.
- A lower GDP leads to a higher level of outgoing youth mobility.
- A high level of rural population (i.e. a low level of urban population) leads to a higher level of outgoing youth mobility.
- A lower HDI leads to a higher level of outgoing youth mobility.
- A higher ratio of foreign population leads to a higher level of outgoing youth mobility.
- A high poverty rate pushes youth to go abroad for work reasons.
- A smaller level of the GINI index leads to a higher level of outgoing youth mobility.
- The higher the number of foreign languages learnt per pupil and the higher the ratio of pupils learning English the higher the outgoing youth mobility rate is.
- The higher the level of adult education in a country, the higher the level of outgoing youth mobility is.
- The higher the ratio of workers with vocational qualifications, the lower the level of outgoing mobility.

The term “Finished outgoing/returning mobility” applies to youth who have been abroad exactly one year before the survey. Thus, the indicator covers only finished and mostly short-term mobilities. The covered information refers to youth aged 15-29 who live in the respective country and have been abroad to another EU-28/EFTA. The reasons for moving were not captured (chapter 3.4). The main results of the panel analysis for causes of finished outgoing/returning youth mobility are illustrated in Fig.5.3 and in the annex (Tab.A.14). The model was calculated with one year time lag (chapter 5.3.1).

In all three samples, a higher level of youth unemployment rate is associated with a lower level of outgoing youth mobility, whereas a higher NEET rate is related to a higher outgoing youth mobility. The increase of minimum wages decreased outgoing youth mobility in the periphery sending countries and yet increased it in the centre-receiving countries. A higher GDP leads to a higher level of outgoing mobility in the periphery-sending countries, but to a lower level in the centre-receiving countries. The higher the adult education level, the higher the outgoing youth mobility is in all three samples. The ratio of workers with vocational qualification is inversely related to outgoing mobility as assumed, because students in vocational training reflect lower education level. The relationships to the foreign language proficiency indicators are inconsistent and too low for interpretation. Also, the effects of the poverty indicator can be disregarded. The strongest effects are found for the social indicators: lower levels of HDI lead to a higher level of outgoing youth mobility in the periphery-sending countries, but not in the centre-receiving countries. A higher ratio of foreign population leads to a lower level of outgoing youth mobility in all samples. A high level of rural population leads to a higher level of outgoing youth mobility, but with a stronger effect in the periphery-sending countries than in the centre-receiving countries.

³⁶ As not all relationships for explaining youth mobility have been analysed on macro-level yet, some of the assumptions are explorative, based on the described neoclassic economic approach.

Outgoing youth mobility is pushed in the periphery sending countries especially by lower minimum wages, lower HDI and lower urbanisation. With this result typical push factors become visible, which are the reason for socio-economic driven mobility flows. For the centre receiving countries however, the most important push factors for returning youth mobility are high minimum wages and a high adult education level. Here one could assume that the reasons for mobility are more value-oriented (e.g. education mobility) wherefore resources as good wages and educated parents are needed and thus mobility is not forced by economic problems.

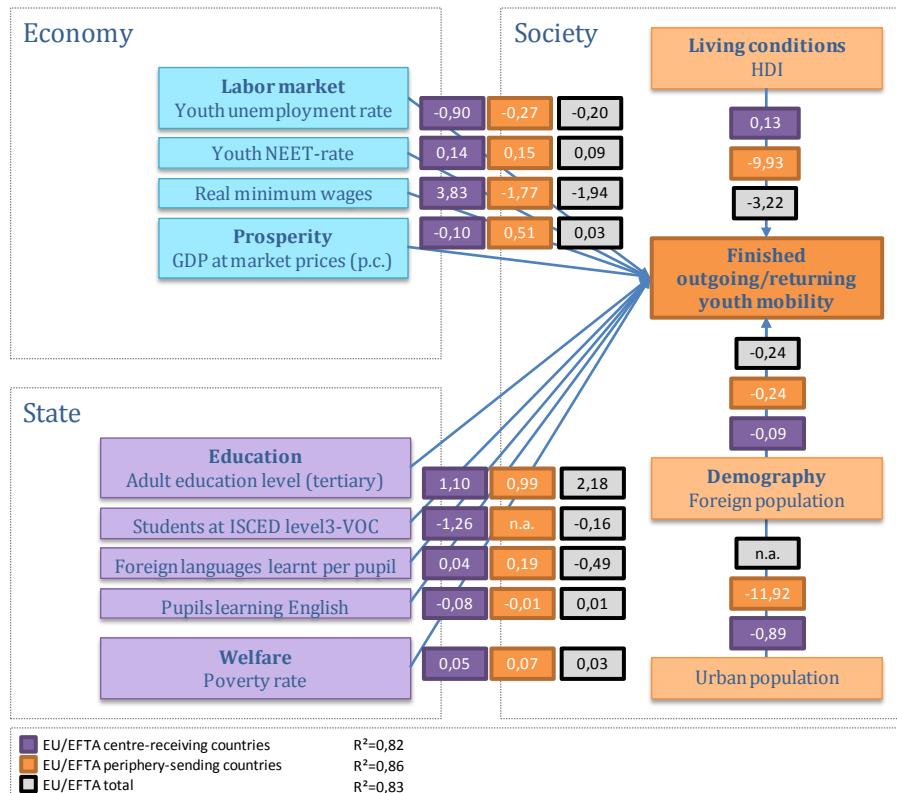


Fig.5.3: Panel analyses of Model "Causes 2" explaining the causes of "Finished outgoing/returning youth mobility" for two clusters and total sample (datatsets with 1 year time lag)³⁷

5.4.4 Model Causes 3: Causes of incoming students' mobility

Based on the theoretical background model described in chapter 4.4.1, the following hypotheses for the causes of incoming students' mobility were developed³⁸:

- A lower youth unemployment rate fosters incoming student mobility.
- A higher GDP leads to a higher level of incoming student mobility.
- A higher HDI leads to a higher level of incoming student mobility.
- A low level of poverty leads to a higher level of incoming student mobility.
- A low level of poverty also fosters youth mobility in general, especially student mobility.
- The higher the rate of pupils learning English and the higher the number of languages learnt per pupil, the higher the incoming ratio of student mobility.
- The higher the adult education level, the higher the ratio of incoming student mobility.

³⁷ Because of too high multicollinearity the urbanisation indicator (only in the total sample) and the GINI coefficient were excluded (in all three samples, Tab.A.14).

³⁸ As not all relationships for explaining youth mobility have been analysed on macro-level yet, some of the assumptions are explorative, based on the described neoclassic economic approach.

- The higher the level of gross domestic spending on R&D the higher the incoming ratio of students.

The incoming students' mobility indicator derives from Eurostat and captures incoming students from EU-28, EFTA and candidate countries. When working with the students' mobility indicator it has to be considered that EU-mobility programmes also foster mobility in times of economic crisis. Thus, programme-mobility within the EU should not be directly affected by the economic crisis and other labour market conditions (chapter 3.3). The results are illustrated in Fig.5.4 and in the annex (Tab.A.15). Each of the three models is calculated without time lag (chapter 5.3.1).

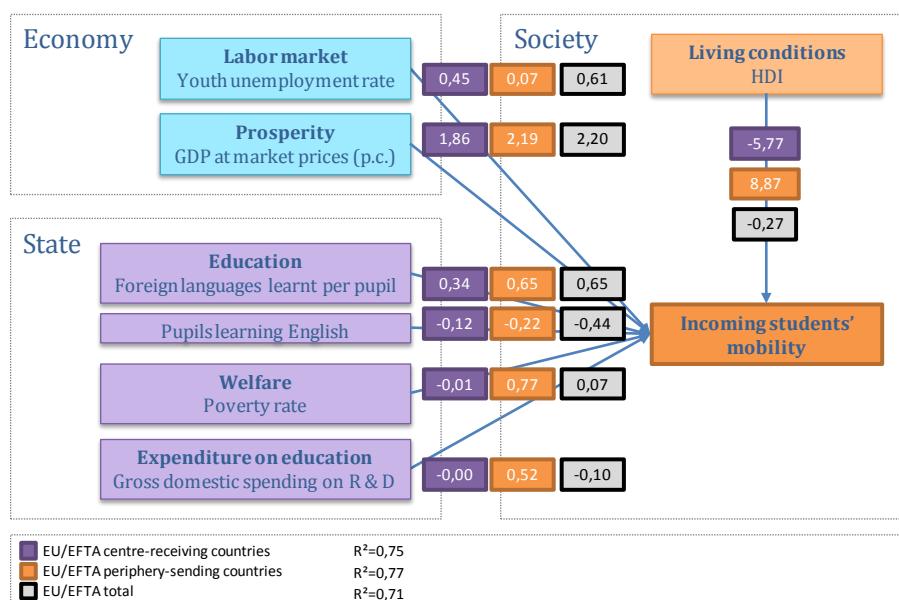


Fig.5.4: Panel analyses of Model “Causes 3” explaining the causes of “Incoming students’ mobility” for two clusters and total sample (cross sectional datatsets)³⁹

Incoming student mobility is positively connected in the centre-receiving countries to a higher youth unemployment rate, better prosperity and more languages learnt per pupil whereas a higher HDI, poverty rate, more spending on R and D, and higher level of pupils learning English is related to a decrease in incoming students' mobility.

The picture for the periphery sending countries mainly differs regarding the HDI, which here is positively related to incoming students' mobility. Also, the expenditure on research and development, which is of no relevance in the centre countries, foster incoming students' mobility in the periphery countries. However, the relationship was assumed to be much stronger. The periphery countries model reaches the highest explanatory power with 77%.

5.4.5 Model Causes 4: Causes of outgoing students' mobility

Based on the theoretical background model described in chapter 4.4.1, the following hypotheses for the causes of incoming students' mobility were developed⁴⁰:

- A high youth unemployment rate fosters outgoing student mobility.

³⁹ Because of too high multicollinearity adult education level, GINI and urbanisation was excluded from the modelling in all three samples (see Tab.A.15).

⁴⁰ As not all relationships for explaining youth mobility have been analysed on macro-level yet, some of the assumptions are explorative, based on the described neoclassic economic approach.

- A lower GDP leads to a higher level of outgoing student mobility. Whereas a high GDP can also be seen as fostering factor for short-term mobilities (e.g. students' mobility).
- A lower HDI leads to a higher level of outgoing youth mobility.
- A high poverty rate pushes youth to go abroad for work reasons and hinders student mobility. A low level of poverty also fosters youth mobility in general, especially students' mobility.
- The higher the number of foreign languages learnt per pupil and the higher the ratio of pupils learning English the higher the outgoing student mobility rate is.
- A high level of adult education fosters outgoing student mobility.
- The lower the gross domestic spending on R&D the higher the outgoing student mobility.

The indicator "outgoing students' mobility" captures students leaving for other EU-28, EFTA and candidate countries and derives from Eurostat (chapter 3.5). The results are illustrated in Fig.5.5 and in the annex (Tab.A.16). The model was calculated with a 1 year time lag (see Chapter 5.3.1).

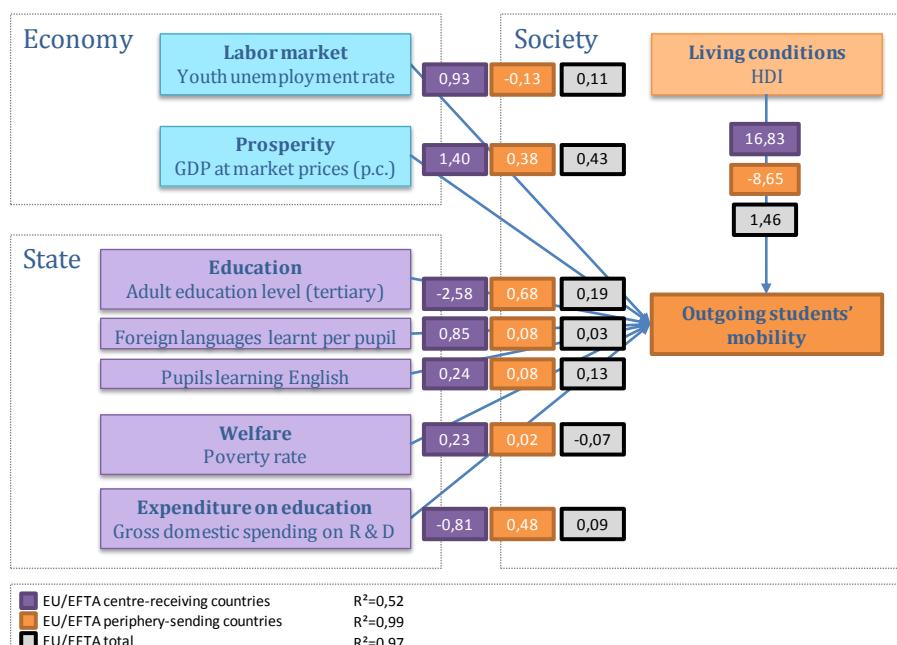
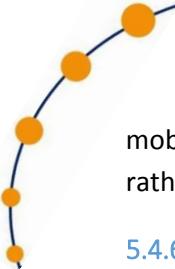


Fig.5.5: Panel analyses of Model "Causes 4" explaining the causes of "Outgoing students' mobility" for two clusters and total sample (datatsets with 1 year time lag)

The model for the centre-receiving countries can explain only 52% of the variance. Youth unemployment rate, prosperity, HDI, foreign language proficiency, pupils learning English and poverty rate are positively related to outgoing students' mobility in this country cluster. The adult education level is negatively related to the outgoing students as is the spending on R&D. This could be due to the lower experienced necessity of studying abroad, when the study conditions in the home country are well enough. But the coefficient is rather low so the result should not be overrated.

For the periphery countries the explained variance is much higher, the model explains 99% of outgoing students' mobility and the directions of the effects are mostly opposite to the ones in the centre-countries. A lower HDI, a lower unemployment, a higher adult education level, and a higher spending on R&D foster students in periphery countries to study abroad.

The differences between the clusters become obvious, even if student mobility is fostered in both clusters through a higher GDP, reflecting the difference between student mobility and other types of



mobility. A higher HDI fosters students to go abroad in the centre countries, whereas a lower HDI rather pushes students away in periphery countries, to find better socio-economic conditions abroad.

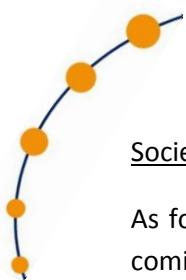
5.4.6 Summary

The results of the panel models analysing the causes of youth mobility are summarised in the following section sorted by the sectors and dimensions. Thereby the proposed interpretations on the individual level have to be seen as preliminary reasoning, since correlations on the macro level do not admit causal conclusions on the micro level. This could conduce to ecological fallacies.

Economy

The relation between *labour market disadvantages* and youth mobility is as follows: the increase of youth unemployment rate increases incoming youth mobility and, also, incoming students' mobility in both country clusters, and the total sample so the initial hypothesis is rejected. Higher youth unemployment rate leads to lower outgoing youth mobility. When youth unemployment rate increases, more students tend to leave the country in the periphery-sending countries, which underpins the initial hypothesis. In the case of centre-receiving countries however, increased youth unemployment is associated with decreased outgoing students' mobility, reflecting the special character of educational mobility in the centre countries, which is not forced through economic constraints. Another indicator of labour market disadvantages is the NEET rate that expresses the share of youth who are either unemployed or inactive and not involved in education or training. These people are at risk of becoming poor and/or socially excluded as their income level often falls below the poverty threshold and they often do not have the necessary skills and abilities to improve their economic and social situation. Higher NEET rate leads to higher incoming and outgoing youth in both clusters. The positive relation between NEET rate and incoming mobility could indicate that the skills and abilities of incoming workers could be complementary of the skills and abilities of existing workers. The relation between the NEET rate and outgoing youth mobility strengthens the hypothesis. Higher minimum wages foster more incoming and outgoing youth mobility in centre-receiving countries, but at the same time lower wages in the periphery countries foster incoming and outgoing mobility. In the centre-receiving cluster more developed countries are included, thus minimum wages can be considered as an indicator of economic growth, the increase of which leads to more opportunity for self-realisation like mobility. For the periphery countries, high wage levels hinder both those who come to come into the country and those who leave the country (maybe an explanation could be that they are not pushed to leave).

For the dimension *prosperity*, it was hypothesised that an increased GDP per capita increases incoming and decreases outgoing youth and students' mobility. In periphery-sending countries, however, an increased GDP increases all four examined mobility types including students' mobility and finished outgoing mobility, indicating that economic growth provides more opportunity for any kind of mobility. In centre-receiving countries however, it fosters only students' mobility and is negatively correlated to incoming and finished outgoing/returning mobility (which is in accordance with the hypothesis). A higher FDI leads to lower incoming youth mobility in both clusters, which is the opposite effect than the one we hypothesised. It shows that foreign enterprises are not per se more open to foreign employees. The employment in foreign enterprises, however, is associated positively with a higher level of incoming youth mobility in the periphery-sending countries; reflecting the fact that big foreign companies can be a driving force for incoming youth in the periphery countries. This effect could not be verified for the centre-countries.



Society

As for the indicators of *prosperity*, it was hypothesised that increased GDP per capita increases incoming and decreases outgoing youth and students' mobility. In periphery-sending countries, increased GDP increases all four examined mobility indicators, indicating that economic growth provides more opportunity for any kind of mobility. In centre-receiving countries however, it decreases all regarded mobility indicators (which is in accordance with the hypotheses, except for the case of incoming youth mobility). As far as all the countries are included, economic growth increases all examined mobility indicators. Higher FDI leads to lower incoming youth mobility, which represents the opposite effect than the one we hypothesised. It shows that foreign enterprises are not per se proven to be more open to foreign employees. However, the growth of the third indicator of prosperity, employment in foreign enterprises, is associated with higher level of incoming youth mobility in the periphery-sending countries, reflecting that big foreign companies possibly could be a fostering factor making economically deprived countries attractive to incoming youth. Thus, the hypothesis is rejected only in centre-receiving countries.

Regarding *demography*, a higher level of urbanisation leads to less incoming youth mobility in both country clusters. This finding is actually counterfactual to the respective hypothesis. However, the effect of urbanisation on outgoing youth mobility is opposite: higher levels of urbanisation are associated with less outgoing youth mobility. Thus, the initial hypothesis is rejected for incoming mobility but the data corroborates the hypothesis for the outgoing mobility. The effect of migration background (ratio of foreign population) is the opposite compared to what was expected: a higher ratio of foreign population leads to a lower level of outgoing youth mobility.

Living conditions were operationalised with the Human Development Index. A higher level of HDI leads to higher level of incoming youth mobility in all the three examined samples. It also leads to a higher level of outgoing youth mobility in the centre-receiving countries, reflecting that youth in countries with well developed socio-economic conditions might perceive push- and pull factors for mobility differently. In periphery-sending countries however, the initial hypotheses can be proofed with the data: low HDI is related to higher outgoing mobility. As for students' mobility, a higher HDI promotes outgoing students' mobility in the centre countries and hinders it in the periphery countries. Incoming students' mobility on the other hand is fostered by a higher HDI only in the periphery countries.

State

As for *welfare* indicators, the hypothesis that high level of social protection fosters incoming youth mobility is not rejected in centre-receiving countries, but rejected in periphery-sending countries. Higher level of poverty pushes more young people to leave the country and attracts less people to immigrate, so the initial hypotheses about the relationship between poverty and youth mobility can be proofed with the data. In the case of incoming students in centre-receiving countries the effect is different than in the case of incoming youth in general, as the increase of poverty rate increases young students' immigration. As for outgoing students, poverty fosters emigration mostly in the centre countries and less in the periphery countries. The results about the relationship between poverty and mobility proof the initial hypotheses, except the fact that higher poverty leads to more incoming students' mobility. Regarding income inequality the results are opposite to the hypothesis: the hy-

pothesis about the effect of income inequality is rejected, as a higher income inequality is related to higher incoming youth mobility in both centre and periphery countries.

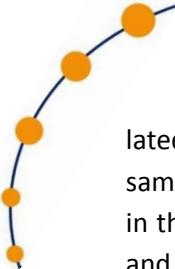
As far as *education level* is concerned, the effect of the ratio of “vocationally qualified” is the same as hypothesised for the centre countries. As this level of qualification can be considered a low/medium one, the higher its ratio, the lower is the level of outgoing mobility. The tertiary adult education level strengthens the same conclusion for outgoing youth mobility in both clusters: the higher the education level, the more young people are likely to leave the country. In the case of outgoing students’ mobility, higher education level leads to higher level of outgoing students’ mobility only in the periphery-sending countries. In the centre-receiving countries however, the effect of the level of adult education is opposite. The effects of foreign language proficiency on mobility are ambiguous yet the relationships for the ratio of pupils learning English have the same directions for both clusters: a high rate of pupils learning English is positively related to incoming youth mobility as it makes the destination country more attractive for young people and also to outgoing students’ mobility as speaking English often is a prerequisite for studying abroad. On the other hand, the rate of pupils learning English is negatively correlated to returning youth mobility and incoming students’ mobility. The effect of the average number of languages learned per pupil is more in line with the assumptions as it is positively related to both kinds of out-going mobility. Again, there are no differences between the clusters. Also, for incoming students’ mobilities the number of languages acts as a pull factor. However, general incoming youth mobility is negatively correlated to the foreign languages learnt in a country.

For students mobility the indicators *gross domestic spending on R&D* was investigated as an independent variable. It has the hypothesised effect on outgoing students’ mobility in the centre countries. More spending on R&D generates less outgoing students’ mobility. In the periphery countries, however, more spending on R&D is fostering outgoing students’ mobility. Regarding incoming students’: expenditure on R&D has no effect on incoming students’ in the centre-countries but fosters incoming students’ in the periphery.

5.5 Analysis of effects of youth mobility on socio-economic macro-indicators

5.5.1 Introduction (Eszter Nandori Siposné, Csaba Ilyés, Ioana Manafi, Daniela Marinescu)

The following panel analysis will focus on socio-economic macro effects of different kinds of youth mobility. However, as the outgoing youth mobility indicator only includes returning mobilities and thus cannot be assumed to affect socio-economic macro indicators, such as youth unemployment, it was not included into the models. A total of six panel models will be analysed: 1) effects on youth unemployment rate, 2) effects on prosperity, 3) effects on ratio of young people in the society, 4) effects on ration of foreign population, 5) effects on the ration of students, and 6) effects on the expenditure on pensions. Whereas the models 1-4 are analysing the effects of incoming youth mobility, model 5 focuses on incoming students’ mobility and model 6 aims at analysing the effects of the international emigration ratio. Similar to the panel models for the causes of youth mobility, the theoretical framework is described in detail in chapter 4 and the specific background models for the analyses are described in chapter 4.4.2 and 4.4.3. For the panel modelling, panel OLS regression analysis was used. 30 countries were included (Cyprus as an outlier was excluded) with data for ten years (2004-2013) as described in chapter 5.2.4. On the basis of the time lag results (chapter 5.3.1), all models will be calculated with cross-sectional datasets, as for all the identified time lag was “0 years”. Following the results of the cluster analysis (chapter 5.3.2), each panel model will be calcu-



lated in three versions: 1) centre-receiving countries, 2) periphery-sending countries, and 3) total sample. The results for each model are illustrated in figures (Fig.5.6-5.11) and in more detail in tables in the annex (Tab.A.17-A.22). The respective indicators for each model can be found in both figures and tables. Because some of the indicators have a lot of missing values⁴¹ the R²-values may have smaller values.

5.5.2 Effects of youth mobility on economic macro-indicators (Eszter Siposné Nandori and Csaba Ilyés)

On basis of the background model described in chapter 4.4.2, the following hypotheses about the effects of youth mobility on national labour markets were developed:

- H1: Incoming youth mobility does not increase youth unemployment rate, but increases GDP per capita.
- H2: Mobility is circular in the case of the youth population therefore the skills of the incoming youths and the skills of the existing workers are mainly complementary.
- H3: The effect of youth mobility on economic indicators is worth examining also for the clusters identifying different country patterns. Our hypothesis is that the effect of youth mobility on economic indicators is different in the well developed countries of Europe compared to the less developed countries (see the centre periphery model in chapter 4.3.4 for details).
 - a. Circular mobility is especially typical for the centre countries, i.e. incoming mobility decreases unemployment in centre countries.
 - b. In peripheral countries, however, this effect is less typical as the causes of unemployment are different in the case of the centre and of the periphery.

Model Effects 1: Effects of incoming youth mobility on youth unemployment rate

The main results of the panel analysis for unemployment are illustrated in Fig.5.6 and in the annex (Tab.A.17). In the total sample, the increase of short-term incoming youth mobility can decrease youth unemployment rate, controlling for economic (GDP at market prices, foreign direct investment and real minimum wages) and social conditions (urban population and adult education level). A one percent growth in short-term incoming youth mobility decreases youth unemployment rate by 0,1% on average, based on the regression model. Furthermore, GDP per capita also decreases youth unemployment rate. With the increase of real minimum wages, however, youth unemployment increases, so the correlation is positive. Regarding the social conditions, both adult education level and the ratio of urban population are positively related to youth unemployment.

The analysis of the potential influence of youth mobility on youth unemployment rate in centre-receiving countries provides the following results: an increase of short-term incoming youth mobility can decrease youth unemployment rate, controlling for economic (GDP at market prices, foreign direct investment, and real minimum wages) and social conditions (urban population and adult education level). A one percent growth in short-term incoming youth mobility decreases youth unemployment rate by 0,1% on average based on the regression model. Additionally, the growth of GDP per capita, FDI, and the ratio of urban population also decreases youth unemployment rate. Real minimum wages and adult education level are positively related to youth unemployment.

⁴¹ The models could be improved if there were less missing values for some indicators (GINI index, HDI) or countries (e.g. Croatia, Romania, Bulgaria). One of the reasons for the gaps is the poor data collection in the eastern European countries before being an EU member state. Additionally, for Romania being not an OECD Member State all the variables used from OECD have missing data (chapter 1.2).

The results of the analysis of periphery-sending countries reveal also that incoming youth mobility can decrease youth unemployment rate. All examined economic indicators (GDP, FDI, real minimum wages) are inversely related to youth unemployment. Urban population and adult education level, however, are positively related to it.

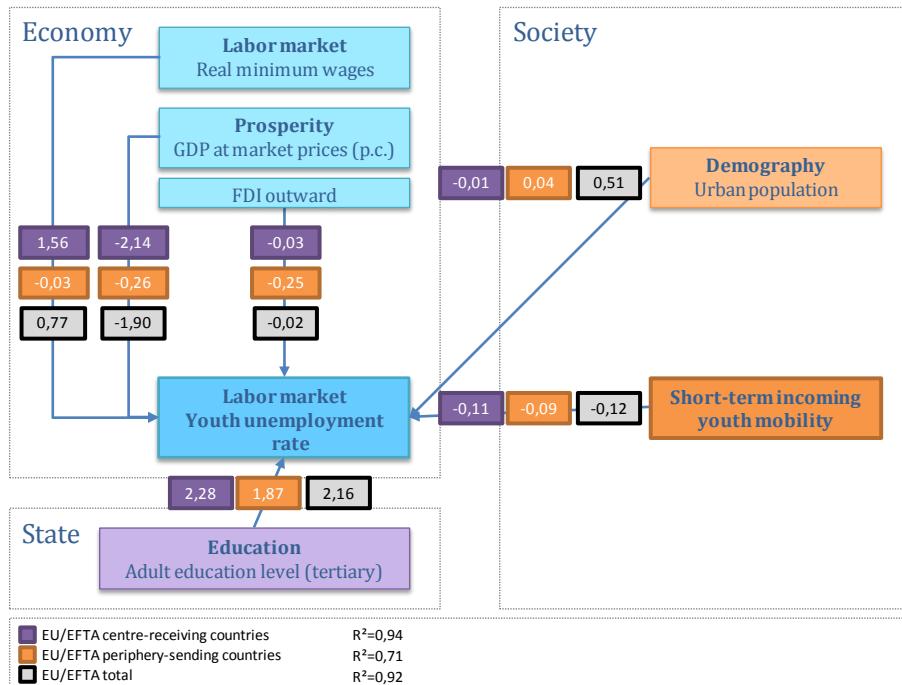


Fig.5.6: Panel analyses of Model "Effects 1" explaining the effects of Short-term incoming youth mobility and other controlled indicators on "Youth unemployment rate" for two clusters and total sample (cross sectional datasets)

Model Effects 2: Effects of incoming youth mobility on GDP

The main results of the panel analysis for GDP are illustrated in Fig.5.7 and in the annex (Tab.A.18). In the case of the potential influence of youth mobility on economic growth, the results for the total sample show that an increase in short-term incoming youth mobility can increase GDP controlling for economic (foreign direct investment and real minimum wages) and social conditions (urban population and adult education level). A one percent growth in short-term incoming youth mobility increases economic growth by 0,1% percent on average based on the regression model. Both economic indicators (FDI and employment in foreign controlled enterprises) have a negative effect on GDP. The increase of adult education level increases GDP, while HDI decreases it.

In the centre-receiving countries, an increase of incoming youth mobility increases economic growth just like employment in foreign controlled enterprises, HDI and adult education level. The rise of FDI, however, decreases economic growth.

The analysis of the potential influence of youth mobility on economic growth in periphery-sending countries shows that not only incoming youth mobility, but also adult education level and HDI are positively related to GDP, while FDI and employment in foreign controlled enterprises are inversely related to it.

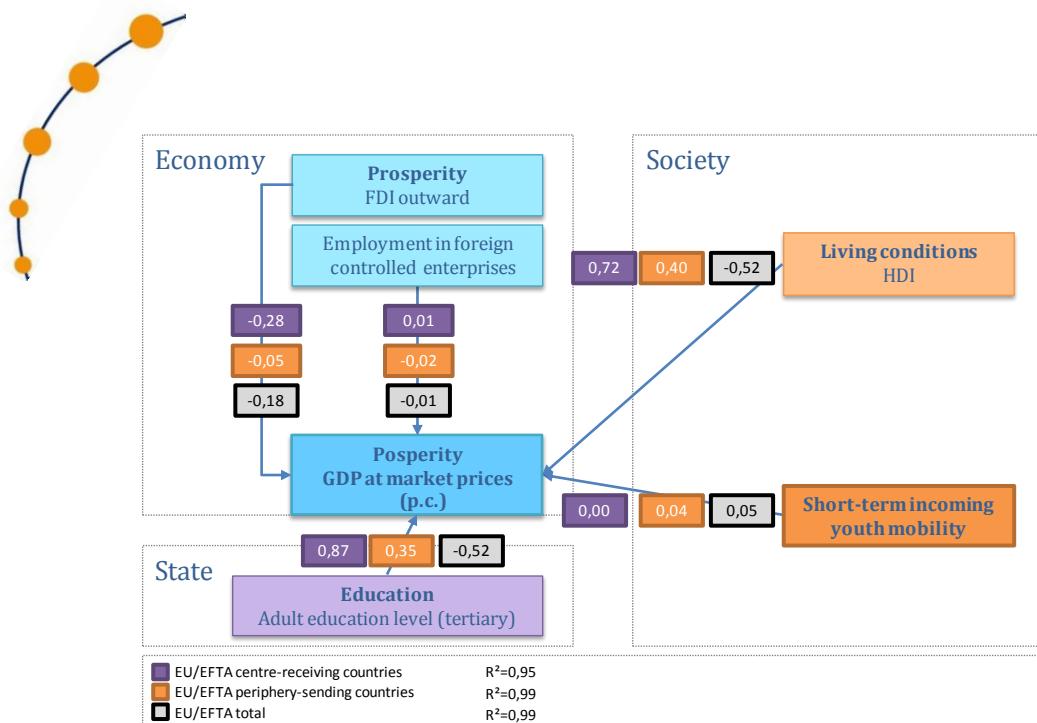


Fig.5.7: Panel analyses of Model "Effects 2" explaining the effects of "Short-term incoming youth mobility" and other controlled indicators on "GDP at market prices" for two clusters and total sample (cross sectional datasets)

5.5.3 Effects of youth mobility on social and state-related macro-indicators

(Daniela Marinescu and Ioana Manafi)

The aim of this chapter is to analyse the effects of youth mobility on social and economic conditions. As discussed in more detail in chapters 4.3.3 and 4.4.3, youth mobility and its impacts generate huge debates in the literature. Empirical studies show that there are no or only few general conclusions regarding these issues, many of them being dependent on more specific aspects such as: the type of analysis, the data set (and its problems of dimension, accuracy, availability, consistency etc.), the set of countries/regions involved, the period of time, etc. In this light, our analysis concentrates on testing, exploring the consequences, and interpreting of the following hypotheses (described in detail in chapter 4.4.3):

- H1: A higher level of *incoming youth mobility* comes along with *an increasing level of youth in the society*.
- H2: *Ratio of foreign population* is positively influenced by *incoming youth mobility*.
- H3: The *students' ratio* is affected by students-mobility: a high level of *incoming students' mobility* leads to a higher ratio of students in the total population.
- H4: The pension systems are affected by *international emigration*: a high level of emigrants leads to a higher pressure on the pension system.

Model Effects 3: Effects of incoming youth mobility on ratio of youth population

The model analyses the effects of incoming youth mobility on the ratio of young population in the total population. In order to get better insights, we use as additional control variables the following socio-economic indicators: infant mortality rate and fertility rate. The main results of the panel analysis are summarised in Fig.5.8 and in the annex (Tab.A.19).

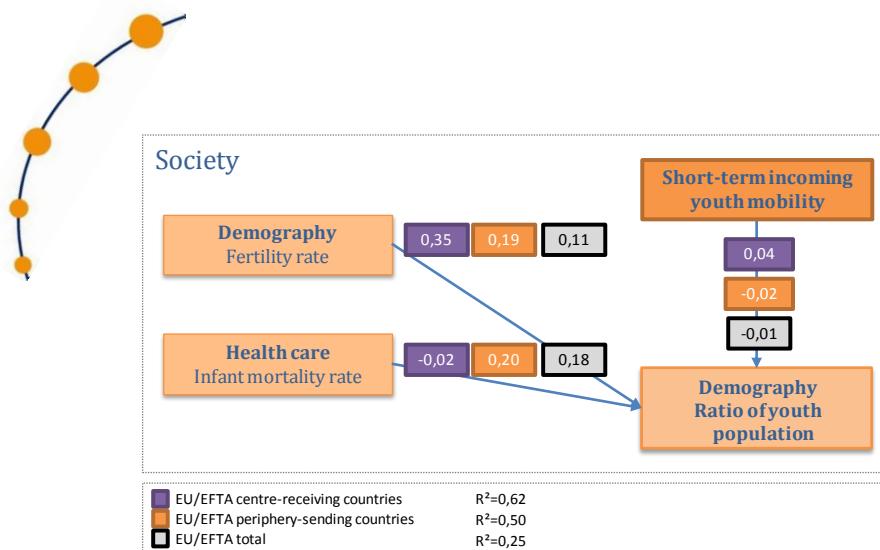


Fig.5.8: Panel analysis of Model "Effects 3" explaining the effects of incoming mobility and other controlled indicators on "Ratio of young people in total population" for two clusters and total sample (cross sectional datasets)

The results reveal that the incoming youth mobility is satisfactory for the enounced hypothesis only for the EU/EFTA centre-receiving countries: if the incoming youth population increases by one percent, the ratio of young people in total population increases by 0,04%. The same interaction has an opposite direction for the periphery-sending countries where the incoming youth mobility is very low in general (or even zero) and does not have significant effects on the ratio of youth population.

In all three samples, the fertility rate has a positive effect on the ratio of youth population, as expected, but with different magnitudes across the clusters. What is surprising is the influence of the infant mortality rate: while having a negative influence on youth population for the centre-receiving countries (increasing infant mortality rates yields a lower ratio of young people), its effect is positive for the periphery-sending countries.

Model Effects 4: Effects of incoming youth mobility on ratio of foreign population

The model considers the ratio of foreign population as dependent variable, possibly influenced by incoming youth mobility while controlling for further socio-economic indicators: population density, Human Development Index and overgrowing rate. The main results of the panel analysis are shown in Fig.5.9 and in the annex (Tab.A.20).

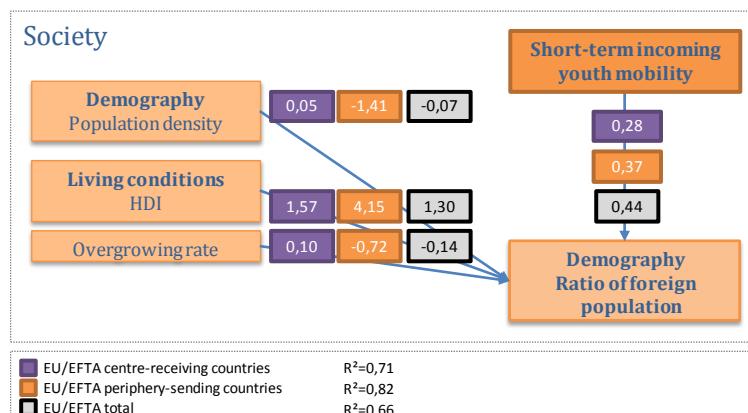


Fig.5.9: Panel analysis of Model "Effects 4" explaining the effects of incoming mobility and other controlled indicators on "Ratio of foreign population in total population" for two clusters and total sample (cross sectional datasets)

The values of R^2 are about 0,70 for all three samples, thus about 70% of the total variance is explained by the independent variables. However, the model fit is best for the periphery-sending countries with 82%.

In accordance with the second hypothesis, the model shows that short-term incoming youth mobility has a positive influence on the ratio of foreign population: a higher number of incoming people comes along with a higher ratio of foreign population (only the magnitudes differ from one cluster to the other).

Also, we found that the Human Development Index is positively related to the ratio of foreign population, in all three samples. An additional interesting result reveals when looking at the population density and the overgrowing rate: a higher density/overgrowing rate in the centre-receiving countries yields to a higher ratio of foreign population (thus these countries seem to be more attractive as the population density/overgrowing rate increases), while a higher density/overgrowing rate lowers the ratio of foreign people in periphery-sending countries (people originating from these countries seem to be more likely to emigrate when the density/overgrowing rate is high). However, as the analyses are based on cross-sectional datasets, a causal interpretation of the effects needs to be done cautiously. Especially, when considering that the two clusters differ already regarding their ratio of foreign population itself.

Model Effects 5: Effects of incoming students' on students' ratio

The model analyses the effects of the ratio of incoming students and other controlled socio-economic indicators on the students' ratio of the countries (the ratio was calculated using total number of students of number of total population). The main results of the panel analysis can be found in Fig.5.10 and in the annex (Tab.A.21).

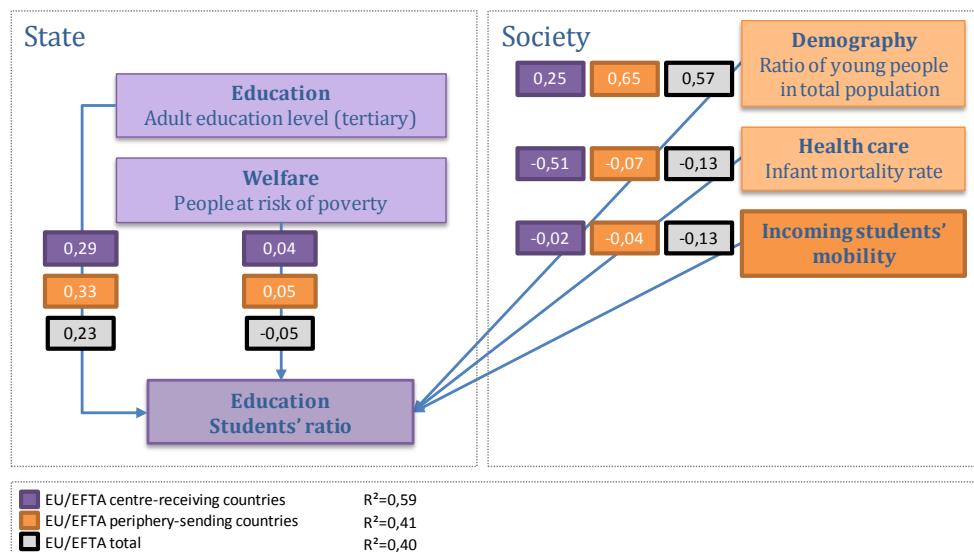


Fig.5.10: Panel analysis of Model “Effects 5” explaining the effects of incoming mobility and other controlled indicators on “Students’ ratio” for two clusters and total sample (cross sectional datasets)

In all three samples, about half of the total variance is explained with the models, the best fit is reached for the centre-sending countries with 59%. The empirical results contradict the third hypothesis when referring to the effects of incoming students' mobility on students' ratio. Surprisingly, in all three samples, increasing incoming student mobility leads to a small but decreasing tendency in the students' ratio.

For both country-clusters, the students' ratio is furthermore positively affected by the ratio of young people in total population, adult education level, and poverty rate, and negatively by infant mortality rate. One possible reason for the fostering effect of poverty rate could be because some economic

indicators could act as signals for young people: a higher value of at risk of poverty indicator could intensify the desire of young people to study and become more educated, and to thus earn more money.

Model Effects 6: Effects of international emigration on expenditure on pensions

This model studies the potential influence of international migration (as a ratio of the total population) on the expenditure on pensions (as % of GDP), while controlling for effects of other socio-economic indicators as expenditure on social protection, GINI index, average wage, inactive population, infant mortality rate, hospital beds, and HDI. The main results of the panel analysis are summarised in Fig.5.11 and in the annex (Tab.A.22).

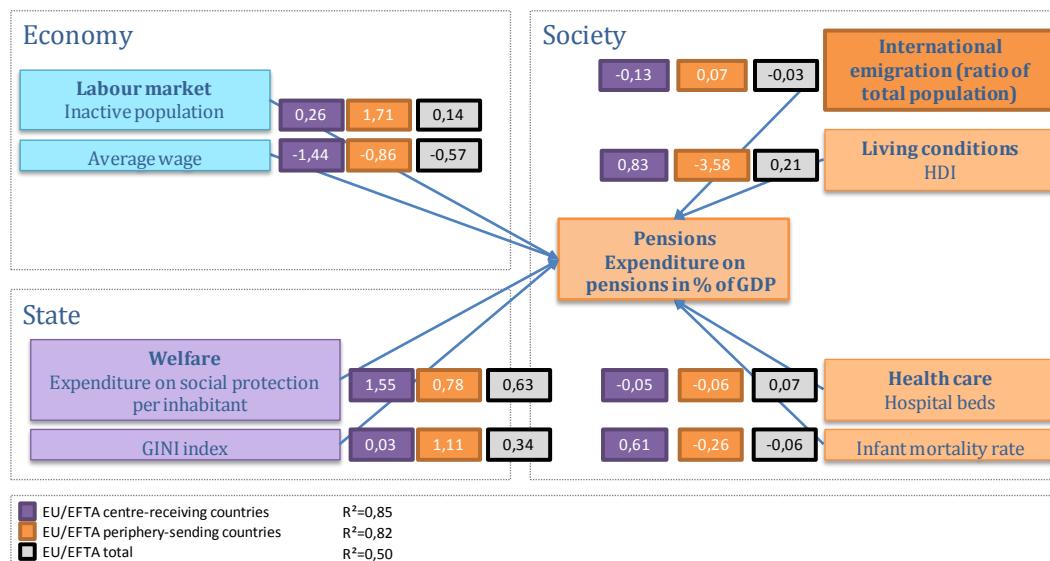
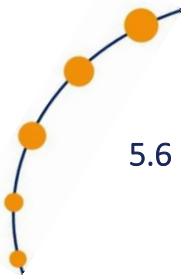


Fig.5.11: Panel analysis of Model “Effects 6” explaining the effects of incoming mobility and other controlled indicators on “Expenditure on pensions (as % of GDP)” for two clusters and total sample (cross sectional datasets)

The summary of the results shows that the models for the single clusters explain over 80% of the total variance; whereas for the total sample only 50% of variance can be explained. This reflects the suitable differentiation between the clusters and supports the centre-periphery approach (Wallerstein 1979; Pierre and Wallerstein 1991). The ratio of international emigration in total population has negative effects on the expenditure on pensions in the centre-receiving countries, meaning that a higher ratio of emigrants leads to a lower pressure on the pension expenditure; while the opposite is true for the periphery-sending countries, where the majority of emigrants are working persons leaving their country of origin and therewith stop contributing to the pension system. Thus, the enounced hypothesis regarding the interaction is partly true – for the periphery-sending countries.

The following controlled independent variables have a similar effect on the expenditure on pensions in both clusters: the number of hospital beds and GDP at market prices are negatively related to it, while the median age, expenditure on social protection per inhabitant, and GINI index are positively related to the expenditure on pensions, as presented in the fourth hypothesis from chapter 4.2.3. However, there are also different types of interaction for the two clusters: 1) when the infant mortality increases, it decreases the expenditure on pensions in the case of periphery-sending countries, and it increases the same indicator in the case of centre-receiving countries; 2) a higher HDI comes along with a higher expenditure on pensions in the centre-receiving countries, whereas the effect is negative for periphery-sending countries.



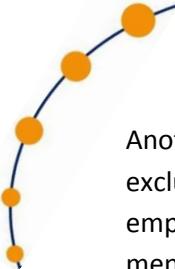
5.6 Conclusions of the macro-economic analysis (Eszter Nandori Siposné, Csaba Ilyés, Ioana Manafi, Daniela Marinescu, Zsuzsanna Dabasi-Halász, and Monica Roman)

5.6.1 Macro-causes of youth mobility

For the analysis of the socio-economic causes of youth mobility, four different types of mobility indicators were taken into consideration: incoming youth mobility, outgoing youth mobility, incoming students' mobility and outgoing students' mobility. The conclusions are linked with possible explanations for the macro-relationships on the micro level; however, these explanations have to be treated cautiously as they only reflect assumptions which need to be proofed by individual micro-data. Therefore, further research questions were compiled which – at least partly – will be answered with the qualitative analysis in work package 3 and the analysis of the online survey carried out in work package 4 of MOVE.

Economy

Higher youth unemployment rate leads to higher incoming youth mobility in centre and receiving countries. It can happen when unemployment is structural, which means that there is surplus demand and surplus supply at the same time in the labour market. It is possible when labour supply is higher than the demand in certain branches while labour demand is higher than the supply in others. In most of the cases, surplus supply (i.e. unemployment) is typical in declining industries (like heavy industry, metallurgy or mining), while under supply can be seen in automotive industry, micro-electronics, etc. In these cases, in spite of the fact that unemployment rate increases (which is probably concentrated in some branches); other sectors suffer from the lack of suitable labour force and need workers from abroad. The case of incoming students' mobility is a bit different, as students do not move primarily for work reasons, so increasing unemployment rate may not deter students from moving. The positive relation between the two variables (youth unemployment rate and incoming students' mobility) can be caused by a third variable that increases or decreases both indicators at the same time, e.g. lower living expenses. The existence of any third indicators also means that even if the panel analysis shows a cause-effect relation between them, their joint movement is in fact independent of each other. Finding any third indicators that make them move together can be the topic of further research. Higher youth unemployment rate leads to lower outgoing youth mobility, so the hypothesis is rejected. The inverse relationship between these two indicators is possible when the youth unemployed people lose their hope in the future and in finding any opportunities that can contribute to any improvement in their life. Among these circumstances, young people are not trying to find any solutions to improve their living conditions and therefore do not think of moving either. This kind of behaviour is especially typical among the long-term unemployed, i.e. among those who have been unemployed for at least 12 months. After such a long time of being unemployed, the prospect of getting a job decreases dramatically and after a while unemployed persons give up trying to make a difference. It also could be a sign for the importance of monetary prerequisites especially for tertiary outgoing mobility episodes (Gerhards, Hans, and Carlson 2016) that are missing for people with periods of unemployment. Analysing the effect of long-term youth unemployment rate on mobility therefore shall be the topic of further studies. In our analysis, unemployment as a cause of mobility cannot be supported unambiguously, similarly to the result of Marr and Siklos (1994; 1999).



Another indicator of labour market disadvantages is the NEET rate which more often expresses social exclusion and labour market disadvantages than youth unemployment rate, given the fact that unemployment can be temporary (changing a job position often leads to some weeks of unemployment, also known as frictional unemployment), which does not have any harmful consequence. If a young person is not employed, not in education or training, it more often means that they are socially excluded and poor, since this ratio covers also these ones who do not even have the impetus to register for job seeking at the employment services (Weerd 2012). However, the results reveal that a higher NEET rate leads to higher incoming mobility. The explanation for it could be found in structural unemployment, i.e. even if there are many people without employment, education, or training, there are open positions in some sectors where finding a suitable employee is difficult or impossible. Under these circumstances, young people living abroad, who have the necessary skills and expertise might decide to move for work reasons. Regarding the relationship between NEET rate and outgoing youth mobility, the initial hypothesis can be proofed with the data. Higher NEET rate fosters outgoing youth mobility; therefore people who are not in employment, education or training are ready and willing to go abroad in the hope of finding more opportunities for a better life.

When looking at both indicators youth unemployment and NEET rate the results regarding the effects on outgoing youth mobility are contradictory. However, with macro-data the opposite effects cannot be explained and further analyses need to be carried out on the micro-level.

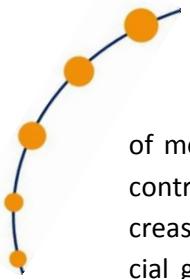
As for minimum wages, their growth increases incoming and outgoing youth mobility in centre-receiving countries, but decreases them in periphery-sending countries. It could imply that minimum wages are high enough only in the centre-receiving countries to push young people to move. Minimum wages can also be considered as indicators of economic growth (economic growth is usually also measured by income level), the increase of which could lead to more opportunities for self realisation like mobility on the individual level.

The effect of GDP on mobility depends on the examined countries. In periphery-sending countries the growth of GDP increases all examined mobility indicators. In centre-receiving countries however, the rise of GDP increases only students' mobility and decreases general mobility. In peripheral countries, where GDP growth usually starts from a lower level, economic growth can be regarded as a fostering factor for short-term mobility (see brain-drain discussion in chapter 4.3.1). In centre countries however, where the initial level of GDP is already high enough to promote mobility and make it possible in both directions, a further growth of GDP might not generate more mobility in general but still fosters students' mobility as a push- and pull factor.

Society

The inverse relationship between urbanisation and mobility might be due to the fact that space utilisation of the youth has changed significantly in recent years. The attraction power of big cities has decreased. And most of the centre-receiving countries have high levels of urbanisation already. Thus, urbanisation does not foster youth mobility, which is a contrast to classical economics (see chapter 4.2). Individual data from the interviews and from the survey of MOVE will help understanding this relationship on a personal level.

A higher level of HDI leads to higher level of mobility in centre-receiving countries (except incoming students). In periphery countries, the growth of HDI increases incoming mobility, but at the same time hinders outgoing mobility. Taking into account the fact that GDP growth increases all four types



of mobility while the increase of HDI increases only incoming mobility in periphery countries; and contrarily in the centre-countries, GDP growth decreases general mobility while the rise of HDI increases three out of four mobility types, we can conclude that in the less developed periphery, financial growth is of much more significance and importance, and therefore might promote mobility stronger. In the centre-countries however, which are at a higher level of financial and economic growth, further economic growth does not foster mobility further, while human development, which is a more complex indicator on the living conditions including not only economic growth but also indicators describing social development, can cause significant social changes, like promoting mobility. The more complex human development index has a less important effect in the periphery because as long as material needs are not satisfied, their satisfaction is the most important motivating power and less attention is paid on higher level needs.

State

Higher level of social protection fosters incoming youth mobility in centre-receiving countries, but hinders it in periphery-sending countries. This implies that social protection is high enough to attract incoming young people only in the centre countries.

Higher level of poverty pushes more young people to leave the country and lower levels of poverty pull young people to arrive, which strengthens the initial hypothesis as well as the push- and pull approach (e.g. Ravenstein 1885a; Ravenstein 1885b) and the welfare magnet hypothesis (Borjas 1999). Poverty or the absence of it seems to be significant push- and pull factors when talking about youth mobility.

As stated before, the effects of the foreign language proficiencies are rather inconsistent and thus no further conclusions can be drawn out of the results. The inconsistencies could be due to the database, the foreign languages learnt per pupil were already identified as an outlier variable in the times lag analyses and the ratio of pupils learning English includes at least for Norway discontinuities.

However, the education level in a broader sense, serves more reliable results. Higher adult education level fosters returning youth mobility in centre and receiving countries and outgoing students' mobility in the periphery countries. The ratio of "vocationally qualified" represents a "medium" educational level therefore the results revealed, in line with the hypothesis, that the higher the ratio of workers with vocational qualifications, the lower the level of outgoing mobility is. The results corroborate the global education hypothesis, where the human capital accumulation is seen as a driving force in mobility flows.

- ✓ *Youth mobility has different causes in the centre-receiving countries and in the periphery-sending countries.*
- ✓ *In periphery-sending countries, GDP growth is an important fostering factor for different types of mobility, whereas in the centre-receiving countries, HDI fosters mobility.*
- ✓ *Separate European strategies are required for the sending and receiving countries.*

5.6.2 Effects of mobility on macro-economic indicators

When the influence of youth mobility on youth unemployment and on GDP per capita at market prices is examined, the short-term incoming youth mobility indicator was used. In Tab.5.3 the main effects of the analysed models are summarised.

Tab.5.3: Summary of the effects of short-term incoming youth mobility on macro-economic indicators for two clusters and total sample

	Short-term incoming youth mobility		
	EU/EFTA centre-receiving coun- tries	EU/EFTA periphery-sending countries	Total
Youth unemployment ¹	↓ (0,11%)	↓ (0,09%)	↓ (0,12%) ³
GDP at market prices ¹	↑ (0,01%)	↑ (0,04%)	↑ (0,05%) ²

¹ See Fig.5.6 and 5.7 for the total set of indicators

² Mobility indicator increases dependent variable: a 1% growth in the mobility indicator can increase GDP by 0,05% on average in the total sample

³ Mobility indicator decreases dependent variable: a 1% growth in the mobility indicator can decrease youth unemployment by 0,12% on average in the total sample

Incoming youth mobility decreases youth unemployment for all three samples, as hypothesised. It strengthens the results of modern migration research stating that unemployment can decrease in times of immigration (see chapter 4.3.2). This effect of incoming youth mobility is of significant importance as it can contribute to the preservation of human capital that can be depreciated when not used. Thus, in contrast to e.g. Altonji and Card (1991), we found that incoming mobility influences young unemployment rates.

Incoming youth mobility increase GDP per capita controlling for the other examined socio-economic indicators. It highlights that incoming youth mobility can contribute to economic and social growth and development. It implies that the skills, knowledge, experience and ability of the incoming workers are complementary with the skills of the existing workers to a large extent, which leads to increased productivity and therefore promotes economic growth. Thus, in contrast to e.g. Morley (2006) and Boubtane et al. (2013), we revealed that incoming youth mobility causes economic growth in the examined countries.

The results corroborate the hypothesis about circular mobility in case of youth population. Incoming youth can replace outgoing youths, and their skills are different, probably higher. It was also proven that the skills of the incoming youths and the skills of the existing workers are more often complementary than a substitute. The panel models concentrated on the effects of short-term incoming youth mobility on youth unemployment and on GDP separately, analysing immediate effects (no time lag). In the long run however, both indicators are related to each other as the increase of GDP can create new demand in the market, which can improve the labour market equilibrium and therefore decrease unemployment.

The results for the different clusters prove that the centre-periphery model can be applied for youth mobility effects. Circular mobility is especially typical for the centre-receiving countries, i.e. incoming youth mobility decreases youth unemployment in centre countries. In peripheral-receiving countries, this effect is less typical. The favourable effect of incoming youth mobility on unemployment rate is stronger in the more developed centre-receiving countries. The difference between the clusters might be due to the difference in the causes of unemployment in the centre and the periphery countries. However, the effect is the opposite when not the unemployment, but the GDP is examined: in the centre-receiving countries the GDP is increasing less strongly in relation to incoming youth than in the periphery-sending countries. The reason for the difference might be due to the fact that when

the starting level of economic growth is lower, a higher percentage of increase can happen more easily than from a higher starting level.

- ✓ *Youth mobility has a favourable effect on unemployment and on GDP growth.*
- ✓ *The effect was found for both centre-receiving and periphery-sending countries.*
- ✓ *The results underpin that youth mobility can be beneficial – in this case positively affecting the labour markets and prosperities of EU-countries.*

5.6.3 Effects of mobility on social and state-related macro-indicators

When analysing effects of mobility on social and state-related macro-indicators three different mobility indicators were considered (short-term incoming youth mobility, incoming students' mobility and ratio of international emigration). Their effects were analysed on several socio-economic indicators: ratio of young people and of foreign people in the total population, ratio of students in the total population and expenditure on pensions as % of GDP. The main results are summarised in Tab.5.4.

Tab.5.4: Summary of the effects of youth mobility on social and state-related macro-indicators for two clusters and total sample

	EU/EFTA centre-receiving coun- tries	EU/EFTA periphery-sending countries	Total
Short-term incoming youth mobility			
Ratio of young people in total population ¹	↑ (0,04) ²	↓ (0,02) ³	↓ (0,01%)
Ratio of foreign population in the total population ¹	↑ (0,28%)	↑ (0,37%)	↑ (0,44%)
Ratio of incoming students			
Ratio of students in the total population ¹	↓ (0,02%) ⁵	↓ (0,04%) ⁶	↓ (0,13%)
International emigration (ratio of total population)			
Expenditure on pensions (as % of GDP) ¹	↓ (0,13%) ⁵	↑ (0,07%) ⁶	↓ (0,03%)

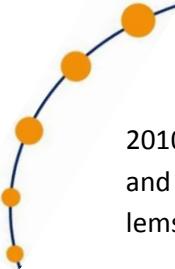
¹ See Fig.5.8 – 5.11 for the total set of indicators

² Mobility indicator increases dependent variable: a 1% growth in the mobility indicator can increase ratio of young people by 0,04% on average in the centre-receiving countries

³ Mobility indicator decreases dependent variable: a 1% growth in the mobility indicator can decrease ratio of young people by 0,02% on average in the periphery-sending countries

The results show that the short-term incoming youth mobility has a positive effect on the ratio of young people in total population only in centre-receiving countries, meaning that a higher number of incoming youth leads to a higher ratio of young people in the destination country. This conclusion is in accordance with the assumed hypothesis (see chapter 5.5.3). An opposite effect corresponds to the periphery-sending countries: As discussed earlier in 5.5.3, this effect could be explained by considering the raw data: periphery countries have very low levels of short-term incoming youth; also, these countries are viewed as sending countries so that the influence of the incoming mobility on the ratio of young people in total population is insignificant.

Short-term incoming youth mobility increases the ratio of foreign population in all three samples, the conclusions being in line with the hypothesis stated in chapter 5.5.3. A 1% increase in the incoming youth mobility could generate an increase of the ratio of foreign people by 0,3% in the centre-receiving countries and by 0,4% in the periphery-sending countries. The result is in accordance with recent papers on migration and its consequences on demographic change (Philipov and Schuster



2010; Zaiceva and Zimmermann 2014): increasing the incoming youth, the number of young people and the ratio of foreign population become higher in receiving countries to an extent that the problems of ageing population and its related aspects are easier to tackle.

A contradictory result was found for another mobility indicator: effects of ratio of incoming students on the ratio of students in total population. Our expectation regarding the potential interaction was that a higher ratio of incoming students could generate a higher ratio of students in total population; but the results failed to confirm the hypothesis. In average, for the total set of countries, an increase of the ratio of incoming students by 1% coincides with a lower ratio of students in total population by 0,13%. One possible explanation could be that the EU-countries are ageing in general and that an increasing level of incoming students would not be sufficient to increase the students' ratio overall as would be an increase in the fertility rates.

The last analysed interaction is between international emigration (as ratio of total population) and expenditure on pensions (as % of GDP), verifying the hypothesis that a high level of the outgoing mobility intensifies the pressure on the pensions system in the origin countries. The problems of rapidly ageing population in Europe and the sustainability of pensions system are largely discussed in the literature, and the international migration is sometimes considered as an alternative solution. As already shown in section 5.5.2, the effect of international emigration is opposite for the two considered clusters. For the centre-receiving countries a 1% rise in the ratio of international emigration generates a decrease by 0,13% in the expenditure on pensions, however, the effect is low. A possible explanation could be found when considering the raw data and the characteristics of the receiving-countries (chapter 5.3.2). The reverse is true for the periphery-sending countries: if the ratio of international emigration increases by 1%, the expenditure on pensions increases by 0,07%. On one hand the explanation could be found in the characteristics of the corresponding cluster (chapter 5.3.2), but on the other hand, the results reflect the fact that for periphery sending countries it is more likely to lose their young labour force or young people and not their old aged people, so the expenditure on pensions remains high (as % of GDP), which is in line with the brain-drain discussion (chapter 4.3.1).

- ✓ Youth mobility has different effects on the centre-receiving and periphery sending countries.
- ✓ Incoming youth mobility increases ratio of youth only in centre-receiving countries.
- ✓ The pressure on pension systems rises due to international emigration only in the periphery-sending countries.
- ✓ In an ageing Europe increasing incoming student mobility correlates with a small, but decreasing students' ratio in both country-clusters.
- ✓ To increase the ratio of youth in the EU member states, structural reform should be considered like increasing fertility rates.



6. Mapping of youth mobility flows within EU-28/EFTA countries (Karen Hemming and Frank Tillmann)

The goal of this chapter is to reconstruct the extent and the directions of youth mobility within European countries. Therefore the mobility flows itself are in focus of the analyses.

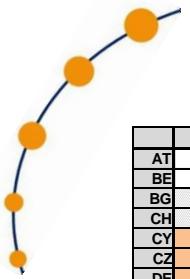
6.1 Sending or receiving country - the development of net-mobility balances for EU-28/EFTA countries within 2004-2013

The data for the mapping analysis derived from the finished outgoing/returning mobility variable of the EU-LFS datasets which was also the basis for the outgoing/returning mobility indicator in the MOVE-SUF (Hemming, Tillmann, and Dettmer 2016; see chapter 1.2 and 4.5)⁴². When working with the variable, its limited explanatory power has to be considered because only finished (mostly short-term) outgoing/returning mobility episodes are captured. The variable was still used because of its detailed information on the respective destination countries. On the basis of the total outgoing numbers per country, the complementary information for the finished incoming-mobilities was calculated by taking into account minor distortions. Thus, using the aggregated information on macro level mobility, balances for almost all EU-28/EFTA countries were estimated. The results derived from the following steps in calculation:

1. All outgoing youth movements to each EU-28/EFTA country per year were mapped as a total number in a table. This table was “mirrored” to calculate the respective incoming mobilities out of the outgoing mobilities per country and year.
2. For each country the number of outgoing youth to every single EU-28/EFTA destination country was added per year, resulting in total numbers of all outgoings from this country for 2004-2013.
3. The same procedure was done for the incoming-mobility, resulting in total numbers of all incomings to each country per year.
4. For each country and year a net-balance was calculated (number of incomings minus number of outgoings).

The calculated net-balances are illustrated in Fig.6.1. Following “the Cohen convention”, observed net-balances with values between -650 and +650 cases were rated as negligible for identifying a sending or receiving country, as these results stayed within a 0,1 range of the standard deviation (Cohen 1969). Thus, the respective cells for the neutral balances were left blank. The total numbers were grouped and coloured appropriately in different shades (see key of Fig.6.1). For single years and/or countries, no data were available due to unfulfilled reliability and/or confidentiality threshold criteria. Additionally, reliability threshold limits have to be taken into account for interpretation (Tab.A.1 in the annex). Complementary to the given characteristic per year, a total country-characteristic for the observed period was deduced from the information. Therefore a maximum of two different shades were used to classify each country. If only one single year did not fit in the overall characteristic of the country, this information was left out for the “total”.

⁴² As stated in chapter 1.2 we followed the strict guidelines of usage and publication for the EU-LFS data. Thus, the outgoing variable in each single EU-LFS dataset (per year/country) was tested for holding the confidentiality threshold: any information based only on 3 or less observations was not included. This procedure unfortunately resulted in numerous missing data points.



	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
AT	0	2	0	2	-1	2	2	2	2	2	12
BE	0	1	3	2	2	2	3	2	2	2	12
BG			-2				-2	-2	-2	-1	12
CH							3	3	2	2	12
CY	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	12
CZ	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	12
DE	-2	3		2	3	-3	0	-4	-4	2	12
DK	-2	-2	-2	-2	0	-2	-2	-2	-2	-2	12
EE				0	0		-2	0	-2	0	12
GR	0	0	2	2	2	2	2	2			12
ES	2	4	-4	-2	1	2	4	2	4	0	12
FI	-1	-2	-2		0	2	2	2	1	2	12
FR			-4	-4	-4	-4	-4	-4	-4	4	12
HR			-2	-2	-2	0	-1	0	0	-2	12
HU	0	0	2	0	0	0	-2		0	-2	12
IE	2	2	2	3	4						12
IS											12
IT	3	2	3	4		3	3	3	3	3	12
LT											12
LU								1	2	0	12
LV		-2	-2	-2	0	-2	-2	-2	-2	-2	12
MT					2	0	0			0	12
NL		2	2		2	2			2	2	12
NO	0	1									12
PL	-2	-3	-3	-3	-4	-4	-3	-3	-3	-3	12
PT	-2	-2	-2	-2	-2	-2	2	-2	-2	-2	12
RO	-3	-3	-2	-3	-4	-4	-3	-2	-3	-2	12
SE	1		2	0	0	2	2	3		1	12
SI					0	0	0	0	0		12
SK	-2	-2	-2	-2	0	-2	-1	0	0	-1	12
UK	3		4	4		4	-2	4	4	4	12

Key	
no data available	
-4	sending <-1000
-3	sending -5000- -10000
-2	sending -1000- -5000
-1	sending -650- -1000
0	neutral balance
1	receiving 650-1000
2	receiving 1000-5000
3	receiving 5000-10000
4	receiving >10000

Fig.6.1: Net balance of incoming/outgoing mobilities per year/country (based on totals of “outgoing/returning youth mobilities to EU-28/EFTA countries, one year before survey”; reliability threshold: for limited reliability cases see Tab.A.1 in the annex; source EU-LFS)

For Luxembourg only data from 2011 to 2013 were available. However, for two of those three observed years Luxembourg has a small positive balance, revealing the fact that more youth moved to Luxembourg than Luxembourgish youth moved to other European countries. However, the numbers are small and should not be overrated, as the reliability is limited.

Germany has a changing role in its characteristic within the observed period of time. Although being a sending country in most of the years, the balance was neutral in 2010 and even positive in 2007. 2013 showed that more youth from other countries came to Germany. The result proves the fact that Germany is both, an attractive receiving country and a supportive sending country for its youth regarding finished short-term mobilities, which are often used by educated and financially secured youth (Gerhards, Hans, and Carlson 2016). Regarding ongoing, long-term mobilities, which occur more often when people are pushed to leave their country because of ongoing difficulties and problems, this characteristic would probably look different.

Romania, as the newest EU-member within the consortium, is a typical sending country, sending a lot of young people to southern and western EU-countries for short-term mobilities. The most favoured target countries are Italy and Spain, which could be due to cultural and language similarities and also to chain migration, as a lot of Romanian families already live there (see also chapter 7.4)

The net-balances for Hungary are comparably low so that in most of the observed years the balance is neutral. However, in 2010 and 2013 a sending tendency is apparent, which is in line with most of the eastern European countries, e.g. with Croatia, Slovakia, Romania, and Poland.

For Norway only two years of observation are available revealing a neutral balance in 2004 and a slightly receiving tendency in 2005. However, the numbers are small and should not be overestimated as the reliability is restricted.

The case of Spain depicts a changing trajectory like Germany. It shows a sending characteristic from 2005 to 2007 but at the same time it has a receiving characteristic in almost all other years of obser-

vation. Despite the difficult economic situation in Spain the country remained an attractive destination for European youth mobility, especially as finished outgoing/returning mobilities mostly refer to short-term students'/touristic mobilities.

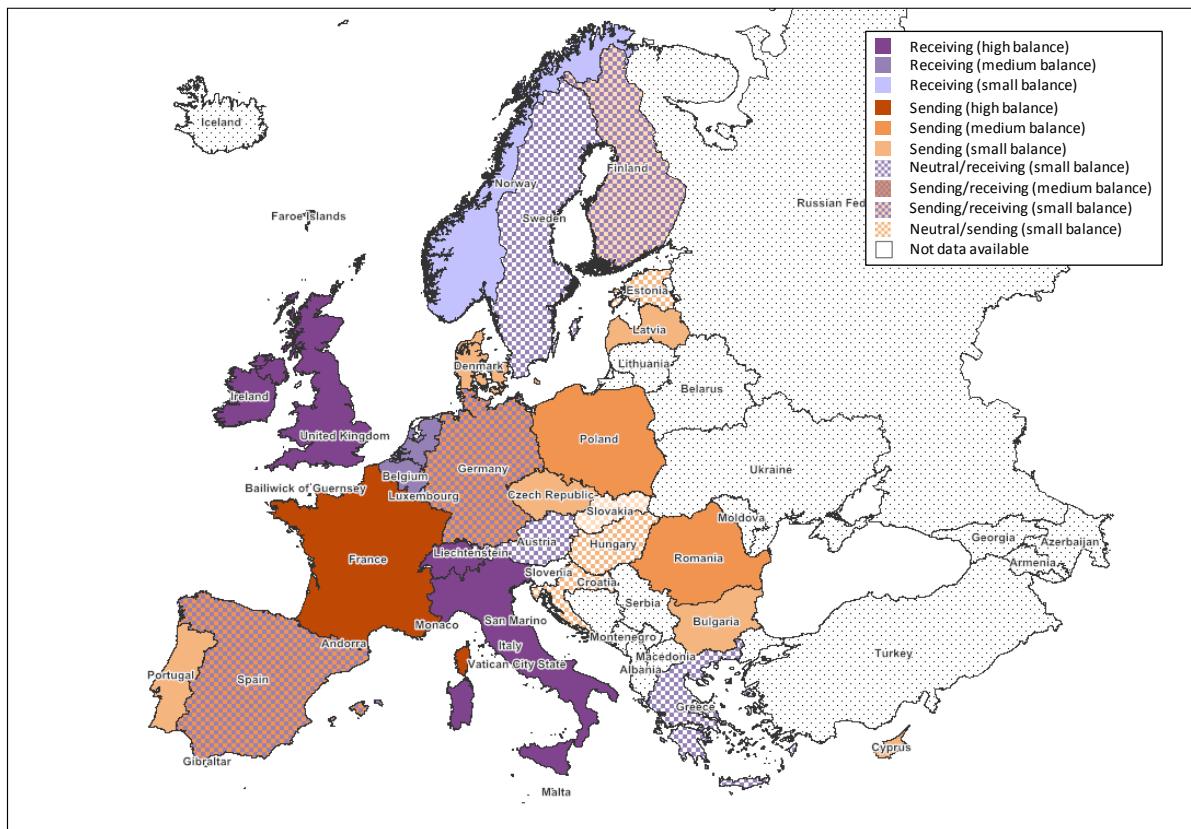
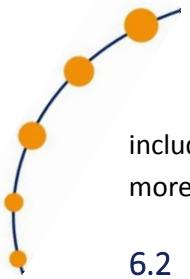


Fig.6.2: Overview of results for EU-28/EFTA countries: condensed net balance of incoming/outgoing mobilities per country (based on totals of "outgoing/returning youth mobilities to EU-28/EFTA countries, one year before survey"; reliability threshold: for limited reliability cases see Tab.A.1 in the annex; source EU-LFS)

Looking at all EU-28/EFTA countries, the analysis reveals on one hand typical receiving countries (Fig.6.2), which are Belgium, Italy, and United Kingdom. When considering the countries with missing data Switzerland, Ireland, Luxembourg, the Netherlands, and Norway were rated as overall receiving, whereas Austria, Greece, and Sweden have a combined neutral/receiving characteristic. On the other hand, typical sending countries could be identified which are, besides Cyprus, France, Portugal, and Denmark; mostly eastern European countries, namely Bulgaria, Czech Republic, Poland, and Romania. Other eastern European countries have a combined neutral/sending characteristic: Estonia, Croatia, Hungary, and Slovakia. Germany and Spain fulfil changing parts in the observed period.

When comparing the above patterns (Fig.6.2) with the developed clusters (Fig.5.1 chapter 5.3.2), one can find both similarities and differences. However, the overall colour-scheme of the EU-map looks comparable, except for France, which shows the opposite characteristic. The changing characteristic of Spain was found in both analyses, reflecting the problems Spain has faced since the economic crisis. For the clusters only economic and social indicators were considered. However, the sending/receiving characteristic derived from the total numbers of outgoing and returning youth per year/country. Thus, the assignment does not necessarily have to be congruent, as returning mobility is more related to educational mobility and not pushed economic mobility. Nevertheless, the overall colour-scheme of both analyses indicates that there are relationships between the cluster-assignment and the sending/receiving characteristic. As the sending/receiving characteristic does not



include long-term migration, differences were assumed. When considering long-term-migration, a more congruent picture to the cluster analysis would appear.

6.2 Youth mobility within the EU/EFTA centre-receiving and periphery-sending countries

6.2.1 Key assumptions for the analysis

The following mapping analyses are based on the two country clusters which were explored in chapter 5.3.2 (Fig.5.1). It is assumed that there are differences in the mobility indicators between the cluster “EU/EFTA centre-receiving countries” and the cluster “EU/EFTA periphery-sending countries”. The following hypotheses were developed on the basis of the centre-periphery approach (Wallerstein 1979; Pierre and Wallerstein 1991):

- 1) Centre-receiving countries have higher incoming ratios than periphery-sending countries.
- 2) Centre-receiving countries have higher ratios of incoming students compared to periphery-sending countries, as the centre-receiving countries are also more attractive to students. The ratio of outgoing students, however, is not assumed to differ between the two clusters as student mobility is common in all EU/EFTA countries despite differences in social and economic conditions.
- 3) For the finished outgoing/returning mobility indicator no differences are assumed, as the indicator does not capture long-term migration and, thus, does not correlate strongly with economic and social predictors.

As we are working with the total of all EU/EFTA countries, p-value statistics are not needed for interpretation of differences. Thus, the results are only illustrated descriptively using the mean-score of the respective mobility indicator of the countries in each cluster for selected years (2005, 2007, 2009, 2011, and 2012/13). The years were chosen in line with the cluster analysis (except for 2010; chapter 6.3.2). Unfortunately, the respective countries of origin were not given in the datasets for the incoming and students’ mobility indicators, and thus, could not be analysed.

6.2.2 Hypotheses 1: Incoming mobility

As shown in Fig.6.3, there are differences in the ratios of incoming mobility between the two country-clusters. The differences are seen in both indicators: short-term incoming youth (living in the country for up to three years) and long-term incoming youth (living in the country longer than three years). For the short-term incoming mobility it can be also stated, that the ratio is decreasing in the periphery-sending countries; whereas it is increasing until 2009 in the centre-receiving countries (and then decreasing in 2011 and 2013). So, the difference between the two clusters in 2013 is bigger than in 2005. The ratios of those youth who have been living in one of the cluster-countries for longer than three years is increasing in both clusters; whereas the rising trend is stronger for the centre-receiving countries than for the periphery-sending countries. Thus, young people tend to stay longer or even forever in one of the centre-receiving countries than in one of the periphery-sending countries. Given the better developed economies in these countries, e.g. with lower unemployment rates, higher average wages, and better equipped social systems, the results support the constructed hypothesis.

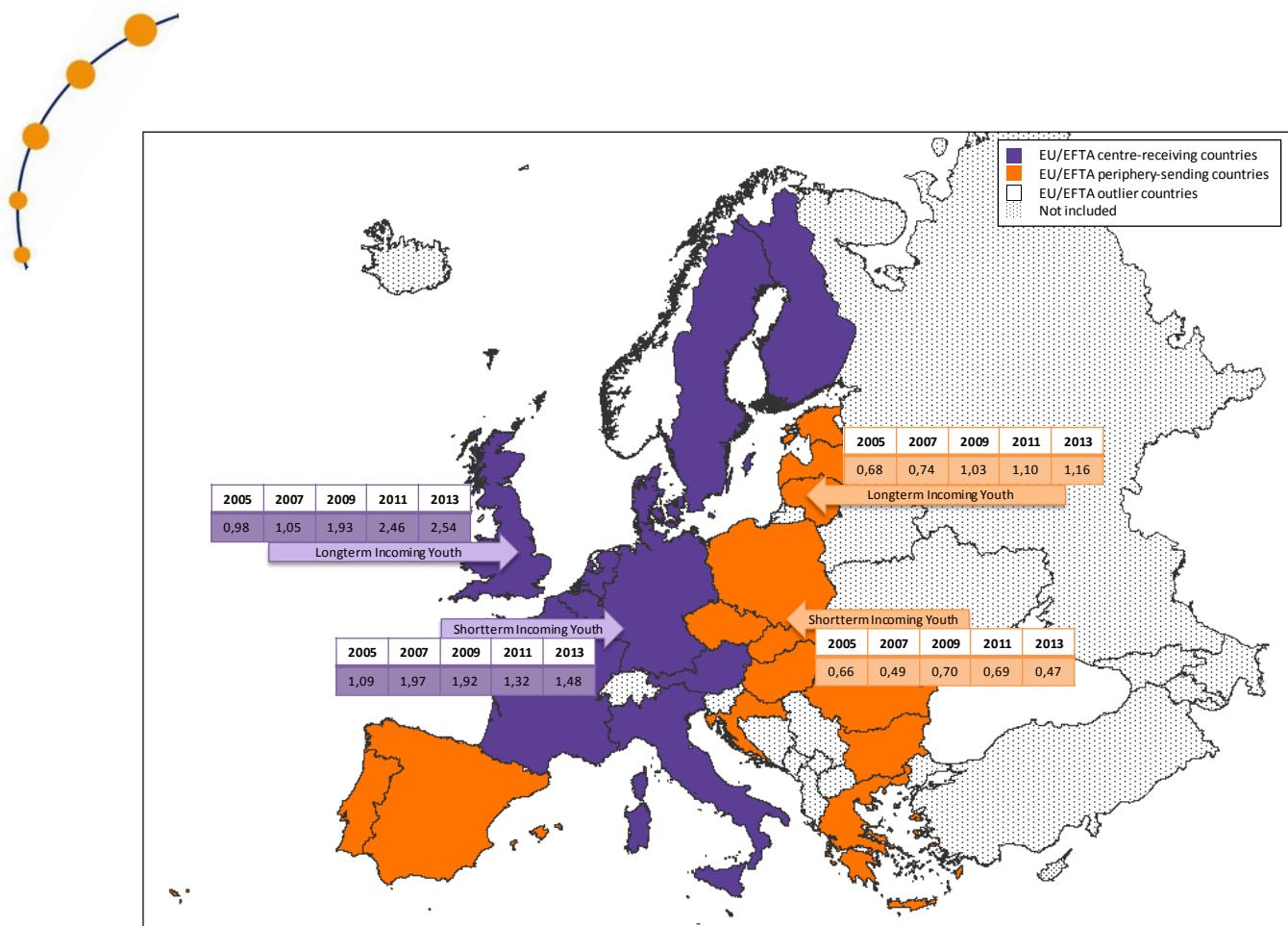


Fig.6.3: Mean incoming youth mobility ratio (%) for the two country clusters for 2005, 2007, 2009, 2011, and 2013 (short-term=up to 3 years; long-term=more than 3 years); used indicator Mo313 and Mo314 (chapter 3.1 and 3.2 and Tab.A.4)

6.2.3 Hypotheses 2: Student mobility

Students' mobility data is only available until 2012 (Fig.6.4; chapter 3.3). In 2005, the mean incoming students' mobility ratio in the centre-receiving countries was 4-times higher than in the periphery-sending countries. However, following the Bologna process the ratio is increasing in both clusters resulting in a smaller difference: the mean-ratio of incoming students in the centre-receiving countries is with 5,9%, only 2-times higher than in the periphery-sending countries in 2012. This development shows that despite economic problems, higher unemployment and lower levels of social security, the periphery-sending countries are getting more attractive for incoming students. The first part of the hypothesis can be confirmed with the results.

Looking at the mean-ratio of out-going students, the hypothesis assumed similarity between the two clusters, but the data reveals a difference: The outgoing students' mobility is higher in the periphery-sending countries than in the centre-receiving countries. Considering the observed period, the mean outgoing students' ratio is increasing even stronger in the periphery-sending countries than in the centre-receiving countries where the ratio increased less. Despite neglecting the second part of the hypothesis, the results also corroborate the characteristic of the periphery-sending countries for student mobility and are in line with recent studies (Salt and Miller 2006; Rédei 2009). Thus, more students from periphery-sending countries move abroad for studying than students from the centre-receiving countries. This development was promoted by the implementation of the Bologna process in all EU/EFTA countries in the first decade of the 21st century.

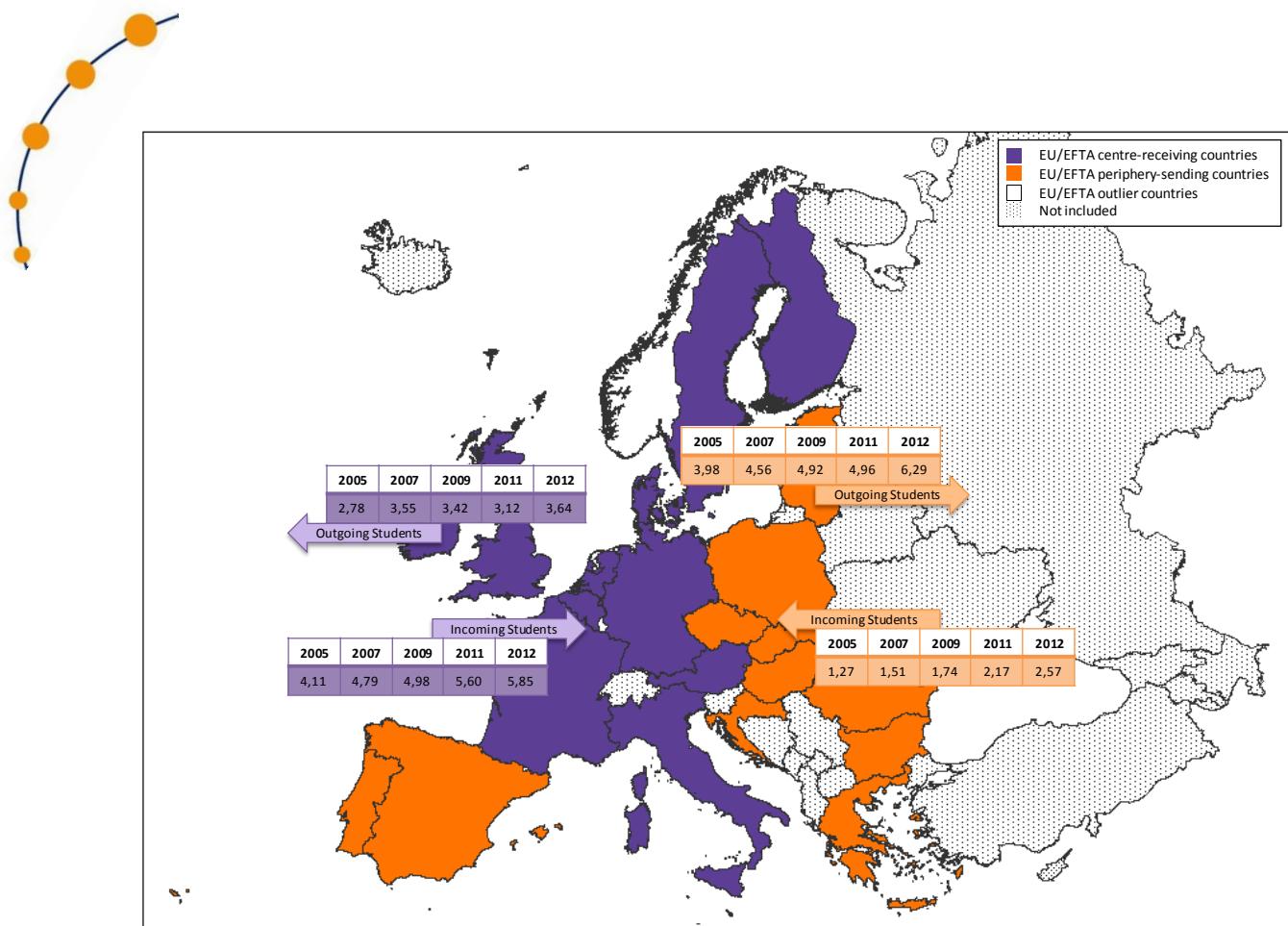


Fig.6.4: Mean incoming student mobility ratio incoming students/total students (%) for the two country clusters for 2005, 2007, 2009, 2011, and 2012; used indicator Mo317 and Mo325 (chapter 3.3 and 3.5 and Tab.A.4)

6.2.4 Hypotheses 3: Outgoing/returning mobility

The finished outgoing/returning mobility indicator captures only those youth who have been abroad but returned to their home country (chapter 3.4). As returning mobility is mostly short-term, and thus, less correlated with socio-economic characteristics of the explored country-clusters, no difference between the clusters was assumed. The data proves the hypothesis as seen in Fig.6.5. The ratio of captured outgoing youth is very low in both clusters; almost no differences can be found. However, when looking at the tendency within the observed period, the ratio of outgoing/returning youth has a slightly increasing tendency in the periphery-sending countries; whereas the ratio in the centre-receiving countries is slightly decreasing. As the tendencies are only marginal, they should not be overrated, but nevertheless, they fit into the characteristics of the explored clusters.

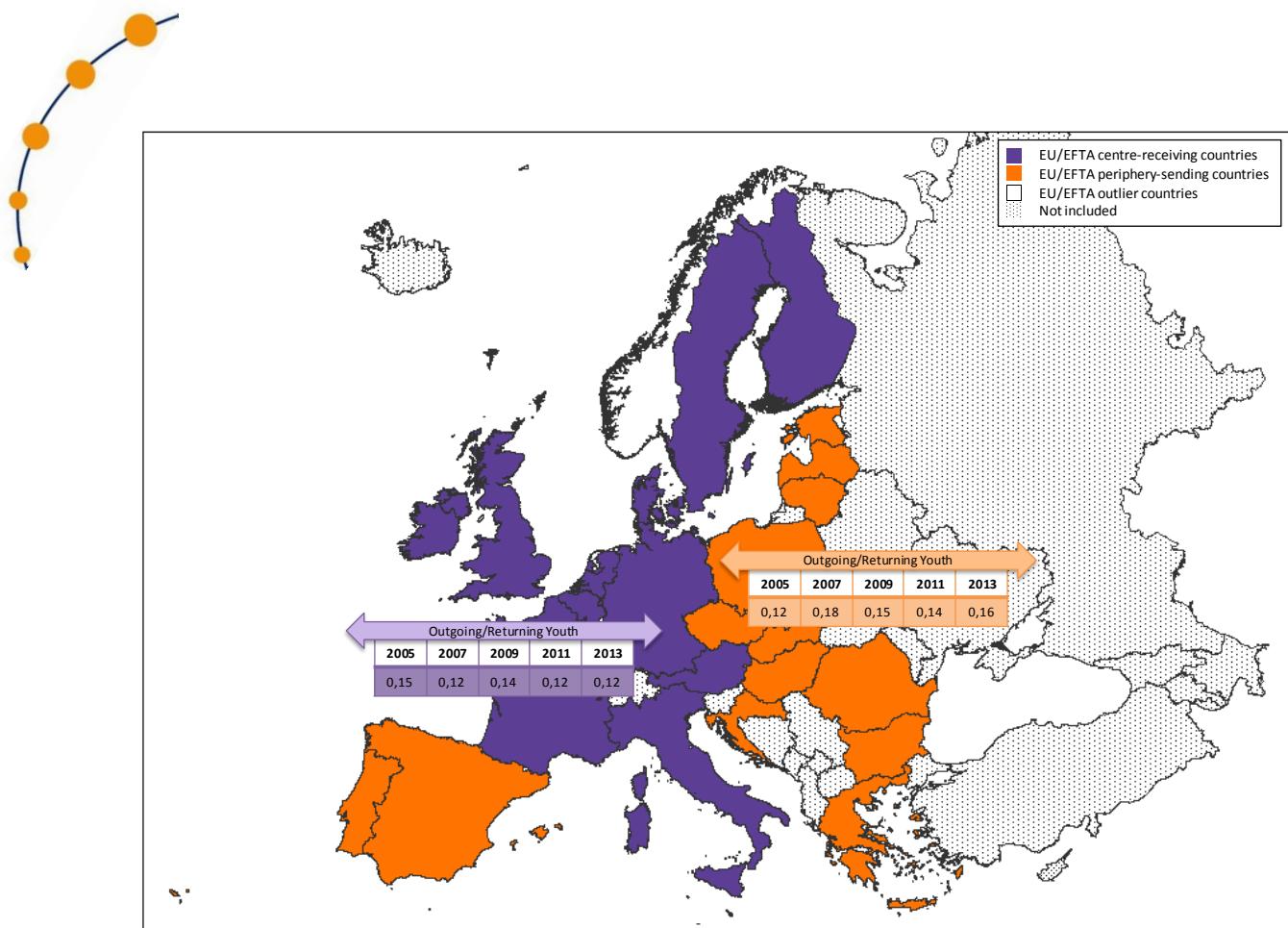


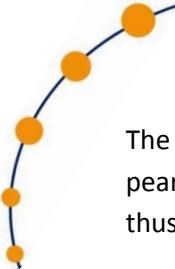
Fig.6.5: Mean outgoing/returning mobility ratio (%) for the two country clusters for 2005, 2007, 2009, 2011, and 2013; used indicator Mo322 (chapter 3.4 and Tab.A.4)

6.2.5 Summary and conclusions

The previous analyses were focussing on the comparison of the two country clusters regarding the different youth mobility indicators. The backdrop for the comparison was that centre-receiving countries are characterised by lower levels of youth unemployment, a higher GDP and HDI, higher expenditure on social protection, lower income inequality, and a lower risk of poverty than periphery-sending countries.

The first hypothesis could be confirmed: centre-receiving countries have higher incoming ratios than periphery-sending countries. Moreover, the difference in the incoming youth mobility ratio is growing during the observed period, especially for the long-term immigration, reflecting the better living conditions in the centre-receiving countries. Hence, the result is in line with the centre-periphery approach (Wallerstein 1979; Pierre and Wallerstein 1991).

At least the first part of the second hypothesis could be confirmed: centre-receiving countries have higher ratios of incoming students compared to periphery-sending countries. However, the difference is getting smaller over time. This highlights the effect, that due to the internationalisation of studies and also the implementation of the Bologna reform, the periphery-sending countries appear as attractive receiving countries for incoming students' mobility. Admittedly, the second part of the hypothesis could not be confirmed. There are differences between the clusters in term of outgoing students' mobility, which is significantly higher in the periphery-sending countries. Despite neglecting the assumption, the result underlines the characteristic of the periphery-sending countries also for student mobility (Salt and Miller 2006; Rédei 2009). As the quality for studying is better in most of the centre-receiving countries due to a much higher gross domestic spending on R&D, students from periphery-sending countries probably tend to move more to those tertiary well-equipped countries.



The third hypothesis could be confirmed: The mean ratios for finished/returning youth mobility appear similar for both clusters, as the mobility indicator does not capture long-term migration, and thus, does not correlate with economic and social predictors.

The results corroborate the country clusters that were explored in chapter 5.3.2 on the basis of economic, social, and state-related macro-indicators with the depicted macro-data on youth mobility within Europe. All in all, by different forms of increasing mobility flows it can be seen that the EU as well as their member states, facilitate a real freedom of movement and enable a free choice of residence within the common economic area.

6.3 Excursus on Conditions for learning abroad in Europe: The relationship between the mobility scoreboard indicators and youth mobility indicators

6.3.1 Key question for the analysis of the scoreboard indicators

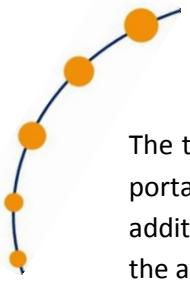
In 2013 a report on Conditions for Learning Abroad in Europe was published by the European Commission (European Commission/EACEA/Eurydice 2013). It contains a set of indicators ("Mobility scoreboard") on conditions for learning mobility in higher education within the EU member states. The scoreboard indicators were developed to support European learning mobility, not only for youth but also for adults. The scoreboard indicators were developed using a methodological framework for capturing the council recommendations (C 199/01 2011) for promoting the learning mobility of young people. Five indicators were developed and rated for the years 2011/2012 for each EU-28/EFTA country on different colour scales. These ratings were adapted to ordinal scales ranging from 1-4 to 1-6 and included as variables into the MOVE-SUF (see Hemming, Tillmann, and Dettmer 2016). The following analyses pursue two different aims:

- 1) Comparing the country clusters (chapter 5.3.2) regarding their mean-value of the scoreboard indicators following the question whether the scoreboard indicators have higher values in the centre-receiving countries than in the periphery-sending countries.
- 2) Analysing the relationship between the scoreboard indicators and the sampled youth mobility indicators, especially the indicator "finished outgoing/returning mobility" and "outgoing student mobility" (chapter 3.4 and 3.5 and Tab.A.4).

6.3.2 Description of scoreboard indicators (according to European Commission/EACEA/Eurydice 2013)

The first scoreboard indicator covers **Information and guidance on learning mobility**. It is based on the following elements: 1) strategic planning of information and guidance; 2) internet-based resources; 3) personalised services; 4) involvement of multipliers and 5) external evaluation of information and guidance services within a general monitoring process.

The second indicator deals with **Preparation of opportunities for learning mobility based on foreign language skills**. It covers language learning in pre-primary, primary, and general secondary education until the end of compulsory education (age 16), following the objective that it is desirable for all children to spend as long as possible in language learning and to have the opportunity to learn a second foreign language at school for as long as possible. However, the data that is available does not include compulsory language learning for pupils who are in vocational or technical secondary education. Thus, the data may not give a complete picture in countries where there is a binary divide in the system.



The third indicator **Portability of public grants and publicly subsidised loans** is concentrated on the portability of student support regarding domestic grants and loans, without taking the existence of additional mobility support into account. Furthermore, the indicator does not include information on the actual amount of portable support.

The fourth indicator **Recognition of learning outcomes** is based on the premise that external monitoring of key aspects of the understanding and use of special tools is a positive feature of national practice. Thus, the variable considers a monitoring of the following elements: 1) average time taken to obtain recognition for qualifications gained abroad; 2) correct use of ECTS in a learning outcomes approach, including proper use of Learning Agreements; 3) correct use of the Diploma Supplement; 4) usefulness of the Diploma Supplement to employers and graduates. The criteria for the variable are excessively demanding; these findings can also be seen as an indication that much needs to be done to improve the use of the tools covered by this variable. The variable could thus be a useful starting point to assess development in this field.

Mobility support provided to students with low socioeconomic background as the fifth indicator captures the following categories of mobility support for students with low socio-economic background: 1) defined national targets regarding the participation of students with low socio-economic background in mobility programmes; 2) monitoring the participation of students with low socio-economic background in mobility programmes; and 3) financial support given to students with low socioeconomic background, either based on the targeting or the mainstreaming model. The information on the proportion of students receiving support and the amount they get is not included in the variable.

6.3.3 Scoreboard indicators for the country clusters

When looking at the two different clusters one could assume that the scoreboard indicators reveal higher values in the centre-receiving countries than in the periphery-sending countries, because of the better developed economy (see chapter 5.3.2) and the considerable higher gross domestic spending on R&D in the first cluster; although most of these variables are actually designed to picture national preconditions to facilitate mobility for going abroad. The mean-scores of the scoreboard indicators for the two clusters are compared descriptively, without interpreting the p-value as the database is a total sample of all EU/EFTA countries.

As illustrated in Fig.6.6 the picture needs a differentiated perspective. Only three out of five indicators have higher values in the centre-receiving countries. The information and guidance on learning mobility is better spread in the centre-receiving countries. The same applies for “portability of public grants and publicly subsidised loans” and “mobility support provided to students with low socio-economic background”. However, the differences between the clusters in these three indicators are comparably low. The biggest difference can be stated for the portability of public grants and loans. Even if the amount of the grants is not included in this indicator, it fits to the significantly higher gross spending on R&D in the centre-receiving countries. Despite of this, the preparation of opportunities for learning mobility regarding foreign language skills is better developed in the periphery-sending countries. This is in line with the mean-ratio of foreign languages learnt per pupil where slightly more foreign languages are learnt in the periphery-sending countries. However, the mean-ratio of pupils learning English is 5-8% higher in the centre-receiving countries. Regarding the recognition of learning outcomes, no difference is gathered but the indicator is comparably low, which

shows that the recognition of learning outcomes needs improvement in general as described already in the report (European Commission/EACE/Eurydice 2013).

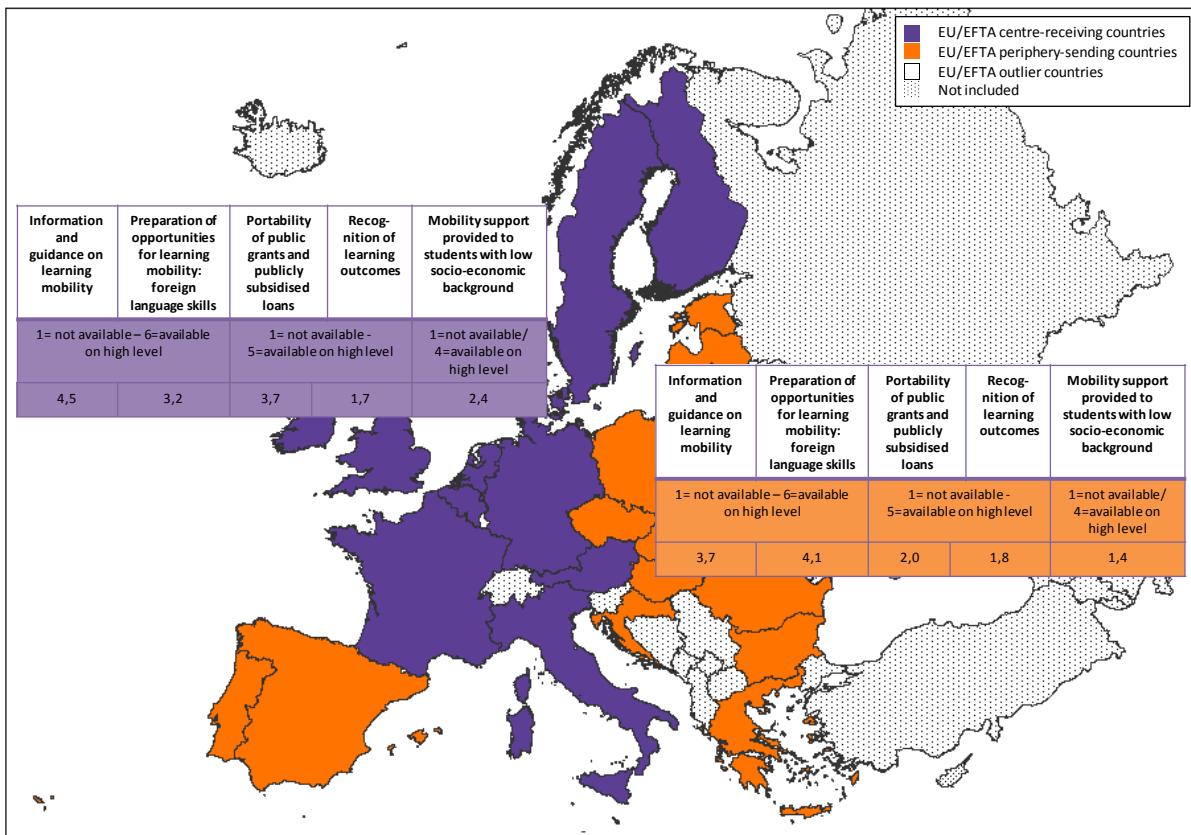


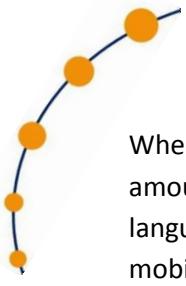
Fig.6.6: Scoreboard indicator means for the two country clusters for 2011

6.3.4 Relationship between scoreboard indicators and youth mobility indicators

In this section the relation between the scoreboard indicators and the MOVE youth mobility indicators is analysed. Used mobility indicators are “Finished outgoing/returning mobility” and “Outgoing students’ mobility” (chapter 3.4 and 3.5 and Tab.A.4). Despite the fact that the reasons for the finished outgoing/returning mobility are unknown, it is assumed that studying abroad is the main reason for doing a returning mobility. The relationship is analysed by multiple regression modelling. For each mobility indicator two models are calculated, one cross-sectional model and one longitudinal model. Thus, a set of four models is presented in Tab.6.1. ⁴³

The results reveal that finished out-going/returning youth mobility is positively affected only by two of the five scoreboard indicators: foreign language skills and the portability of public grants and loans. Information and guidance on learning mobility and mobility support provided to students with low socioeconomic background however, are negatively related to the outgoing/returning youth mobility ratio. The direction of the effects is the same for both models: cross-sectional and longitudinal. The recognition of learning outcomes also shows a negative effect but only when looking at the longitudinal perspective. However, the explained variance is comparably low for both models, so the effects should not be overrated.

⁴³ Beside the explained variance (R^2), the levels of the standardised Beta-coefficients are considered for interpretation. Only Beta-coefficients ≥ 10 are considered to be of practical relevance (Cohen 1988). P-values will not be interpreted due to working with a total sample of all EU/EFTA countries.



When looking at the ratio of outgoing students, the scoreboard indicators are able to explain a higher amount of variance (24 to 29%). However, the direction of the effects is the same: only the foreign language skills and the portability of grants and loans are positively related to outgoing students' mobility. Neither information/guidance on learning mobility nor the recognition of learning outcomes is of relevance for outgoing students' mobility. Moreover, mobility support for students with low socioeconomic background negatively affects the outgoing students' mobility ratio. The effects and their direction are the same for both models: cross-sectional and longitudinal.

Tab.6.1: Explaining Outgoing/Returning youth mobility and outgoing students' mobility through the indicators of the mobility scoreboard (multiple regression analysis), N=31

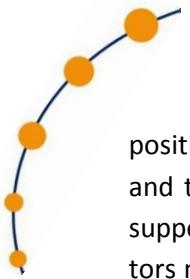
Conditions for learning abroad in Europe 2011 "Mobility Scoreboard"	Model 1: Outgoing/returning youth mobility (2012 reported for 2011)		Model 2: Outgoing/returning youth mobility (2013 reported for 2012)		Model 3: Outgoing students' mobility 2011		Model 4: Outgoing students' mobility 2012	
	Beta							
Information and guidance on learning mobility	-,19	$R^2=,19$	-,11	$R^2=,12$	-,05	$R^2=,29$	-,01	$R^2=,24$
Preparation of opportunities for learning mobility – foreign language skills	,36		,28		,50		,50	
Portability of public grants and publicly subsidised loans	,45		,42		,47		,44	
Recognition of learning outcomes	-,09		-,22		-,01		,03	
Mobility support provided to students with low socioeconomic background	-,13		-,16		-,16		-,16	

When comparing the effects of the scoreboard indicators on outgoing/returning youth mobility and outgoing students' mobility similarities can be seen: both kinds of mobilities are supported by foreign language skills and the portability of public grants/loans. However, information and guidance on learning mobility, the recognition of learning outcomes and the support provided to students with lower socioeconomic background does not quantifiably support the outgoing mobility ratios.

6.3.5 Summary and conclusions

The mobility scoreboard indicators for the conditions of learning abroad in Europe (European Commission/EACE/Eurydice 2013) were included into the MOVE-SUF (Hemming, Tillmann, and Dettmer 2016) for analysis of the relationship between the scoreboard indicators and the sampled outgoing mobility indicators for the EU/EFTA countries. The results reveal assumed differences between the centre-receiving countries and periphery-sending countries regarding information and guidance, portability of grants and the support for students with low socioeconomic background. The results are in line with the tremendously higher spending on R&D in the centre-receiving countries. However, more foreign languages per pupil are learnt in the periphery-sending countries which might be due to the compulsion to keep up with developments in the leading industrial nations. The aspect of recognition of learning outcomes obviously needs to be supported in both country clusters, as it is not developed sufficiently until now.

The results of the regression modelling reveal a discrepancy between the institutional analysis of the mobility scoreboard indicators and the actual outgoing youth mobility ratios. Only two indicators are



positively related to outgoing youth mobility: namely foreign languages learnt by pupils over time and the portability of public grants and loans. Thus, both indicators seem to have a practical and supportive relevance for learning mobility within the EU/EFTA countries. For the other three indicators no supportive effect can be seen. As the connections between the indicators are rather low, we would argue that their level is of no practical relevance for outgoing students' mobility. However, the negative effect of mobility support provided to students with low socioeconomic background should be treated cautiously. Considering a higher ratio of outgoing students in the periphery-sending countries and at the same time a lower support for students with low socioeconomic background, a structural difference is the reason for the effect: the ratio of outgoing students is higher in those countries where the gross domestic spending on R&D and the support for disadvantaged learners are lower. For analysing the effects of institutional support for students coming from a low socioeconomic background, further differentiated analyses are needed, due to the fact that among samples of mobile youth disadvantaged people are highly underrepresented.



7. National country case studies on different youth-mobility topics in selected partner countries

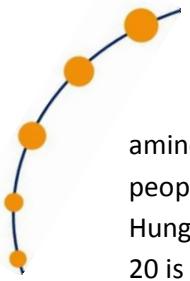
The presented national country case studies are an additional achievement of work package 2. They result from the national youth mobility macro-data that the project partners searched for at the beginning of the project. The availability of macro-data was limited, a harmonisation of the datasets was infeasible and the MOVE-SUF was set up with 31 country-cases; thus, available national datasets were not included into the analyses of work package 2 so far, though their analysis appears promising. For some countries very detailed youth migration data was available. Hence, the national case studies will complement the overall results of the secondary analyses with more detailed national insights. However, each national case study stands on its own, using individual data basis and analysing strategies. The responsibility of each case study lies entirely with the respective authors. The results of each country case studies will be linked with the results of work package 2 and the overall MOVE-project in the respective conclusions section.

7.1 Outgoing youth mobility from Hungary

(Kláudia Horváth, Zsuzsanna Dabasi-Halász, and Éva G. Fekete)

7.1.1 Introduction

Processes of youth mobility are significantly influenced by social recollection; the mobility/migration situation in Hungary today is still highly affected by the history of the past fifty years. In the situation following World War II, the migration system of Hungary for incoming migration was strictly limited and controlled. At the time, hundreds of emigrants left the country illegally, so the migration balance was rather negative. Another peak of emigration is linked to the events of 1956, where nearly 200.000 people, mainly young ones, left the country (Hablicsek and Illes 2007). During the decades after 1956, emigration nearly ceased to exist. There were about one or two hundred young students per year who went to study to the countries of the CMEA (Council for Mutual Economic Assistance). This isolation of Hungary ended in 1988 when the weakening of Soviet control triggered a political turn, which finally resulted in the change of regime in the following years. These events indicated the beginning of changes affecting the Hungarian position in the migration system and also the changes in the quality and quantity of migration concerning our country. Our country could again become an integral part of international migration processes and, contrary to previous trends, it became a transit and a receiving country (Illes 2004). Similar processes were ongoing in other countries of the Central-Eastern European block as well. After the removal of the "Iron Curtain", the people of Central and Eastern Europe became more mobile and migration, both within and outside of the region, was set in motion as well (Salt 2001). Compared to other countries of the Eastern European region, the migration potential of Hungarians was relatively low. According to a survey carried out by Wallace (1998), Hungary's migration potential was the lowest in Central- Eastern Europe in all four period categories examined (week, month, year, permanent). To obtain a more exact figure as to the rate of migration, migration statistics of the receiving countries should be examined. Between 1998 and 2004 an average of 24.000 Hungarian citizens migrated to Europe. After the change of regime nearly 40.000 people came to Hungary. In the mid-1990s an annual migration of 12.000 people could be observed with regard to Hungary. From 1998, a slight increase in migration can be seen. Most of the migrants to Hungary were people from neighbouring countries. The majority of these migrants were Romanian citizens, whose presence and dominance was obvious in the migration process. If we ex-



amine migrants by age categories, we can see that young age groups are more mobile. The ratio of people aged 20-39 is dominant both among men and women. Two thirds of the migrants coming to Hungary belong to this age group (67% of men and 62% of women). The ratio of people aged below 20 is about 20%.

In this current country case study we will analyse the tendencies of youth mobility in the case of Hungary. The underlying research question is: What kind of economic, social, and political factors affect youth mobility from and to Hungary? Following the neo-classical theoretical background of work package 2 (chapter 4), these factors are considered as push and pull factors.

The main data sources of our analysis are derived from the database of the Hungarian Central Statistical Office (CSO) and Eurostat. We will use descriptive and dynamic statistical analyses.

7.1.2 Theoretical background/state of the art

The theoretical background of our case study is comprised by the theoretical model on drivers of youth mobility that were presented in chapter 4. There has been a lot of research with different foci on causes of mobility in the past: macro-economic aspects of mobility were studied by Massey and Taylor (2004), Straubhaar (2002), while other research defined the potential of mobility (Haas 2010; Borjas 2000; Hönekopp 2000; Wallace 1998). The labour market situation of a certain country can influence inbound and outgoing mobility in different ways: increasing unemployment during recession increases the likelihood of migration, whereas this process exerts a pulling force in the receiving country (Bodnar and Szabo 2014). According to researchers, migration decisions and the choice of the target country are influenced by the differences in wages and employment between the sending and the receiving countries (Blasko and Gödri 2014). Research articles mention language similarities and the number of citizens of the sending country present in the receiving country, as structural causes of migration. It is also worth examining what percentage of GDP is spent on social expenses in each country. The more significant role the welfare system plays in a country, the more attractive it becomes for migrants. The differences in welfare expenses might also serve as a reason for mobility (Bodnar and Szabo 2014). Human capital theory of migration considers not only the expected income but also benefits like the standard of the social system in the target country or an attractive natural environment (Blasko and Gödri 2014).

7.1.3 Method, Database

In the current country case study, we refer to the results of Hungarian empirical studies in connection with youth mobility. We conduct descriptive and dynamic statistical analyses based on self-collected data provided by the CSO and open access databases from CSO, as well as from OECD and Eurostat. The analyses are in line with other methods used in statistical modelling in chapter 5. The datasets are described in Tab.7.1.

For the analysis of the relationships, we used the database of the Hungarian Research Institute called "Kutatópont". The database includes empirical data of the "Magyar Ifjúság 2012" survey. The applied indicators of the survey are: foreign mobility willingness, age group (15 to 29), sex, educational background, type of settlement, region, family status, foreign experience – learning, foreign experience - work, and foreign language skills. For the macro-economic analysis also described in the current country case study we examined secondary macro-data collected by us. The compiled data uses a similar period as the MOVE-SUF (2003-2013).

Tab.7.1: Data for the regression and factor analysis, Source: own work

Variable Name	Other information	Unit	Source of data	Period
Hungarian citizens aged 15-29 emigrating from Hungary	Emigration by five year age group, sex and citizenship; Reference area: EU-27	Number	Eurostat http://ec.europa.eu/eurostat/web/products-datasets/-/migr_emi1ctz	2003-2013
GDP/capita	Value of gross domestic product, per capita; download: October 2015	PPS	CSO http://www.ksh.hu/docs/eng/xstadat/xstadat_annual/i_qpt016.html	2003-2013
Youth unemployment rate	Unemployment rate by age-group, persons aged 15-24	Percent	CSO https://www.ksh.hu/docs/hun/xstadat/xstadat_eves/i_qlf017.html	2003-2013
Minimum wages	Monthly minimum wages: 1 January	EUR	Eurostat http://appso.eurostat.ec.europa.eu/nui/how.do?dataset=earn_mw_cur&lang=en	2003-2013
Direct investment stocks as % of GDP	Financial account, Direct investment, Abroad	Percent	Eurostat http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&plugin=0&language=en&pcode=tec00047	2003-2013

7.1.4 Result

Descriptive analysis of macro-causes of youth mobility

In this chapter we present the economic and social factors theoretically modelled in chapter 4.1 and 4.4 and analysed in chapter 5.4 for all EU/EFTA countries for the situation in Hungary.

Youth mobility: According to the CSO, the most mobile generation is the one aged between 15 and 29 years (see Fig.7.1). According to the CSO, the most popular destination among the younger generation for men and women alike is the United Kingdom with more than 50% of the people choosing the country as their new home. Hungary is primarily a receiving country, there are more migrants arriving to the country than there are people leaving. However, outgoing mobility has been increasing for the last eight years, especially among the younger generation (based on CSO data). Between 2003 and 2013, mobility among Hungarian youth (aged between 15 and 29) has increased significantly. The biggest jump in the numbers occurred in 2007. In 2013, according to Eurostat, 183 Hungarian youth moved to other countries of the EU, whereas, in 2008 this number was 1.501; thus, Hungary became a sending country in terms of youth mobility (see Fig.7.2). However, according to chapter 5.3.2 Hungary was grouped as an EU/EFTA periphery-sending country.

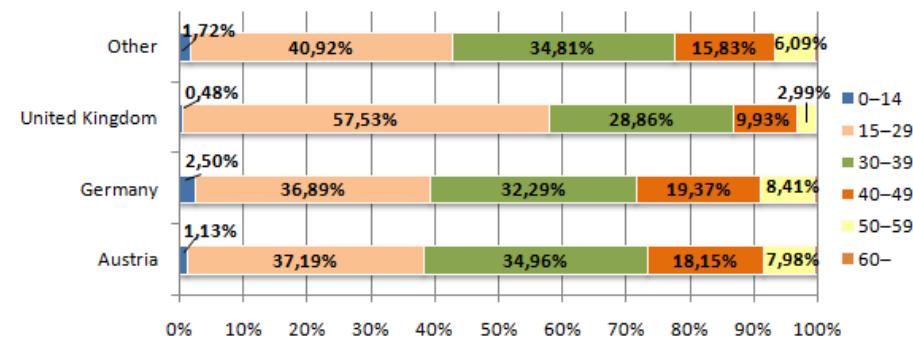


Fig.7.1: The composition of Hungarian migrants based on their destination and age, 2014 (rounded value), Source: own figures based on data from the CSO

According to the census in 2011, more than 30% of the people who spent *at least one year* abroad were from Budapest. The region with the second largest amount of people spending time abroad was the Southern Great Plains. More than 24.000 young people (aged 15-29) were residing *temporarily* abroad, most of them coming from Budapest (15%) or Borsod-Abaúj-Zemplén county. The ma-

jury of them were single; the rate of married people was less than 10%. Most of the people *habitually residing* abroad came from Central Hungary (ca. 5.500 persons), followed by Southern Transdanubia and the Southern Great Plains. The number of young people who habitually reside abroad is close to 3.000 in each region. This group of youth typically come from municipalities or small towns (32% each).

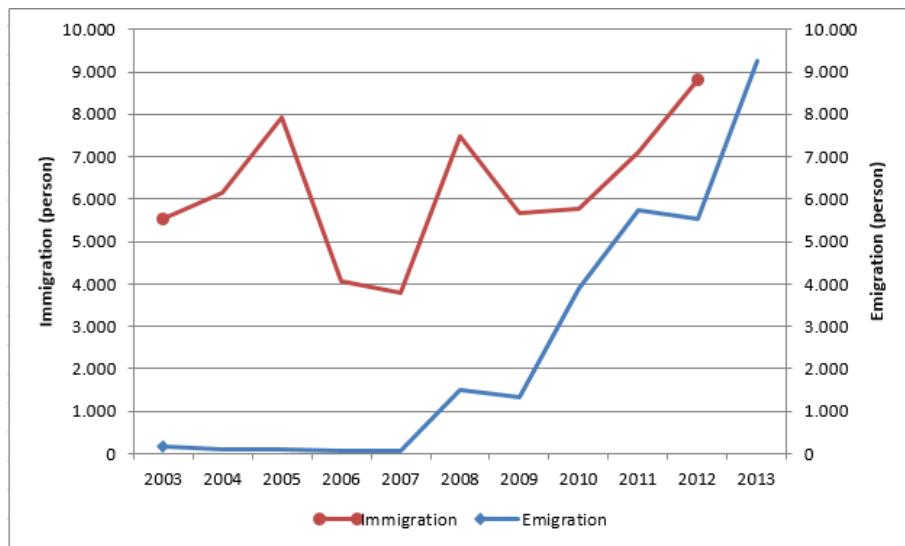


Fig.7.2: Immigration and emigration by the age group of 15-29 from EU-27 countries (in Hungary), Source: own figures based on data from Eurostat http://ec.europa.eu/eurostat/web/products-datasets/-/migr_emi1ctz⁴⁴

Economy - GDP and real earnings: The economic performance of Hungary improved by an annual 4,2% between 2000 and 2006. The economic crisis caused a huge setback for the economy, the GDP growth rate was -6,8%. During the years after the crisis the growth rate was still very low. The negative tendency improved a bit in 2012, due to the performance of agriculture, industry, and the construction industry. In 2013 the country's economic performance improved by 1,5%. A report issued by the CSO in 2013 highlights that there is a significant geographical concentration in the distribution of foreign working capital. The effect of the crisis was reflected in the changes of real wages as well. A positive turn was witnessed in 2013; since then real wages have been growing steadily (Fig.7.3).

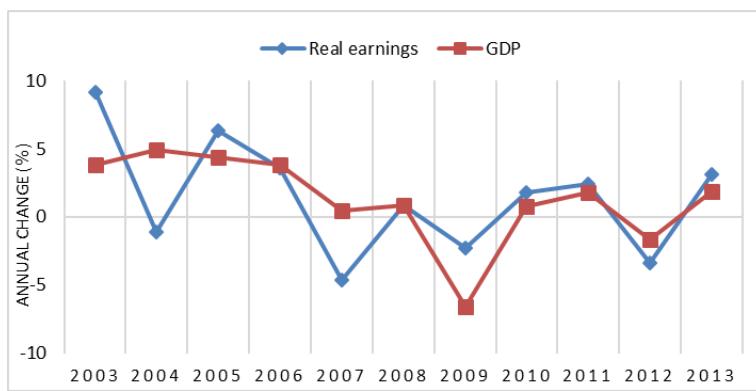
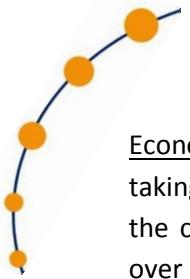


Fig.7.3: Net real earnings and changes of GDP, Source: own statement based on CSO data

⁴⁴This domain comprises a series of long-term international immigration and emigration processes during the reference year. Based on Eurostat, regarding long-term immigrants, if they stay in their country of destination for a period of 12 months or more, having previously been resident elsewhere for 12 months or more. Long-term emigrants, if they leave their country of previous regular residence for a period of 12 months or more.



Economy - General unemployment rate: Hungary joined the European Union in 2004 and since then taking up jobs in the EU has gradually become easier. The migration of employees accelerated due to the crisis of 2008. The unemployment rate typically increases during recession; in Hungary it was over 10% for years. Several studies mention that migration from Central-Eastern European countries increased during the recession period). In the time of crisis not only the differences in unemployment rates, but also the inequality of wages, surface between the countries in Eastern and Western Europe. Neoclassical theories consider the wage differences to be the cause of migration. One of the most favoured target countries for Hungarian migrants is Germany. The growth of migration correlates with the unemployment rate in the sending country, the GDP per capita and the free flow of workforce. Comparison of Hungarian minimum wage and EU average minimum wage reveals a significant difference(Neubecker, Fratzscher, and Linckh 2014). There are special professional fields where employees find their salaries too low and decide to go abroad for the purpose of employment, a typical example being the field of medical professionals.

Economy - Youth unemployment rate: Total unemployment in Hungary between 2003 and 2013 was exponentially growing until 2010; after that it was fluctuating. The unemployment rate among young people aged 15-29 nearly doubled between 2003 and 2013. Besides unemployment, another problem is the high number of economically inactive population.

Economy - Inactivity, NEET ("Not in Education, Employment or Training"): Among inactive people there are a lot of people with no qualification and also many of them have been unemployed for a long time. After the change of regime, the need for workforce dramatically decreased and the employment structure significantly changed (both geographically and professionally). As a result, a lot of people became unemployed permanently and became desperate job-seekers. From a geographical point of view, these inactive people can mainly be found in underdeveloped, disadvantaged regions of Hungary (Fazekas 2006). Speaking about juvenile unemployment, young NEET people represent one of the major problems. According to the 2013 workforce survey by the CSO of Hungary, the majority of young NEET people have a low educational level, they finished their studies in primary schools or vocational schools, and they have no GCSE (General Certificate of Secondary Education). Based on Eurostat data, 18,4% of young people aged 15-29 belong to the NEET group.

Economy - Minimum wage: The minimum wage nearly doubled in Hungary in the examined period but its ratio to average gross earnings remained low. It is interesting to note that in the neighbouring Slovakia minimum wages were lower than in Hungary until 2009, but after 2010 this trend reversed.

Economy - FDI: Privatisation of the Hungarian economy resulted in a significant structural change, in which foreign direct capital investments played an important role. Due to these investments the country's balance of payments has improved. Foreign capital investments significantly grew after the EU accession. About three quarters of direct capital investments come from the EU. The most significant investors are the Netherlands, Germany, Austria, and Switzerland. In 2008, in the year of the economic crisis, investments slowed. The most significant German investors are Mercedes, Audi Hungaria, Bosch, Deutsche Telekom, E-on, Siemens, and Knorr-Bremse. These days, most investments come from the service sector (banking and real estate; Fábián 2012).

State - Foreign language studies: The ratio of students studying foreign languages in vocational schools increased by 5% between 2003 and 2013. The ratio in secondary grammar schools and tech-

nical schools slightly decreased. In 2013, the ratio of students studying foreign languages was the highest in secondary grammar schools (178%), in vocational schools it was 98% (Source: CSO)⁴⁵.

State - Foreign language skills: The most commonly spoken foreign language in Hungary is English, followed by German. Based on census data from 2001, more people spoke German than English. In 2011, 1,5 million people spoke English, and German was only spoken by 1,1 million people. From the aspect of age categories, people aged 15-39 are able to speak foreign languages at the highest ratio; as for qualifications, those with GCSE or holding a degree rank the highest.

State - Social inequality, poverty rate: The social situation of the Hungarian population is very different in various geographical regions. In 2014 the number of people regularly receiving social benefits was the highest in North-East Hungary, Southern Transdanubia, and the Northern Great Plain. According to Eurostat data, 32,1% of the Hungarian population was exposed to social exclusion and the risk of poverty in 2005. In 2013 the ratio was 33,5% (1,75 million people). This value is very high compared to the 24,5% EU average in 2013. The GINI index, which shows social inequality, is 28 (on a scale of 100). It is lower than the EU average (25,5).

State - Social expenditure: Social benefits available in a certain country can be attractive for mobility. In the period between 2003 and 2012, the amount of social benefits has not changed considerably in Hungary. In the beginning of the period 20% of the GDP was spent on social benefits, in 2012 benefits accounted for 22% of the GDP. This ratio is lower than the EU average: in Germany, Austria, and the Netherlands the ratio is higher (around 30%), whereas in neighbouring Slovakia and Romania the ratio of social benefits to GDP is lower (source: Eurostat).

Society - Population and youth in society: The population of Hungary has been constantly decreasing since 1981. In 2013 the population of Hungary was 9.908.000. The ratio of young people in the population was also gradually falling by 2,3% between 2003 and 2013.

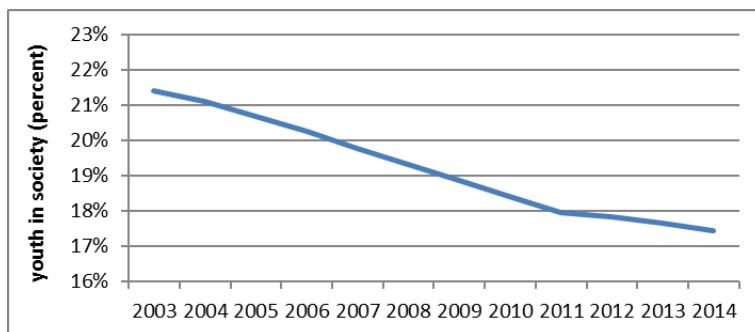


Fig.7.4: The ratio of young people aged 15-29 in the population, Source: own figures based on CSO data

Society- Urbanisation: The majority of the population (about 71%) lives in the capital and other cities. This ratio did not change considerably between 2003 and 2013. The density of the population of Budapest slightly increased: in 2003 it was 3.274 people/km², and ten years later it was 3.305/km². As for settlement types, the ratio of cities slightly increased whereas the ratio of villages decreased to a certain extent.

⁴⁵ Rate of students learning foreign languages refers to all students who are studying foreign language in full education. The rate is determined by levels in the statistics (different levels: school types: grammar school, vocational school). In the denominator can be found all of the students (by school type). If a student is learning more than one foreign language, than he/she appears several times in the statistics. Source:

http://www.ksh.hu/thm/2/indi2_2_3.html

Society - HDI: Hungary falls into the category of countries with a high HDI; in 2013 Hungary ranked 44th with a HDI index of 0,83. This is four places lower than our position in 2009. According to Eurostat datasets young Hungarians aged 16-24 are satisfied with their financial situation (5,4 on a scale of 10); young people of the 25-34 age group gave an average 5,3 to express their satisfaction. Young people aged 16-24 are even more satisfied with their work (7,1 out of 10) and with their place of living (6,5 out of 10). The values are very similar to the other group of respondents aged 25-34.

Effects of local economic factors on outgoing youth mobility (regression analysis)

The objective of the regression analysis is to examine the effects of socio-economic factors on outgoing mobility in Hungary. Due to the fact that Hungary was examined focusing on data for 10 years, it was not the purpose to review all explained socio-economic indicators. Thus, the regression analysis was performed only with four indicators: the dependent variable is the outgoing youth mobility of youth aged 15-29 to the EU; the independent variables are five economic factors (GDP per capita; youth unemployment rate; minimum wages; ratio of direct investment stocks in GDP). The regression analysis was performed by using the enter method. The data refers to the whole country, thus significance values were not interpreted. The value of Durbin Watson is 1,93. In two cases the multicollinearity VIF indicator was very high, that is why the variable with the highest VIF value was removed.

According to the results, high FDI stocks and youth unemployment would increase, and high minimum wages would decrease outgoing mobility. Young adults employed by international companies are getting used to the international environment. The connection between FDI and outgoing mobility disproves the assumption that the employment of the youth at international companies would replace foreign mobility. Presumably, the international environment is inspirational to young adults' mobility. The regression analysis shows a strong, significant correlation between the three economic factors and youth mobility. The three economic factors have an explanation power of 88% of in explaining the dependent variable. The regression equation is as follows:

$$y = 0,641x_1 + 0,184x_2 - 0,214x_3 - 0,239$$

(x_1 =FDI; x_2 =Youth unemployment rate; x_3 =Minimum wages).

Mobility potential among the Hungarian youth

Another factor to consider besides the actual numbers of mobile youth is the willingness to be mobile. The mobility potential can predict the composition and trends of migration (Hárs 2011). A recent survey examining migration plans shows that the younger generation is more willing to migrate (Blasko and Gödri 2014).

In 2012 the Hungarian Research Institute *Kutatópont* carried out a representative survey involving a large number of samples about young people aged 15-29⁴⁶. Our descriptive secondary analysis of the database revealed, that out of the 8.000 people asked, 52% would leave the country if given the opportunity to study or work abroad. In fact, the younger the respondents, the more they expressed their willingness to become mobile. 55% of the people aged 15-19 are planning to leave Hungary. The average age of the people who would settle down abroad for a longer period of time is 22 years. The survey shows that more than half of the married or divorced population plan on staying in Hungary whereas the opposite can be observed among singles. 12% of the respondents would leave the

⁴⁶The sample is representative of the Hungarian population by region, settlement type, age and sex.

country permanently. Youth from county seats are more likely to have plans regarding moving abroad (60%), while in Budapest this ratio is significantly lower. Foreign language knowledge has a strong influence on the willingness to migrate. 60% of the respondents who speak a foreign language would leave the country and only 27% of them would stay. Previous experience in a foreign country also had a strong effect on the results. 29% of people with previous study experience in a foreign country and 39% of people with previous work experience in a foreign country would settle down in a foreign country permanently. The majority of the Hungarian youth named better livelihood, language learning, gaining experience, and career as a reason for leaving the country. 63% of the respondents listed family as an obstacle for mobility followed by nationalism, friends and lack of foreign language skills. For the youngest generation the lack of information and insufficient financial background are the main obstacles, while for people aged 25-29 these are their social network and nationalism. Gaining new information and experiencing new perspectives also play an important role in the increased willingness to migrate among young people.

We used the explained database to analyse the relationship between different variables and the willingness for mobility. The results of our analysis show a weak relation between age, sex, school qualification, settlement type, foreign work or study experience, foreign language knowledge and willingness for mobility.

Tab.7.2: Foreign mobility willingness and other variables, Source: Kutatópont, Magyar Ifjúság 2012 survey - database

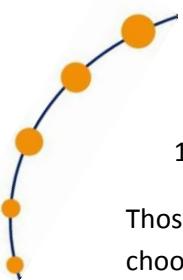
Qualitative data	Csuprov-index	Cramer-index	Significance level
Sex	0,198	0,078	0,000
Educational attainment	0,198	0,075	0,000
Type of settlement	0,165	0,083	0,000
Region	0,312	0,127	0,000
Family status	0,172	0,077	0,000
Foreign experience - learning	0,256	0,148	0,000
Foreign experience - work	0,292	0,169	0,000
Foreign language skills	0,230	0,115	0,000

7.1.5 Conclusions and recommendation

As stated in chapter 5.3.2, Hungary can be considered as a peripheral sending country, which is why we focused our research on outgoing youth mobility from Hungary to other EU-countries. As theoretical backdrop for our country case study, we specifically used the push and pull factors approach (chapter 4.2.1; e.g. Lee 1966; Massey et al. 1993; Todaro 1980) and the “brain drain” issue (chapter 4.3.1; e.g. Docquier and Rapoport 2012; Dodani and Laporte 2005).

The high rate of the young inactive population is a country-specific problem in Hungary, which contributes to outgoing mobility (see chapter 5.6.1). In accordance with the results of chapter 5.4.6, in the case of Hungary, the analysis revealed that high minimum wages decrease outgoing mobility. However, with regards to the unemployment rate, the result opposes the case study analysis, due to the fact that we only analysed data for Hungary, compared to the entire set of periphery-sending countries. According to our analysis, high FDI stocks strengthen outgoing youth mobility. Our second objective was to examine the willingness of Hungarian youth to be mobile as it might forecast the future plans and behaviour of young people. The results revealed that there is a strong willingness to mobility in general and that this willingness correlates with individual features of the young (Tab.7.2).

Besides the theoretical approaches mentioned earlier, we also considered other approaches explained in detail in chapter 4.1.(e.g. Borjas 1999; Haas 2011; Muenz 2013). Based on these we developed four models for restructuring outgoing youth mobility in Hungary:



1. Difficulties regarding finding a job, escaping a high level of unemployment of youth:

Those who are pushed out from and who are unable to enter the domestic labour market rarely choose to go abroad. "Brain drain" is more typical, which means that the more talented and qualified young adults are the ones leaving the country. Many of them have already taken part in student mobility. Thus, they adapt more easily to the labour market requirements of the host country. In the hope of higher initial salary, making use of the foreign demand of the labour market, more and more people plan to take a job abroad. This also includes studying abroad and/or preparing for the repayment of domestic tuition fees. Their decision can be beneficial regarding domestic unemployment of young people, because less skilled and less flexible young adults can take their place, which requires the mediator institution's conscious engagement. The employees lost may be substituted with respect to skills shortages and for social security by (re-)training of those who stay in the home country and by the involvement of inactive people. If domestic wages are improved, the supply of the foreign labour markets of other countries and the final loss of expenditures spent on the education of young people may be avoided.

2. Reaction to the deficiencies of the domestic educational system:

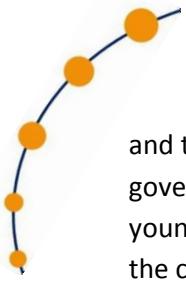
A lack of scholarships in the field of social sciences, the intention of fencing off education based on an obsolete, out-of-date substance of knowledge and weak competency development, and learning foreign languages in native environments already inspire high school students to participate in mobility. Therewith their future career opportunities will improve, so parents are willing to make more sacrifices. Such decisions of families are also strengthened by the fact that the differences between the costs of domestic and foreign quality education are constantly decreasing. The Bologna process also enhances the interoperability of education in Europe. However, the increasing mobility of students continually weakens the domestic educational institutions due to the decreasing number of students. In response, they advertised their educational courses abroad. Because of this the number of students increases from the Eastern countries in the first place. The maintenance of the deficiencies of education will however, not be able to sustain this growth. The solution for either keeping youth in education for a while, or attracting further students may only be expected from a qualitative reform of domestic education.

3. HR strategy of global companies:

Today multinational companies play a perceivable part in young people's employment. The central element of their HR strategy is to employ young adults across borders, and to integrate foreign experiences between systematically constructed countries into work. Those who intend to apply to multinational companies expect to spend years abroad, therefore they try to study in different countries in order to prepare themselves. Also, in this case employment mobility is exceeded by student mobility.

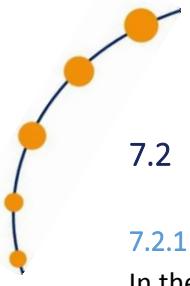
4. Starting life creatively, innovative self-realisation:

In the course of the realisation of their own ideas, young people expect that foreign experiences, diverse knowledge and skills (spread over different sectors, sections, activities) will provide good references either in the course of innovative initiations to be launched in the home country, or when starting a business abroad. Those new businesses, which adapt knowledge of innovation, could then spread from central regions to the periphery and disseminate the idea of new products and services,



and thus, will gain competitive advantages. In case of development, it would be essential for national governments to facilitate the spreading of innovation in the peripheries, which was obtained by young adults in central regions. At the same time, this represents an opportunity for the countries in the central region for market expansion.

This case study complements the statistical secondary macro-analyses of work package 2 for all EU/EFTA countries with national insights for Hungary. Thus, it has delivered substantial information for other work packages, especially for the qualitative analysis in work package 3 and the quantitative survey in work package 4.



7.2 Student mobility in Luxembourg (Emilia Kmiotek-Meier and Ute Karl)

7.2.1 Framework - EU, Luxembourg, students and mobility

In the introductory part we will focus on the frame of our case study, i.e. the EU context, the Luxembourgish context and previous findings on student mobility.

EU, mobility and students – short introduction

Within the frame of the EU, mobility is understood as the internal movements between the Member States. And within this context mobility is understood as always good and desirable⁴⁷. Current European discourse sees mobility as a good opportunity for (young) people, to develop their personality and their skills, to gain new experience, and to learn foreign languages (e.g. 2008/C 320/03, 2). Mobility in this sense is mostly understood and fostered through programmes as learning mobility. At the same time mobility is seen mainly as an antidote to labour market shortages in the EU (EC 613 2001; Zimmermann 2004).⁴⁸

These assumptions have led to a strong promotion of the mobility in the EU – and one of the target groups are *students*. The Leuven Communiqué set an aim that until 2020 at least 20% of all graduating in the European Higher Education Area should have a study or training period abroad.⁴⁹

Luxembourg, students and mobility – main facts

While in the rest of the Europe the threshold of 20% seems to be unreachable, Luxembourg has been fulfilling this criterion since years. For tertiary education, the quota for outgoing mobility is over 95% in Luxembourg (degree and credit mobility calculated together). While searching for reasons for this discrepancy between Luxembourg and other EU-countries, it firstly has to be mentioned that the University of Luxembourg was founded only in 2003. Before that date all young people had to go abroad for tertiary education on university level and for university degrees⁵⁰. Even today, there are programmes, which cannot be studied in Luxembourg resulting in high outgoing numbers of students. Another reason leading to high numbers of mobile students from Luxembourg is the fact that studying abroad is on-going seen as 'normality'⁵¹ and a necessity for the development of the young people and for acquiring skills and knowledge that is important for social and economic development. While in other countries some concerns of sending young people to study abroad exist (brain drain), those concerns seem to be absent in Luxembourg. On the contrary – student mobility, the education of the citizens abroad was and is still seen as a strategy for the development of the country (Rohstock and Schreiber 2012; Gouvernement.lu 2016). Although there is always a risk that young people do not come back to their country of origin, it may be assumed that for Luxembourg this risk is minimised due to high salaries, good working and career conditions and a welfare and social security system

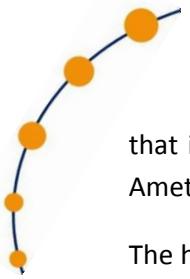
⁴⁷ For detailed analysis see Karl and Kmiotek-Meier (2015).

⁴⁸ In this context two phenomena (in fact two sides of one phenomenon) have been addressed by scholars: brain drain and brain gain.

⁴⁹ For the importance of the aims speaks the budget of the whole Erasmus+ programme that adds up to almost 15 billion Euros (Erasmus+ 2016).

⁵⁰ There were some higher education institutions prior to the foundation of the University of Luxembourg. However, there were either private institutions or overseas departments of existing universities. Both types with rather limited number of students (for more details see Powell 2015).

⁵¹ Based on the first analyses of the qualitative material collected within work package 3.



that is considered in some aspects even higher than Scandinavian standards (Hartmann-Hirsch and Ametepe 2011).

The high mobility ratio for Luxembourg's student mobility has also its roots in one of the principles of the University of Luxembourg – all *undergraduate* students inscribed at this institution have to spend at least one semester abroad as an integral and compulsory part of the study programmes.⁵²

Student mobility research – short outline

As King and Ruiz-Gelices (2003, 229) stated 'students comprise an important element in global and European population mobility, especially of highly skilled movements'. Additionally, students are an important 'element' for the economics and development of the EU as they are the best-trained and educated group of population.

Against this backdrop, it is surprisingly that over the years only few attention has been paid to student mobility in migration and mobility research (King and Ruiz-Gelices 2003; van Mol and Timmerman 2014). However, the recent development of research dealing with this topic shows its actuality and relevance (see e.g. Beech 2015; Beine, Noël, and Ragot 2014; Kritz 2016; Petzold and Peter 2015; van Mol and Valk 2016).

Definition of student mobility – credit and degree mobility

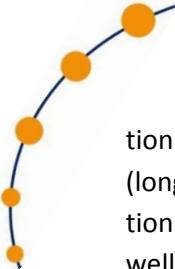
Student mobility is a heterogeneous phenomenon and can be divided in many sub-groups. As we cannot pay attention to all of them, we will limit our analyses to two main groups of mobile students, i.e. types of student mobility: degree mobility and credit mobility. 'Credit mobility' takes place when a student leaves the home university for a certain period of time to study in another then comes back and graduates from their home university. The European programme Erasmus+ for students is the most common form of spending some time (usually one or two semesters) at a foreign university in Europe (or outside). There are also other – much shorter stays – which allow students to obtain some credits (e.g. a two-week course in another country). In the following, we will not take these very short forms into account. In this case study we define *credit mobility* as a stay abroad with the minimum length of one academic semester at any university abroad. This stay can take place within a European programme (e.g. Erasmus+) or be organised by institutions or students themselves.

The second type of student mobility discussed in the following is the degree mobility. It includes students who decide to register for a whole study programme abroad (e.g. Bachelor or Master) and receive the final degree from the foreign university.

Overview of this case study

Taking into account the importance of this group of mobile young people and the moderate stock of knowledge about it, we would like to present Luxembourg as a case study in terms of student mobility. We will start with a description of some issues on the empirical material, both on the European and national level. Further, we will track the development of student mobility in Luxembourg. The focus will be on the geography of the mobility, i.e. destination countries for students who come from Luxembourg and sending countries for students coming to study into Luxembourg. The specific situa-

⁵² There are some reasons why students might skip the compulsory stay abroad, e.g. studying part time and having at the same time a permanent working position or care duties for children.



tion of highly mobile students in higher education allows us to ask how young people are mobile (long-distance or short-distance; within international study programmes as part of the higher education policy or not). We will conclude with the outlook for other work packages within our project, as well as with suggestions on the European level regarding the process of collecting data on student mobility.

7.2.2 Data coverage and problematics

Regarding the data situation on student mobility (and probably on other mobility types as well) we have to deal with three major challenges on both, the national and the international level: 1) lack of statistics, 2) various definitions of 'mobile students', and 3) discrepancies between different sources.

For most of the European countries there are numbers on student mobility, 1) but not all are exact: 'The lack of data on the distribution of students by nationality in some countries leads to underestimation of the values' (Eurostat 2016). There are also some difficulties to gather data, as in many countries there are no statistics about both incoming and outgoing mobile students: 'Countries do not have details of the numbers of their home students studying abroad. For a given nationality, the number of students studying abroad is calculated by summing the numbers provided for this nationality by the receiving countries' (Eurostat 2016). This is partly caused by the fact that many young people do not deregister themselves in the country of origin when they decide to go abroad to study. However, the situation has improved within last decades. Additionally, 2) there is still no common definition of a 'mobile student' or 'international student' (Wächter 2014, 88), '[a]lthough UNESCO asks countries to report student numbers based on whether they arrived for tertiary study purposes, in practice, some European countries that receive relatively large numbers of students include in their counts immigrant students already living in the country if they are non-citizens' (Kritz 2016, 9). Kelo, Teichler, and Wächter (2006) calculated data from several European countries and concluded that the definition using the nationality as a definition of 'international student' may overestimate numbers of mobile students up to 20%.

An additional issue of the definition of mobile students is the missing information on the way the students are mobile: are they credit mobility students or degree mobility students or both together in one statistic?

Concerns should be also given to national and European discrepancies in data. Data provided by Eurostat (Eurostat 2016) indicate that there were 2.500 foreign students in 2012 in Luxembourg – this is an approximated number (rounded off or up) and different from national statistics (Statec 2016a), which indicate more than 3.000 foreign students for that year. Here again, the problem of definition comes up – different statistics may refer to different student groups. It is not indicated if the numbers are based on nationality or any other criterion (for a detailed example see the sub-chapter on outgoing degree mobility in this case study).

Taking all data issues into account, we have decided to use three different data sources in the following analyses, choosing for each topic the data source, which seemed to be unbiased or least biased. The data set used is stated in the first footnote of every subchapter. The selection was based on comparison analyses between available data sources as well as debates with experts in charge of those data sets.



7.2.3 Time trends

In the main part of this case study we will focus time trends of mobile students to and from Luxembourg. The first analyses refer to credit mobility, the second calculations target degree mobility.

1. Credit mobility⁵³

This kind of student mobility is only possible if a country hosts an institution; that can send and receive students for a certain period of time (one or two semesters is a common time frame of a credit stay abroad). As the University of Luxembourg was founded in 2003 it is possible to depict the numbers of credit mobile students almost since the foundation of the University. We will take into account the time frame from academic year 2006/2007⁵⁴ to academic year 2015/2016. As mentioned before – it is an obligation for undergraduate students of the University of Luxembourg to spend some time abroad (and ‘take home’ at least 30 ECTS⁵⁵ from the other university/ies). This rule results in much higher numbers of outgoing than incoming students. Additionally, the array of destination countries (credit mobility outgoing) is, with 54 different destination countries, a little richer than the pool of sending countries (credit mobility incoming) with 41 countries. This fact may not be surprising as the University of Luxembourg is quite a new institution. The University of Luxembourg has approx. 240 partner universities around the world and new partnerships are being added continuously. These partnerships determine – at least for those students who do not go as free movers – the range of alternatives.

Outgoing credit mobility from Luxembourg – receiving countries

It can be said that the outward credit mobility of students of the University of Luxembourg⁵⁶ is almost purely European. Taking the whole period between academic years 2006/2007 and 2015/2016 into account, 93,2% of all outgoings choose a receiving institution in one of the EU-countries. 3,0% decided for a stay in the non-EU European countries. The remaining 3,8% chose a stay on another continent (N=5.164).⁵⁷

The main destination of outgoing credit students is Germany. This country has hosted 46,1% of the credit outgoing students for the discussed 10-years-period and it was from the beginning the most popular destination. France lies clearly on the second position with 24,3%. For Belgium and Portugal respectively, 8,0% and 3,4% have been reached. 76,0% of all credit outgoing stays were financially supported by the Erasmus or Erasmus+ programme. Generally speaking, the popularity of EU-countries other than Germany, France, Belgium, and Portugal has been rising gradually over the whole period (see Fig. 7.5).

⁵³ Analyses on credit mobility are based on information received from the University of Luxembourg in June 2016 (dataset uni.lu I). Based on this information it was not possible to differentiate in Bachelor, Master and other programmes. However, calculations based on another data source (dataset uni.lu II) have showed for the University of Luxembourg that ca. 97% of outgoing credit students are at Bachelor level.

⁵⁴ The academic year 2006/2007 consist of winter semester 2006/2007 (from the mid of September 2006 until the mid of February 2007) and summer semester 2007 (from the mid of February 2007 until the mid of September 2007).

⁵⁵ European credit transfer and accumulation system, for details see:
http://ec.europa.eu/education/ects/ects_en.htm.

⁵⁶ The students of the University of Luxembourg are not equitable with students residing in Luxembourg or having Luxembourgish nationality; for more details see further in this case study.

⁵⁷ Countries were assigned to the continents according to classification used for census (COMMISSION REGULATION (EC) No 1201/2009).

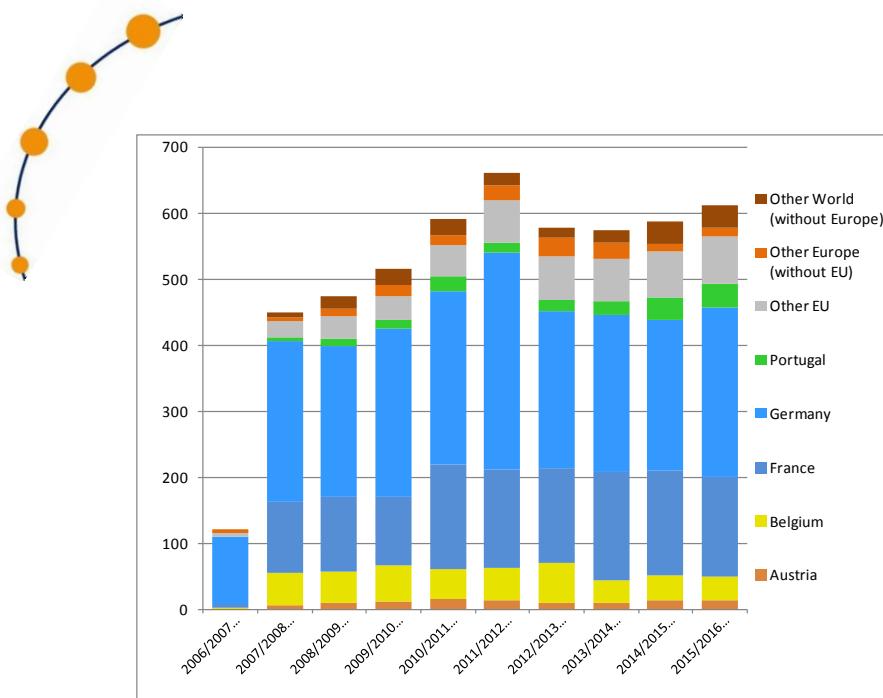


Fig.7.5: Credit mobility (outgoing) - University of Luxembourg (N for the whole period = 5.164)

The favourite non-European countries are Canada and the USA with 43,9% (n=86) and 30,6% (n=60) respectively, out of all placements in non-European countries. Among the European but non-EU countries Switzerland is the favourite destination with 84,6% (n=132) placements. Switzerland is also the fifth favourite country in general with 2,6% (n=132) of all placements. However, this situation changed in the academic year 2014/2015 as the share dropped to the level of 1,2% of all placements. The share for the academic year 2015/2016 was 1,8% so it has to be observed in the next years if there will be again a raising trend for Switzerland. The drop in 2014/2015 might be due to the popular vote in Switzerland (9th of February 2014). It was decided by the people and the cantons of Switzerland in favour of a restrictive immigration policy questioned the free movement between Switzerland and the EU. In consequence, the outcome of the vote led to a change in the Erasmus+ policy towards Switzerland and a change of its status into a partner country (Erasmus+ 2016), which might have caused uncertainties from the perspective of the students although there were no obstacles on the institutional level.

Rising numbers of outgoing students between the academic year 2006/2007 and the following years can be ascribed to the overall rising student numbers of the University.

Incoming credit mobility to Luxembourg⁵⁸ - countries of sending institutions⁵⁹

As mentioned before – the numbers for incoming credit mobility are in general smaller than for outgoing credit mobility. The other difference is that, even if incoming students to Luxembourg come mostly from other EU countries, the percentage of students coming from a EU country to Luxembourg is lower than the other way round.

⁵⁸ Similar as for outgoing credit students it was not possible to track back both country of sending institution and the level of study within one data base. Information in regard to sending country is based on information received from the University of Luxembourg in June 2016 (dataset uni.lu I). According to another data source (dataset uni.lu II) the incoming credit students are nearly equally divided in Bachelor and Master students. Students from other programmes are only 0,6% out of all incoming credit students for the reported period.

⁵⁹ The category 'sending country' indicates the country where the sending institution is located. It should not be mixed with the nationality, as e.g. not all students studying in Germany hold German nationality.

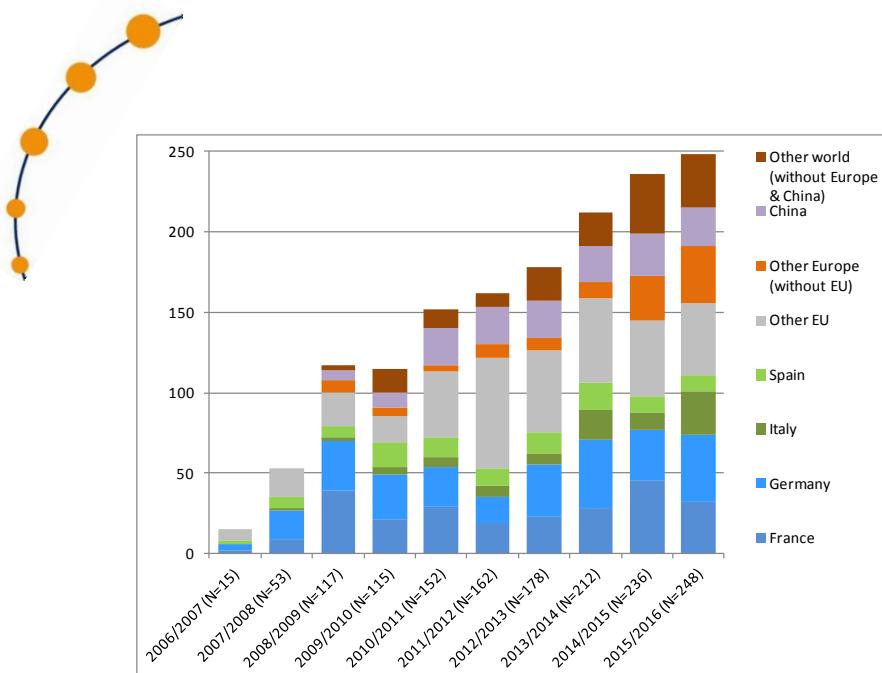


Fig.7.6: Credit mobility (incoming) - University of Luxembourg (N for the whole period = 1.488)

Taking into account the period between academic years 2006/2007 and 2015/2016, 72,2% of all incomings⁶⁰ come from a EU-country, 7,2% from a European but non-EU-country (N=1.488). Slightly more than one fifth have their hosting institution on another continent. 66,1% of the incoming stays were financially supported by the EU via Erasmus or Erasmus+ programmes.

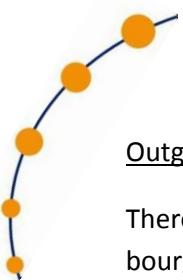
Numbers of incoming credit mobility students have been continuously rising within the reported time period (see Fig.7.6). If the whole time period is taken into account, it is Germany and France that send the highest shares of exchange students to the University of Luxembourg, 18,2% and 16,6% respectively. China occupies the third position with 10,5% out of all incoming students. In academic year 2011/2012, China was even the country where the most incoming students came from (14,2% for this academic year). For the reported period, Spain and Italy follow on fourth and fifth position with 7,0% and 5,6% respectively. Among the non-EU European countries, students from Russia make up the highest share of incoming credit students, especially since 2014. The amount of exchange students from Russian and USA institutions is comparable (slightly more than 4,0% out of all incomings - for each country).

2. Outgoing degree mobility from Luxembourg

In contrast to credit mobility – when just a part of the study is completed abroad – degree mobility indicates acquisition of university diploma in a foreign country⁶¹. Similar as in the case of credit mobility, the degree mobility from and to Luxembourg is mostly intra-EU European mobility.

⁶⁰ The number of incoming semesters and not the number of incoming students are presented.

⁶¹ Foreign country may mean different categories and there is no common definition, as stated before. Foreign country may mean e.g. a country different than the country of nationality. It may also mean a country different than the country where the most years of life have been spent but the same as country of nationality. It may also mean a country different than the country of the nationality and different than the country where the most years have been spent. Other combinations are imaginable.



Outgoing degree mobility from Luxembourg – receiving countries⁶²

There is no accurate statistic for this mobility type. First of all, there is no obligation for Luxembourgish citizens or residents to give a reason for moving to another country. Thus, it is not known if the purpose of move was to start tertiary education abroad. Secondly, not all people who go to another country with the purpose of studying register this movement. Thirdly, there is a possibility to live in Luxembourg and study in another country as the distance to some universities allows commuting if somebody is not willing to give up the Luxembourgish residence. The only accurate data source for this type of mobility would be aggregated information based on statistics from every university in the world about nationality (or country of school-leaving certificate) of its students.

To give at least a data-grounded impression, where Luxembourgish young people study (if they do not study in Luxembourg) we will use the statistics regarding the financial state support⁶³. However, there are three issues linked with this data source: Firstly, the statistics available are for the entire tertiary education, i.e. for both academic and vocational education (ISCED11 5-8). Secondly, the number of state allowances and not the number of young people who get them is reported.⁶⁴ Additionally, it cannot be stated which nationality receivers of the support have (as the Luxembourgish nationality is not necessary). From the academic year 2013/2014 it is even more complex as children of *cross-border commuters* (employers and self-employed who work in Luxembourg but live in another - often neighbouring – country) are also entitled to receive the Luxembourgish higher education financial support under certain conditions⁶⁵.

The effect of this new legislation may be seen in Fig.7.7. In the last two reported years much more scholarships have been allowed. The higher percentage of Belgium, France and Germany (in a smaller grade) as destination countries as far as financial support is concerned can be probably⁶⁶ ascribed to the fact that young people from these countries receive the financial support from Luxembourg but that they study in their home country.

Fig.7.7 shows also another turning point – the year 2010. From this year on child allowance has no longer been paid to those in tertiary education and older than 18. Additionally, the link between the financial situation of the parents and the amount of student help has been abolished too. Young people were seen as young adults responsible for their own education and for the financing of their higher education (CEDIES 2010). This change led to rising numbers of receivers but only to a slight change in the proportions between various destinations, as the ground principle of the revisited leg-

⁶² Analyses in this sub-chapter are based on the official statistics ‘Étudiants d'études supérieures par pays et aides financières 2002/2003 - 2014/2015’ (Statec 2016b). As the data on the academic year 2015/2016 have not been upload so far, we will concentrate on 9 years and not as it was the case for credit mobility on 10 years.

⁶³ The financial state support in Luxembourg may have two forms: the non-refundable financial scholarship (where a few sub/types can be obtained) or loan. In this paragraph there is no differentiation which kind of help a person obtained. Each individual is counted only once regardless the number of helps received.

⁶⁴ Reported figures are numbers of helps not of persons. They depict the arithmetic mean out of numbers from summer and winter semester for a respective year. It may happen that in both semesters (winter and summer) the number of helps are the same but the receivers of the helps differ between those two periods.

⁶⁵ Art.3, § 5b, Loi du 24 Juillet 2014 concernant l'aide financière de l'Etat pour études supérieures; République rectifiée, suite à une erreur matérielle, de la loi du 19 juillet 2013 modifiant la loi modifiée du 22 juin 2000 concernant l'aide financière de l'Etat pour études supérieures.

⁶⁶ It cannot be certainly stated that this is a fact – it should be supported by statistics we do not have any access to.

isolation in 2010 stayed untouched – only Luxembourgish residents could apply for the state financial support.

In conclusion it may be said that data on financial support are rather an estimate (and no exact data source) as far as destination countries of degree mobile students from Luxembourg are concerned.

As for the case of outgoing credit mobility, Belgium, Germany, and France are the favourite destination countries for young people seeking tertiary education abroad with respectively 22,1%, 20,1% and 18,6% out of all financial aid in the period 2006/2007 to 2014/2015 (N=125.904). Luxembourg as a destination has been becoming popular over the reported period until the new legislation for cross-boarders was introduced (academic year 2013/2014). Luxembourg was the main destination of support receivers during only three academic years (2010/2011 with 22,7%, 2011/2012 with 22,7% and 2012/2013 with 23,0% out of all financial aid for the respective year). The interest for UK has been quite high and has been oscillating around 8,0% - 9,0% until the change of the legislation in 2013). Two German-speaking countries – Austria and Switzerland – are also frequent host countries with 4,2% and 2,6% respectively for the entire period.

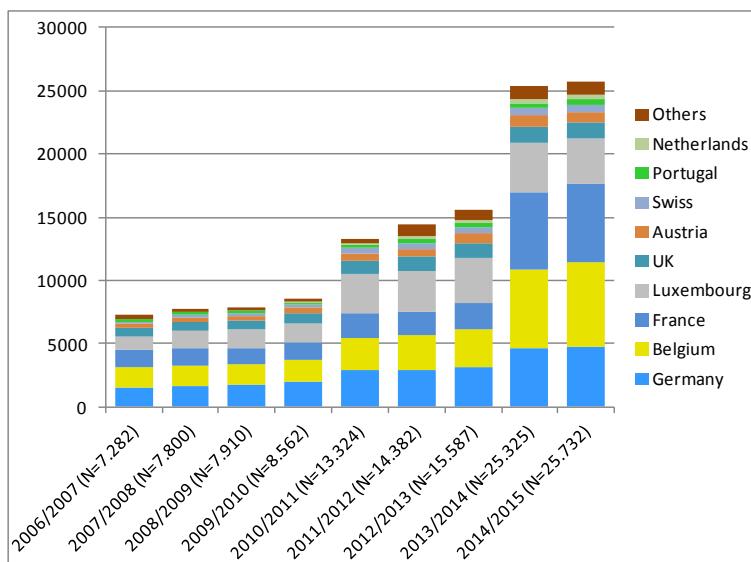


Fig.7.7: Estimator for degree mobility (outgoing) – number of state financial benefits in Luxembourg for tertiary education and country of receiving institution (N for the whole period = 125.904)

For this mobility type it can be stated that rather cities and not the countries themselves are destinations. E.g. until 2013 more than 40,0% of young people heading to Belgium had studied in Brussels. More than 90,0% of those who have studied in Austria decided to go either to Vienna or to Innsbruck. Until 2008/2009 Innsbruck was the main destination, from that year on Vienna has been leading. For France, Strasbourg has been the dominating city (35,0% of all degree tertiary students from Luxembourg in France in the reported period), since the academic year 2011/2012 it has had a similar share as Paris (approx. 26,0%). After the novelisation of the law (from the academic year 2013/2014) the rate dropped to 10,0% – 11,0%. A probable explanation may be that the new law supported more French citizens and their children. French recipients of the Luxembourgish academic support may have another ‘favourite’ destination in France than Luxembourgish residents heading to study in France. On the other hand, Germany is a good example of a destination country where students are rather ‘better’ distributed over many cities. However, Trier (a city near the Luxembourgish-German border) is a location with the most degree mobile Luxembourgish students out of those going to Germany.

Incoming degree mobility to Luxembourg⁶⁷

One of the central ideas of the University of Luxembourg, the first and only public university of the country, is internationality, the other one multilingualism. Both are interconnected and can be translated into direct actions of the University, as e.g. a compulsory stay abroad for undergraduate students. Another way to meet these criteria is the openness towards international students as regular students of the University, the so-called incoming degree students, a fact that is fostered by programmes that are completely offered in English.

While introducing this type of student mobility we would like to show how important it is to have clear definitions while describing a phenomenon. Tab.7.3 shows how different a statistic may be depending on the category one works with. On average, 5 percentage points difference could be stated for two categories: nationality and country where the school-leaving certificate was obtained as far as Luxembourg and Portugal as categories are concerned. This is an extreme example determined by the situation in Luxembourg: many Portuguese living in Luxembourg are second generation but do not hold Luxembourgish citizenship. There are additional differences, however, much smaller, e.g. for Germany and France. Taking into account only nationality as criterion will falsify the ratio of mobile degree students as long-year residents or second-generation immigrants would fall in the category of foreigners. In fact, they are not incoming students for obtaining a degree, but residents holding a foreign passport.

Tab.7.3: Nationality and country of school certificate (University of Luxembourg)

	Country	2006/2007 (W)**	2009/2010 (W)	2012/2013 (W)	2015/2016 (W)	TOTAL 2006-2016
Nationality	Portugal	6,0%	5,7%	5,4%	5,5%	5,3%
COSC*	Portugal	0,5%	0,7%	0,7%	0,9%	0,7%
Nationality	Luxembourg	56,5%	49,9%	48,1%	43,0%	49,3%
COSC*	Luxembourg	63,8%	57,3%	54,5%	48,0%	55,3%

Notes: *COSC – country where the leaving school certificate was obtained

** only winter semester is concerned

*** as there is only small difference regarding the ratios between the years, the evidence for only four academic semesters and the total ratios have been presented

Concluding from the previous example the category country of school-leaving certificate (and not nationality) will be used for the following analyses. The first finding to report is the fact that the percentage of students who do not hold a Luxembourgish school-leaving certificate has been rising over the years and reached 51,0% in the winter semester 2015/2016 (ratio for winter semester 2006/2007 was 35,8%). The majority of students with a non-Luxembourgish school-leaving certificate come from other EU-countries. However, focusing on the entire period reported, the ratios of those from non-EU-European countries and Asian countries have been rising (see Fig.7.8). It is also interesting that all continents are covered as far as incoming degree mobility into Luxembourg is concerned.

Taking only the EU-countries into focus, France is the main sending country of incoming degree - 39,9% in the entire period (N=23.028). Belgium and Germany follow, with about 20% each. Over the years, Italy has become also one of the strongest countries (from 1,2% in winter semester 2006/2007 to 5,1% in winter semester 2015/2016).

⁶⁷ Analyses in this sub-chapter are based on information received from the University of Luxembourg in June 2016 (dataset uni.lu II). Those analyses include only regular students of the University – incoming credit students are excluded, outgoing credit students are included as they are registered as regular students at the University even if they spend some time abroad.

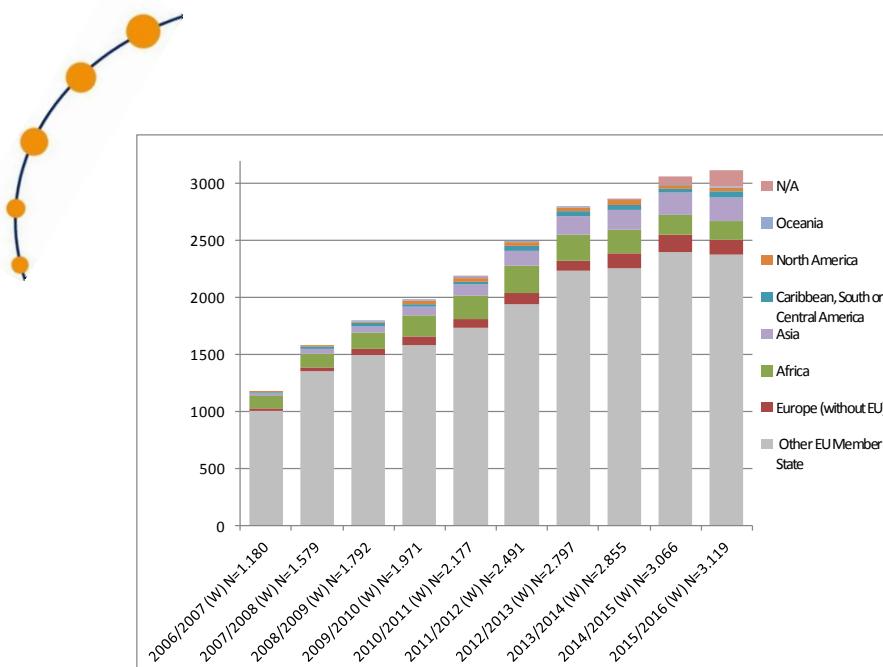


Fig.7.8: Country of school-leaving certificate of regular students of the University of Luxembourg by continent (holders of Luxembourgish school-leaving certificate; N for the entire period = 23.028)

7.2.4 Discussion and Outlook

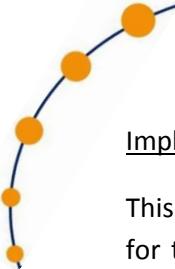
Summing up the findings it may be said that the student mobility, into and from Luxembourg, is an EU-mobility. The major flows take place between Luxembourg and Germany, France, and Belgium. This may be caused not only by the geographical proximity to the neighbouring countries but also by the multilingualism in Luxembourg, where German and French, next to Luxembourgish, are official languages. However, different from Germany and France, credit incoming mobility from Belgium into Luxembourg is very low. Simultaneously with the growth of the University, the variety of countries, which send and receive short-term as well as send long-term mobile students, grew also. As mentioned in chapter 7.7.2, it was difficult to get appropriate datasets even for this descriptive case study. Based on this situation we would like to make some suggestions. In the next step we would like to draw from this case study some implications for the other WPs within the MOVE-project.

Implications for EU

As long as (at least) European countries (1) do not agree on the common underlying definition of 'mobile students' and (2) do not 'count' students based on that, no reliable data on international flows of students could be provided. It also means that no unbiased data comparison will be possible until this task will be achieved.⁶⁸ Neither in the EU, nor in the national statistics a clear working definition of mobile students may be found. Information about the type of mobility misses – degree or credit mobility. Also, it is not clear which 'country'-category is applied: nationality, school-leaving certificate, place of residence, or others.

No unified statistics at the EU level and data differences between different sources – especially between the national and European statistics – are causing major problems in practice as many political decisions refer to these numbers. As long as the aim to implement unified categories on the EU-Level has not been reached, it is very important to make always explicit which data set has been taken into consideration and which categories have been used.

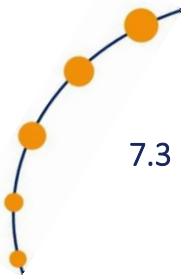
⁶⁸ Due to these data issues we have to choose whether we will use national statistic agency or Eurostat as data supplier for this case study. Different as in the chapters 3.3 and 3.5 we decided to use the national data sets within this national case study as they offered more detailed insight into the phenomenon.



Implications for MOVE

This descriptive case study has delivered substantial information for other work packages, especially for the qualitative part and the quantitative survey. In regard to work package 3 (qualitative case studies) we could show which destination countries are the most frequent ones and therefore should be taken into consideration while searching for interview partners. It is important to gain knowledge about why exactly those countries have been favourites among people residing in Luxembourg (or studying in Luxembourg). Additionally, it is also essential to get to know why so many Luxembourgish residents/citizens leave their country for the tertiary education abroad even if there is a possibility to stay at home and study at the University of Luxembourg. One of the topics in the student mobility centred case studies will also be the 'forced' mobility at the University of Luxembourg. On the other hand, looking at the incoming degree students we will also have a look at the aspects that make Luxembourg interesting and valued as destination country.

Similar questions will be addressed in the large-scale survey. Even if student mobility stays in the centre of EU interests little is known about it, as the data coverage is very selective. Our international survey will help to get some answers and formulate new hypotheses.



7.3 Comparison of incoming youth mobility to Germany, Norway and Luxembourg (Karen Hemming, Jan Skrobanek, Emilia Kmietek-Meier, and Michael Dettmer)

7.3.1 Introduction

The following country case study examines the role of macro-level characteristics in shaping youth mobility in the EU-countries Germany and Luxembourg and the non-EU country Norway. Based on the heuristic theoretical model developed for work package 2 (see chapter 4.1 and 4.4.1) for analysing causes of socio-economic macro-characteristics on youth mobility, a descriptive analysis has been carried out. It addresses the relation between key factors of the sectors state, society, and economy, on the one hand, and incoming youth mobility on the other. The analysis aims to shed light on questions about how cross-border youth mobility developed in the three countries over the period 2004-2014⁶⁹ and how macro-indicators of the sectors state, society and economy are related to the different developments. Since Norway and Luxembourg were both identified as “outlier countries” in the cluster analysis for all EU/EFTA countries (see chapter 5.3.2), we are additionally interested in key characteristics of both countries for a better understanding of incoming mobility of the young. The country case study is based on detailed migration datasets (registration data for young people aged 15-29) of the national statistics offices in Germany, Luxembourg and Norway.

Our guiding questions for the following analysis are:

1. How did youth mobility to Germany, Norway and Luxembourg develop between 2004 and 2014?
2. How did the macro-factors develop in the three countries over this period?
3. Which trends can be found with regards to the development of both - youth mobility and macro-factors – in parallel?
4. Which are the main sending countries for youth mobility to Germany, Norway and Luxembourg between 2004 and 2014?
5. How do the short-term incoming youth mobility indicator (used for analysis chapter 5, 6, and 7) and the youth mobility ratio used for the at hand analysis correlate with each other?

7.3.2 Background model and its theoretical embedment

To explain migration and/or interregional mobility, over the last decades a variety of approaches has been introduced into debate (Massey et al. 1993, 432). The proposed concepts and theoretical models differ significantly from each other, focusing on macro-, meso- and/or micro-factors explaining migration and/or mobility. In chapter 4.1 different macro-approaches for causes and effects of mobility and migration were explained in detail, which are relevant for the at hand country case study:

- Classical work on push and pull factors of migration (Lee 1966)
- “Todaro Migration Model” – initially developed for internal migration (Todaro 1980)
- “Welfare magnet” hypotheses (Borjas 1999)
- “Global education” hypotheses (Haas 2011)
- “Demography differential” hypotheses (Muenz 2013)
- “Gravity model” (Amirault, Munnik and Miller 2013; Zipf 1946)

⁶⁹ For some indicators data was only available from 2005 onwards and/or only until 2012 or 2013.

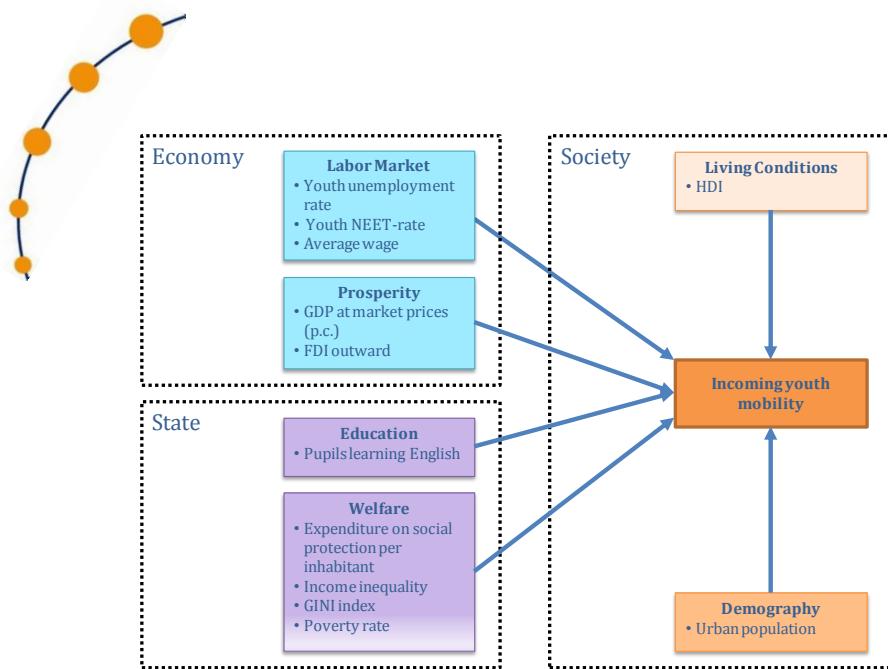


Fig.7.9: Background model for causes of youth mobility for country case study⁷⁰

Based on these approaches a specific background model explaining incoming youth mobility to Norway, Germany, and Luxembourg was developed. We are fully aware that the theoretical model is of course incomplete, not taking into account the huge range of meso⁷¹ and micro explanations⁷², which have been introduced into the debate over the last 60 years. However, framed by the macro focus of work package 2 and mobility data the at hand, macro-theory originating from neoclassical economics seems – in the sense of an explorative tool – appropriate for examining youth mobility to the three countries against data restrictions regarding the case study. Based on the frame of the aforementioned theories the following analysis will be based on the model in Fig.7.9. As it can be seen economic, social, and state related aspects influence incoming youth mobility. We suppose that a prosperous labour market (especially regarding the transition from school to employment and prosperity), good opportunities for young people in the educational market (regarding first of all educational opportunities for achieving requested skills), thereby influenced living conditions, and demographic challenges (here stagnating or even declining youth populations in the three addressed countries) foster incoming youth mobility.

7.3.3 Methods and datasets

Like the other analysis in work package 2, the country-case-study is based on a secondary macro-data analysis. The macro-data used derived from different sources: 1) macro-drivers of mobility (Eurostat, OECD, World Bank; see chapter 1.3); 2) youth migration data (German Federal Statistical Office, Destatis; Norwegian Federal Statistical Office; Luxembourgish Federal Statistical Office – all data based on information from registration offices). The registration data delivered information on the total number of immigrants to Germany, Luxembourg, or Norway aged 15-29 indicating the respective sending country by nationality of the youth. Out of the total numbers a ratio was calculated using the total number of youth population per year and country. The descriptive analysis of incoming youth mobility focuses on the three countries over a period of 10 years (2004-2013/14) including

⁷⁰ As not all indicators of the model have sufficient cell numbers – especially the real minimum wages (labour market), employment on foreign controlled enterprises and foreign languages learnt per pupil (education) – or outliers (pupils learning English for Norway) these factors are not included in the analysis.

⁷¹ Like the dual labour market theory, migration network theory, institutional theory, and migration system theory.

⁷² Here especially neoclassical economical micro theories like value expectancy theory and rational choice theory as well as new approaches regarding processes of individualisation and agency in migration.

several indicators of the sectors economy, state, and society. Additionally, for answering question 5, bivariate correlation analyses between the two different kinds of mobility information for the three countries and comparisons of means are conducted. Thus, two different youth mobility indicators will be compared: the short-term incoming youth mobility indicator (Mo313, chapter 3.1 and Tab.A.4) and the ratio of incoming youth calculated out of the datasets deriving from the Federal Statistical Offices.

7.3.4 Results

Development of youth migration to Germany, Norway and Luxembourg between 2004 and 2014

The development of incoming youth migration to Germany, Norway and Luxembourg between 2004 and 2009 is comparably stable, except for Norway where the data indicates a slight ascending tendency (Fig.7.10). From 2010 onwards, the numbers for Germany have increased strongly whereas the trend for Norway showed a slight decrease from 2011 onwards (which is different compared to the mobility indicator used for the statistical modelling in chapter 5, see chapter 3.1). The number of incomings to Luxembourg, however, remained more or less stable over the observed period.

The ratios of incoming youth further illustrate differences in the mobility total numbers in relation to the population of the countries. Luxembourg has the highest ratio, oscillating between 4,7% and 5,7%. The ratios in Germany and Norway vary between 0,9% and 2,5%.

Regarding developments of incoming mobile youth, for Norway the analysis indicates a decreasing trend (from 2011 onwards) and an increase for Germany (from 2010 onwards) of the numbers of incoming youth. Between 2006 and 2012 Norway had a higher ratio of immigrating youth than Germany, for 2013 and 2014 the ratio for Germany was higher.

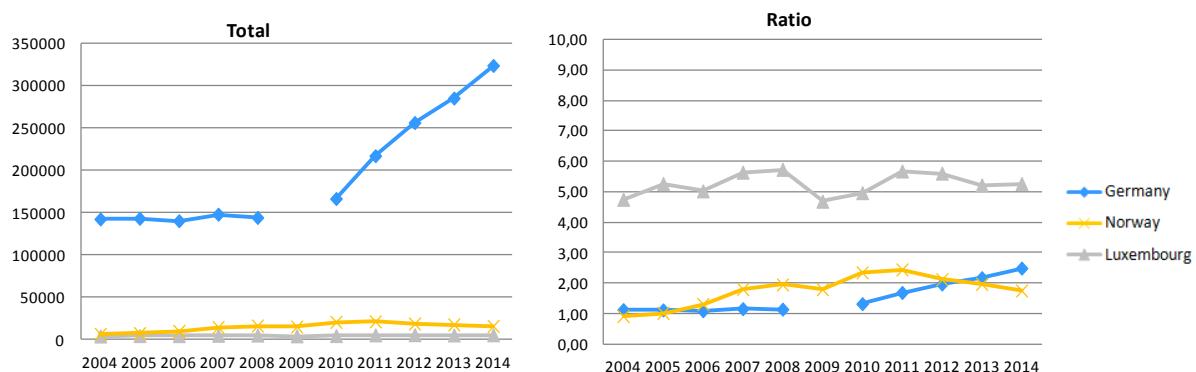
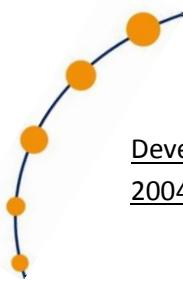


Fig.7.10: Total number and ratio (as percentage of the total youth population aged 15-29 years) of incoming youth to Germany, Norway, Luxembourg between 2004 and 2014⁷³

⁷³ Unfortunately, the original migration data source for 2009 for Germany was not available any more. Thus, the German Federal Statistics Office (DESTATIS) was not able to re-calculate the migration data for 2009 for the age group of 15-29 year olds.



Development of macro-predictors for youth mobility in Germany, Norway and Luxembourg between 2004 and 2013



Fig.7.11: Economic macro-predictors: labour market and prosperity between 2004/5 and 2013

Germany, Norway and Luxembourg are countries with a well-developed and still growing economy (slowly but steadily rising GDP) and slightly rising average wages (Fig.7.11). In addition, the foreign direct investments (FDI) increased steadily, especially in Luxembourg. Following the development in Germany and Norway, youth unemployment is also decreasing. However, the youth unemployment rate in Luxembourg is slightly higher and not decreasing. Nonetheless, Luxembourg shows the lowest rate of youth neither in employment nor in education or training (NEET rate) in 2013. As Luxembourg is a very small country (only 0,54 million inhabitants), data depictions are more vulnerable to changes described by ratios compared to Norway and Germany.

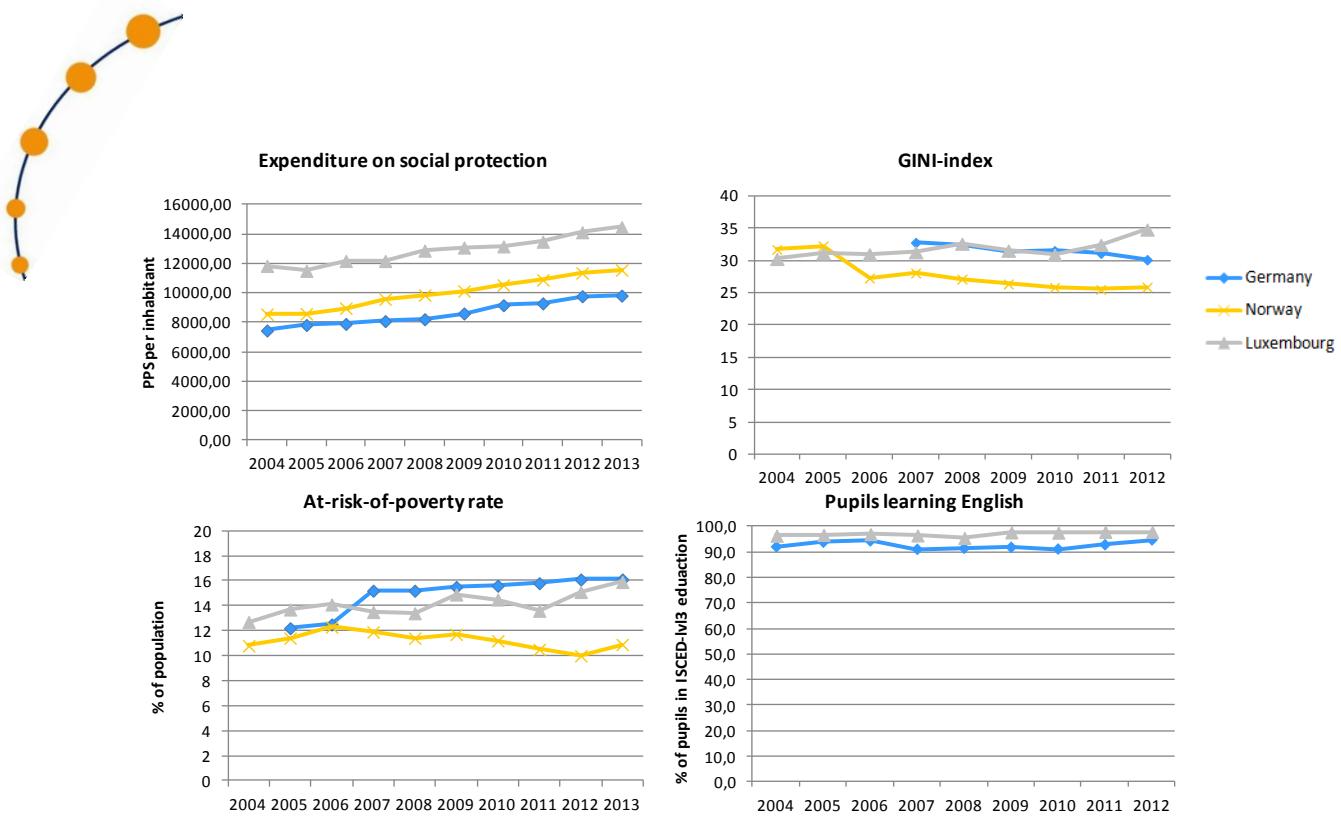


Fig.7.12: National macro-predictors: welfare and education between 2004 and 2012/13⁷⁴

When looking at the indicators of the sector state (Fig.7.12), there is a positive development for the expenditure on social protection over the observed years. They are rising in all three countries, whereas Luxembourg has the highest level followed by Norway and Germany. In addition, the GINI index illustrating the income inequality in a country is slightly decreasing in Norway and Germany, reflecting a tendency towards an equal distribution of incomes. However, in Luxembourg the GINI index increases over the time. Furthermore, there is an ascending poverty risk in Germany and Luxembourg over the observed time span, rising from 12% to 16% in 2013, whereas the rate in Norway is more or less stable over the time and lower (11% in 2013). The ratio of pupils learning English ranges between 91 and 97% in Germany and Luxembourg within the observed period and a slightly rising tendency in Germany.

The considered social indicators show more stability in the reported period (Fig.7.13). The HDI is stable with a slightly increasing trend in all three countries, whereas, Germany has the highest level with 0,88 in 2013, followed by Luxembourg with 0,85 and Norway with 0,83. In addition, a typical tendency for all EU countries can be seen in the development of the urban population. More and more people move from rural areas to the cities. Thus, the annual percentage of urban population in 2013 was the highest in Luxembourg (90%), followed by Norway (80%) and Germany (75%).

⁷⁴ The data on pupils learning English for Norway included too many outlier scores so it was not included in the analysis.

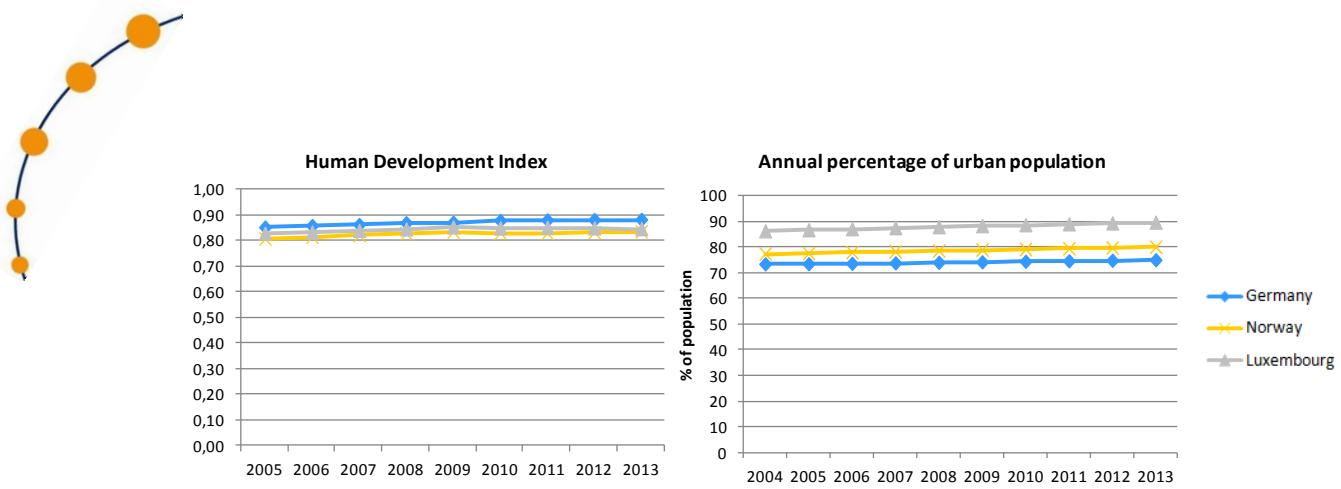


Fig.7.13: Social macro-predictors: Living conditions & demography between 2004/5 and 2013

Relationship between macro-indicators and youth-mobility in Germany, Norway and Luxembourg

When comparing the trends of youth mobility in the three countries with the overall development of the indicators, a relationship between most of the factors can be assumed. The descriptive results show that a decreasing youth unemployment and NEET rate and increasing average wages and GDP developed in parallel with a rising trend of incoming youth mobility. Regarding the state related indicators, the rising development of the expenditure of social protection is in line with the rising incoming youth mobility ratio. However, the trends in poverty and income inequality are not congruent between the three countries, and thus, not in line with the development of the youth mobility ratio. Regarding the HDI and the urbanisation level as social macro-indicators, a further parallel development becomes visible: both indicators are rising slightly as does the ratio of incoming youth.

For Norway however, the ratio of incoming youth has been decreasing since 2012. When looking at the observed macro-indicators, no obvious parallel developments can be identified; but possibly the immense rise of GDP and average wages - which would also indicate an increase in living costs - could be an explanation.

Main sending countries for migration to Germany, Norway and Luxembourg

The main sending countries for youth mobility to Germany are shown in Fig.7.14. It can be seen, that the most important EU/EFTA-sending countries for youth mobility over time are Poland, Romania, Italy, Hungary, and Bulgaria (until 2010, also France was among the first five countries). The countries are comparable to those of the total immigration. Fig.7.14 illustrates the development regarding the five sending countries with the highest total number of youth-immigrants for the observed years.

When looking at Poland as most important sending country, one has to consider the long history of Polish emigration to Germany. As neighbouring countries, both have strong economic relations fostering, for example, the exchange of seasonal workers from Poland to Germany. The EU eastern enlargement in 2004 possibly enhanced the immigration from Poland and also the one from Hungary. The rising numbers of Bulgarians and Romanians in Germany within the last years are in line with the EU eastern enlargement in 2007.

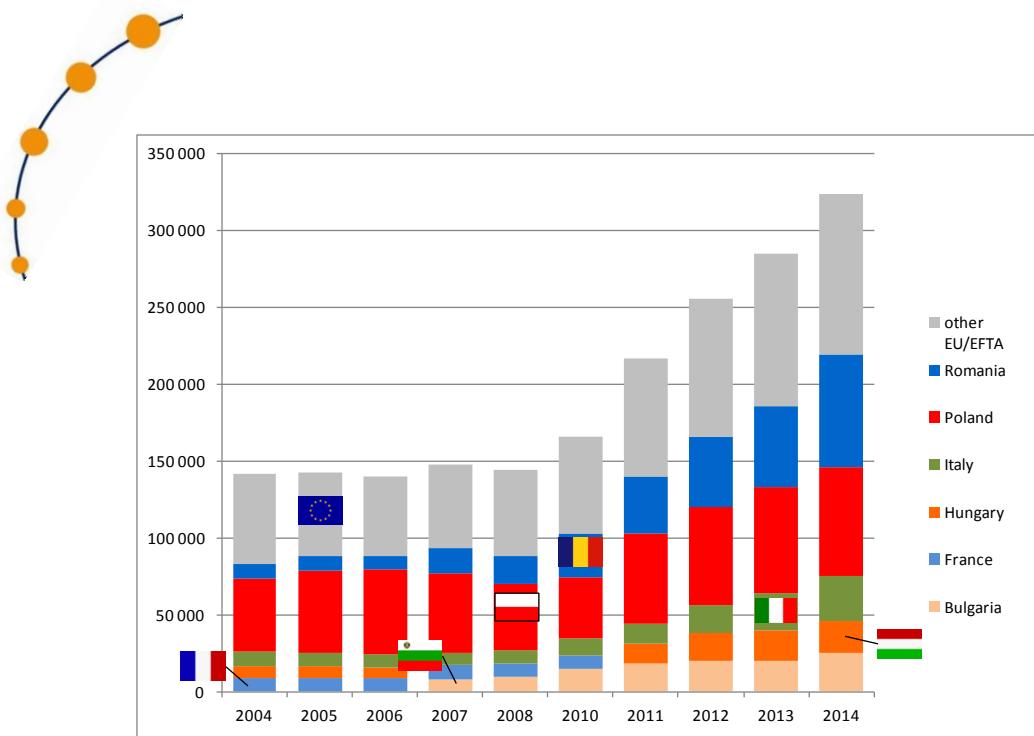


Fig.7.14: Main sending countries for youth mobility to Germany between 2004 and 2014

Compared to Germany, the peak of youth immigration in Norway was in 2010 and 2011, since then the total number has been decreasing (Fig.7.15). In addition, the most important sending countries vary more strongly compared to Germany. For 2013 and 2014, the most important sending countries to Norway were Poland, Sweden, Lithuania, Romania, and Denmark. In the years before, Germany, Finland, and Latvia were among the five most important sending countries. However, Polish immigrants have provided the largest group in all years. This might be due to the narrow geographic position of both countries. The high wage level makes Norway very attractive to immigrants from eastern European countries.

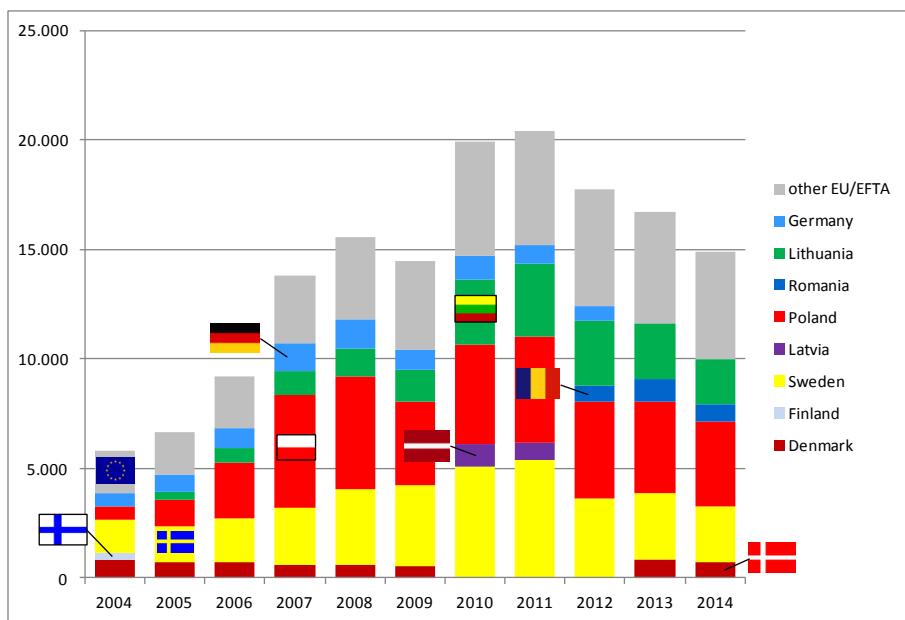


Fig.7.15: Main sending countries for youth mobility to Norway between 2004 and 2013

The most important sending countries for youth migrating to Luxembourg are Portugal, France, Italy, Germany, and Belgium (Fig.7.16). Overall, the number of youth migration is rising slightly; however, there is a drop/downturn in 2009.

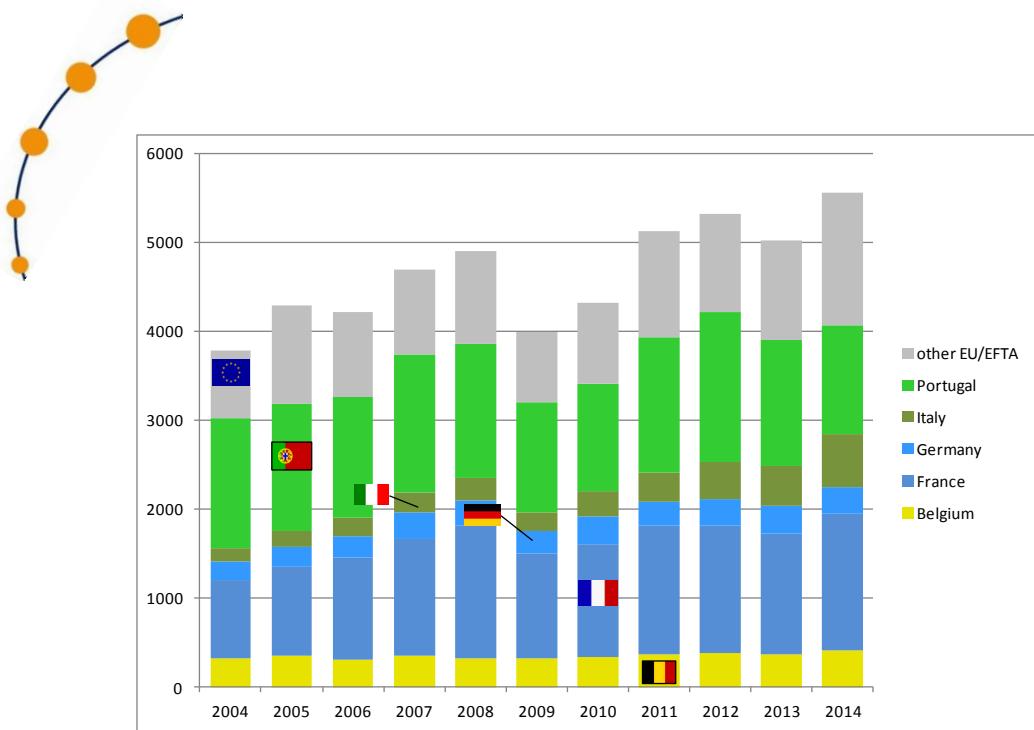


Fig.7.16: Main sending countries for youth mobility to Luxembourg between 2004 and 2013

Similarly to the cases of Germany and Norway, the Luxembourg's case clearly shows that some countries have been acting as 'suppliers' for the same receiving country for years. About 40% of all young migrants in Luxembourg have come from France, Germany, and Belgium - the neighbouring countries to Luxembourg. This ratio has been stable for the whole reported period. However, the ratio of French nationals in Luxembourg is much higher than the ratio of Germans and Belgians. Further 30% have come from Portugal followed by Italian young people. This trend is historically determined as the most guest workers in Luxembourg in the 60's onwards came from Portugal. Portuguese citizens are the biggest minority in Luxembourg. Additionally, nowadays there is a well-developed network of Portuguese citizens or citizens with Portuguese descent who live in Luxembourg – often the first address for the newcomers. It is interesting that the numbers for Portuguese incomers have been dropping slightly over this period of time, while the numbers of Italian incomings have been continuously growing, reaching in 2014 almost 11% out of all incoming youth to Luxembourg.

Relationship between short-term incoming youth mobility indicator (used for analysis in chapter 5, 6 and 7) and the youth migration ratio (based on registration data)

Comparing migration data of different sources helps to verify the validity of the secondary data used. For other analysis in work package 2 (chapter 3, 5, and 6) a youth-mobility indicator was used that was calculated per year and country out of the EU-LFS yearly survey-files (see chapter 3.1). This was due to the lack of accessible youth-migration data for EU/EFTA countries. However, using survey data raises the question of whether this data is of the same quality as migration data derived from registration offices. Thus, the availability of high quality youth-migration data from federal statistics offices in Germany, Norway, and Luxembourg offered the opportunity to compare mobility/migration data out of the two described sources.

The comparison was carried out by conducting bivariate correlation analysis for three country cases and the total sample (excluded missings; Tab.7.4) and a comparison of mean-scores. All observed years per country were included as cases into the analysis with each having two variables: 1) incoming mobility indicator deriving from EU-LFS and 2) incoming youth mobility ratio on the basis of national registration data. The results differ in their means for Norway and Germany with a lower

mobility ratio for the surveyed indicator (Mo313). As the mobility ratio is low in general, an underestimation even in a representative survey can be assumed. For Luxembourg only three years of observation were available and the result is different, here the surveyed mobility ratio is higher. This confirms that due to limited reliability in the EU-LFS data for Norway and Luxembourg (see Tab.A.1); the results of the EU-LFS datasets have to be interpreted cautiously. But also for Germany (without limited reliability) the validity of the EU-LFS mobility indicator is in question.

The correlation coefficients range between strong and very strong correlations (Tab.7.4). For the total sample, the Pearson's coefficient is 0,97, confirming that both migration data are highly correlated. Hence, despite the under-/over-estimation of the EU-LFS mobility indicator the gathered migration data reliable reflects mobility trends.

Tab.7.4: Background model for causes of youth mobility for country case study

	Germany ⁷⁵	Norway	Luxembourg ⁷⁶	Total
Mean Incoming mobility indicator deriving from EU-LFS (Mo313; chapter 3.1)	0,83	1,11	9,49	2,13
Mean Incoming youth mo- bility ratio on the ba- sis of national regis- tration data	1,41	1,76	5,49	2,12
Bivariate Correlation Pearson	0,84	0,68	0,65	0,97

7.3.5 Summary and conclusions

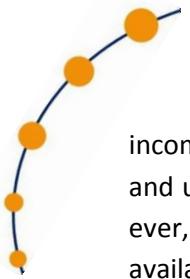
All three countries represent attractive “receiving countries” for European mobile youth. The comparison shows that the incoming numbers of young people in all countries have risen within the observed period. Thus, the characteristics of the three countries are in line with the centre-receiving countries described in chapter 5.3.2, though only Germany grouped in this cluster, whereas Norway and Luxembourg were identified as outliers. The descriptive analysis has shown that the countries addressed here are attractive countries regarding the economic, state, and societal indicators, which were addressed in the analysis. All three have comparatively stable economic situations, an increase in social welfare spending, and good (with a slight increase over the observation period) living conditions. These might have been reasons why the three countries have been attractive for young people from other European countries over the observed time span.

However, the analysis cannot explain why there is a decline of incoming youth in Norway. The data show a significant decline of incoming youth. One of the reasons could be the oil crisis, where the first indications and effects on the Norwegian labour market became visible. A further hindering factor could be the rising costs of living in Norway against the background of the economic crisis in Europe, since the economic crisis has significantly reduced the spending power of young people in almost all of Europe.

When comparing the results with the statistical modelling of the causes of incoming youth mobility for all EU/EFTA countries (chapter 5.4.1) similarities and differences were found. The panel analyses revealed HDI, urbanisation, and real minimum wages as most relevant macro-causes of short-term

⁷⁵ For Germany data for 2009 is missing in the second indicator.

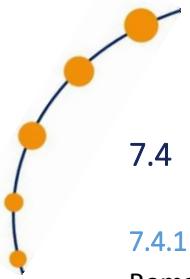
⁷⁶ For Luxembourg no data was available for the first indicator for 2004-2010.



incoming youth mobility for centre-receiving countries (Fig.5.2), with HDI and wages having a positive and urbanisation having a negative impact. The results for Germany, Norway and Luxembourg however, reveal parallel positive developments for HDI, average wages (real minimum wages was not available for the three countries and the observed period), and urbanisation. A reason could be the different characteristics of Norway and Luxembourg as outlier-countries. However, the results support the hypotheses introduced with the background model (e.g. Borjas 1999; Lee 1966; Todaro 1980; Haas 2011; Muenz 2013; Amirault, Munnik, and Miller 2013; Zipf 1946).

The comparison indicates further that the countries vary significantly in respect of sending countries, i.e. where mobile young people come from. Beside the common sending countries Romania and Poland for youth migration to Germany and Norway, and Italy for youth migration to Germany and Luxembourg, the sending countries differ. Many young people from other northern countries and the Baltic States Lithuania and Latvia migrate to Norway, whereas, Germany seems to be comparatively more attractive to young people from the southeast and south of Europe. Luxembourg, however, seems to be very attractive to Portugal and European neighbouring countries speaking either French or German. This points to the fact, that beside the macro-indicators, other meso- and micro-variables have to be taken into account while explaining cross border mobility of young people; e.g. the chain migration approach (MacDonald and MacDonald 1964) to explain migration induced and fostered by existing and rising social networks of a national community within one of the target countries. This could be analysed with the youth mobility micro-data gathered in the online-survey in work package 4 of MOVE.

The comparison of the two different mobility indicators revealed an underestimation of incoming youth mobility for Germany and Norway for the EU-LFS indicator. However, the trend of the mobility indicators was comparable and both indicators were highly correlated. The results support the usage of the mobility indicators derived from the EU-LFS for the statistical analysis in work package 2, albeit considering the underestimation of the indicators. For Luxembourg the comparison was difficult, because data was available only for three years. This emphasises the fact that a reliable open access secondary database for youth mobility data in Europe is needed.



7.4 Youth mobility from Romania to Spain (Ioana Manafi and Daniela Marinescu)

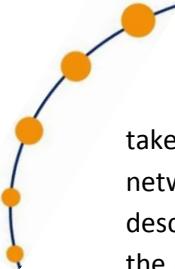
7.4.1 Introduction

Romanian mobility to Spain is a recent demographic phenomenon with high magnitude that impacts both origin and destination countries in various ways. The objective of this section is to analyse the factors affecting mobility trends of Romanian youth to Spain. Based on the MOVE-SUF database, the analysis describes the constellation of factors by grouping them in three categories: economic, social, and factors related to state and institutions.

According to Eurostat, in 2013 Germany reported the highest number of the immigrants from the EU member states (692.700 persons), followed by France (332.600), Italy (307.500), and Spain (300.800). In the same year Spain reported the highest number of emigrants among all EU member state (532.300), followed by UK (316.900), France (300.800), Poland (276.400) and Germany (259.300). In Spain and Romania but also in Bulgaria, Ireland, Greece, Croatia, Poland, and Portugal the number of emigrants was higher than that of immigrants. While in Spain migration and immigration processes are intense, immigration in Romania is rather non-existent, but emigration gained momentum with Romania's accession to the EU. Starting in 1995 outflows of Spanish people were significantly counterbalanced, and even surpassed, by the inflows of migrants coming from the central and eastern European countries (Serra et al. 2005).

In 2007 the Romanians in Spain formed the largest group of foreigners, having surpassed Moroccans (Instituto Nacional de Estadistica 2009). As of 2014, they made up 15,6% of Spain's total foreign population of 4.676.022 people (Instituto Nacional de Estadistica 2008). The principal reason for Romanian migration to Spain was economic at the beginning as will follow from the analysis. In Spain the wage level is higher than in Romania. Before 2005 approximately 6 million jobs were created on the Spanish labour market. In this way the immigrants were absorbed in economic sectors with low paid jobs, long hours, and low social prestige jobs. Nevertheless, the continuous growth of foreign population changed the local communities in terms of ethnic diversity, requiring for new integration programmes (Cucuruzan and Vasilache 2009).

The literature on the Romanian communities in Spain developed a lot recently with qualitative studies. Constantinescu (2003) and Bleahu (2004) studied the role of the networks in this migration process; Serban and Grigoras (2001) studied different migration strategies and experiences. The Romanian migrant profile was developed by Campbell et al. (2007) and Birsan and Cucuruzan (2007). Several studies on Romanian migration also emphasised, that Romanian "migrants preferred locations where the native population was perceived as more understanding, allowing foreign workers to „live in normal conditions" (Hiris 2008). Bernat and Viruela (2011) analysed, in an empirical study, the effects of the economic crisis on the size of the immigrants' stock and on the number of returning migrants. Also, Prada (2015) estimated the factors determining Romanians to return from Spain using a Spanish survey on immigration. In this context of returning to the country of origin, another paper (Marcu 2011) emphasised the characteristics distinguishing the collectives of Romanian immigrants from other similar collectives living in Spain. In his article, Bradatan (2014) focuses on migration as a demographic phenomenon influenced by and influencing family structure in Romania within the general eastern European context. Using an open interview, Cristian and Baragan (2015) tried to identify the main economic and social causes of Romanians migration. Elrich and Ciobanu (2009) concluded that networks could help migrants circumvent restrictive policies, foster the effective



take-up of permissive policies or impede them, depending on the development of the migration networks of the communities. The role of informal organisations and networks on migration was also described by Potot (2008). In empirical studies, Cruceru (2010) and Pescaru (2015) argued that one of the most serious problems caused by Romanians migrating abroad refers to the situation of children left behind, who are vulnerable to abuse, labour exploitation, lower school performances, and early school leaving. Furthermore, Roman and Voicu (2010) presented the recent labour migration flows and trends and the impacts of these movements on Romanian economic and social life, pointing also to one of the most important problems: temporary abandonment of minors by their labour migrant parents. Nikolova, Roman, and Zimmermann (2015) found that the emigration of family and friends may have positive but previously undocumented consequences for the individuals and communities left behind in Bulgaria and Romania. Saseanu and Petrescu (2012) analysed the importance of the educational level of immigrants in the reasons for migrating from Romania to Spain. Based on a questionnaire, they revealed the existence of statistically differences between different groups of respondents taking into account their educational level.

7.4.2 Analysing strategy

Considering the political developments and changes in Romania and Spain during the last three decades that affected mobility (presented in chapter 2.4 and 2.7) comparative descriptive statistics for the two countries Romania and Spain will be presented. Descriptive statistics for the total of EU-28/EFTA countries show that economic factors are important in affecting Romanian youth mobility to Spain (Rolfe et al. 2013).

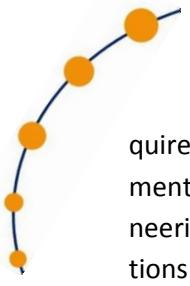
The main hypothesis is that Romanian youth that would be mobile chose Spain, influenced not only by economic factors (such as higher level of the GDP, average wage, low levels of the unemployment rates) but also by the networks created through existing Romanian communities and by language proficiency.

Using the results of the cluster analysis presented in chapter 5.3.2 will help in proving that Romanian migrants are influenced by other reasons beside economic ones, when choosing Spain as destination country.

Using the Principal-Agent model in symmetric and asymmetric information (see also chapter 4.2.1), the importance of existing networks and the language hypothesis when choosing a foreign country to live/work/study were highlighted.

7.4.3 Political developments and changes in Romania during the last three decades

Since 1990 Romania changed the totalitarian regime with market economy. In March 2004 Romania was admitted to NATO and in January 2007 Romania joined the EU, raising the EU membership to 27. Restrictions on the labour market for Romanian citizens were kept in place in most countries, including the UK and Ireland, but were eased or unlimited in some others. In 2008 in Europe one of the most severe economic crises happened, also affecting the Romanian economy. In 2009 the restrictions on Romanian people working in the Spain were lifted. In May 2010 the Romanian government adopted the austerity package to limit the impact of the crisis. The wages of the employees from the public sector and pensions were cut off 25%, and also the thirteenth wage. Since 2011 the Romanian workers could enjoy full rights to free movement in 15 (of 25) Member States (Denmark, Estonia, Cyprus, Latvia, Lithuania, Poland, Slovenia, Slovakia, Finland, Sweden, Hungary, Greece, Spain, Portugal, and Czech Republic). The restrictions remained in the rest of the Member States and typically re-



quired Romanian citizens to have a work permit. Italy does not require a work permit for employment in sectors as agriculture, hotel and tourism, domestic work, care services, constructions, engineering, managerial and highly skilled work, seasonal work. Austria and Germany also apply restrictions on the posting of workers in certain sectors. Restrictions on Romanian people working in the UK were lifted on 1 January 2014. Before 2014 the high skilled workers were easily accepted on the labour market.

7.4.4 Descriptive Statistics

In the next sections we will present the variables considered for the cluster analysis presented in chapter 5.3.2 comparatively for Romania and Spain grouped by the three considered dimensions of the heuristic theoretical model (chapter 4.1): economy, society, and state.

1. Economy

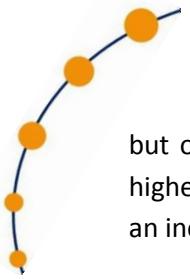
Youth unemployment rate: In 2004 the average youth unemployment rate in all European countries was around 18,9%, substantially lower compared to the rates from Spain (22%) and Romania (21,9%). After a slight decrease, the average youth unemployment rate at European level increased to 20,6% in 2009, while the lowest value belongs to Spain (37,7%). During the period 2010-2013, the average indicator increased every year under analysis. The highest increase of youth unemployment rate between 2004 and 2014 was in Spain (31,2%). Romania has a stable rate during the period, while Spain recorded increasing rates starting in 2007. Comparing the two countries in the period of 2004 to 2014, two different patterns were found: Romania has an annual unemployment rate around the European average and with low variations, while Spain recorded lately annual rates far above the European mean with an increasing trend.

GDP at market prices: The data set regarding the GDP at market prices presents high variability every year considered. The range of individual values increased from 57.600 Euro per capita in 2004, to 67.900 Euro per capita in 2009 and 81.700 Euro per capita in 2014. The relative increase over 2004-2014 period registered in Romania was about 158% (from 2.900 Euro in 2004 to 7.500 Euro in 2014), the highest within the 29 countries. Spain registered a relative increase around 11,4% (from 20.100 Euro per capita in 2004 to 22.400 Euro per capita in 2014). But with respect to the absolute values, the differences between the national GDP at market prices in Romania and Spain are around 14.900-17.000 Euro per capita, with a declining trend during the years.

2. State

Expenditure on social protection (% of GDP): Analysing the figures from 2004-2013, there is some variability in the observed levels of the expenditure on social protection. In 2008, in average, the European countries allocated about 21,7% from GDP for social protection, while the mean expenditure at European level (29 European states) became about 24,0% in 2012. In 2010, the lowest share of expenditure on social protection was registered in Romania (17,3%). It should be noted that there are differences between countries only regarding the absolute values of the mentioned indicator, the gap between Romania and Spain being about 7% in 2004-2010 and increased up to 10% during 2011-2013. But the patterns are similar.

GINI index: For Romania there are data registered since 2007. Comparing the two countries, two different patterns can be remarked: Romania has annual high shares compared to other Western European countries, but comparable with the former soviet countries with low variations during the years



but on a decreasing trend (from 37,8 in 2007 to 34,0 in 2013), while Spain recorded annual rates higher than other Western European countries, but smaller than Eastern European countries but on an increasing trend (from 31,9 in 2007 to 33,7 in 2013).

At risk of poverty: For Romania there are data registered since 2007 when Romania scored the highest share of all European countries (24,8%). Although the trend was decreasing it remained one of the European Union countries that scored poorest with 22,4% in 2013. Spain registered the smallest share in 2007 (19,7%) for the 2004-2013 period, but the trend is almost constant around 20,0%, being far behind other European Union countries.

3. Society

Human Development Index: In 2005, the Human Development Index varied across the analysed countries. In Romania the HDI level was about 0,79, while in Spain the same indicator registered 0,79. During 2005-2013, Romania recorded small increases of the HDI levels (from 0,79 in 2005 to 0,82 in 2013), while in Spain HDI presented very small variations from year to year, ranging between 0,79 in 2005 and 0,81 in 2009.

The population in rural areas: For both countries Romania and Spain the trend of this indicator was constant over time.

Fertility rate: In 2013, the last year with available data, the average fertility rate, within the 29 European countries, was 1,53 children/woman. During the period 2004-2013, the same indicator rose from 1,49 in 2004 to a high of 1,61 in 2009 and then started to decrease with slight variation every year until 2013. The maximum range of the individual levels observed accounts for 0,8 in 2010 and 2011; the years 2008-2010 are characterised by the biggest average fertility rates with values above 1,6 children/woman. Romania registered the highest variation during the period, from 1,33 in 2004 to 1,66 in 2009, but this trend has been declining in the last years. The same happened for Spain only that its individual levels are below the European mean in every considered year.

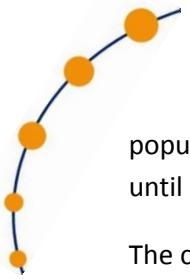
Population density: While the population density in Romania is decreasing (from 94,3 in 2004 to 86,9 in 2013 with the highest decrease in 2012-2013), population density in Spain is increasing (from 84,8 in 2004 to 92,9 in 2013).

Infant mortality rate: In 2004 Romania scored the poorest of all European Countries with an infant mortality rate of 16,8% decreasing this rate to 9,2% in 2013. Also, the trend of the infant mortality rate in Spain decreased from 3,9% in 2004 to 2,7% in 2013, being one of the smallest rates registered across Europe.

Expenditure on pensions: Both countries registered in 2004-2013 period small rates on expenditure on pensions. Spain has an overall increasing trend (from 8,9% in 2004 to 12,6% in 2013). In Romania the expenditure on pensions increased in 2004-2009 period from 6,1% to 9,3% decreasing to 8,3% in 2013.

7.4.5 Cluster analysis

Following the cluster analysis performed in section 5.3.2, the countries were grouped into three clusters. In the first cluster named EU/EFTA centre-receiving countries, countries were characterised by low levels of youth unemployment rates, high levels of GDP per capita, high expenditure on social protection, low levels of GINI index, low rates for the risk of poverty index, low level of HDI, high



population density, high fertility rates, high expenditure on pensions. Spain was a part of this cluster until 2009, the beginning of the economic crisis.

The countries grouped in the second cluster, named EU/EFTA periphery-sending countries are characterised by high youth unemployment rates, high GINI index, and high shares exposed at risk of poverty. The GDP per capita, expenditure on social protection, population density, fertility rates, and expenditure on pensions are lower than in the first cluster. Romania was grouped in this cluster, as well as Spain since 2010.

The Romanians that choose to migrate usually prefer countries such as: Spain, the United Kingdom (especially in the brain drain case, see chapter 4.3.1), Germany, and Italy as EU member states, as well as the USA. Since 2010, all countries except Spain grouped in the first cluster being characterised by high economic development, meaning high levels for the GDP per capita and low levels of unemployment. At the early beginning, a Romanian migrant to Spain faced the same economic pull factors. However, changes in the economic factors did not change the mobility patterns of the young people. This means that since 2010 the pull factors for migrating from Romania to Spain are different compared to those between Romania and other countries.

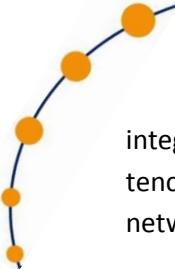
7.4.6 Principal-Agent model

In the following section, we aim at investigating if the Spanish language is easier to learn for Romanians and if this is an important pull factor. We will do so with using the Principal-Agent model (chapter 4.2.1).

The major consequences of Romanian youth mobility for Spain are the effects on the receiving labour market. This result was found for all EU/EFTA countries (see chapter 4.4.2 and 5.5.2). A positive implication is that the vacant low skilled jobs are occupied by Romanians with low wages; a negative one is that they are overcrowding the labour market, yielding to a higher unemployment rate. Also, for the sending country (Romania) there are positive aspects to be highlighted: unemployment rate and the pressure on social protection are lower; and negative ones: aspects related to demographic change, ageing labour force and the pressure of the public pension system are only a few (Grosu and Dinu 2016). The negative aspects of Romanian youth mobility to Spain are:

- even Romanians having a university degree prefer to migrate and to work in agriculture, housekeeping, elderly or child care, construction industry etc.;
- the social aspects are also of interest for authorities: many children left at home and cared for by their relatives or grandparents are abandoning the school, have no financial support or get involved into different illegal activities; and
- only few migrants will come back; it is important to design policies for incentivising them (e.g. developing EU/national programmes encouraging entrepreneurship; this is one of the mobility types researched in work package 3); they could come with new experiences, new acquired skills and new attitudes towards labour and business.

In the settings of the Principal-Agent model (chapter 4.2.1) the wage received by the highly skilled agent is greater with asymmetric information. In this context a Romanian that migrates to Spain having to compete for the same job with another migrant will be higher skilled when considering the language course (because of the similarity between Romanian and Spanish) obtaining a greater wage level than the statutory minimum level. Thus, the decision to migrate can also be based on personal beliefs and is not always necessarily based on strict economic conditions, but also on the easiness of



integrating in a new country. When considering integration, an important factor would be the existence of information which is in many cases more precisely and better available within social-networks.

7.4.7 Conclusions

Romanian migration to Spain is characterised by two stages: the beginning of 2000s (until 2006) when most of the emigrants went to Spain for labour purposes (due to increasing demand in construction industry, agriculture, and domestic activities); through this the Romanian networks were created in Spain. Reasons for migration in the first stage were: lack of money, desire of a better life, and lack of a job in the origin country. The second stage corresponds to the period of 2007 onwards where the existing networks expanded, and two recent mobility purposes arose: family reunification and youth mobility for studies (the Spanish language is an advantage because it is easy to learn for Romanians).

Descriptive statistics show that economic factors are important in affecting Romanian youth mobility to Spain. If this was the case then important changes of these factors (such as the impact of the financial crisis) could generate changes in mobility patterns as well, which was proven false. Spain switching from one cluster to another should have the effect of decreasing the number of migrants in this country but it did not (chapter 5.3.2.).

But the recent motivation of choosing Spain as a destination country would rather be that Romanian mobility is strongly influenced by the created networks and the Latin language. For a Romanian, the easiness of Spanish language and the network created will be crucial when choosing the destination country. In the last decade Romanians prefer countries such as Spain, the UK (especially in the brain drain case), Germany, and Italy as EU members. From all these countries only Spain is in the second cluster, which could be surprising. In fact, the pull factors when migrating to Spain are the linguistic ones and the networks created. We have seen that there are strong communities of Romanians, and Romanian migrants are in large numbers in Spain. The majority of the new migrants are coming to the proximity of the network already created. The Romanian migrants have formed strong communities in Spain and Italy where the language is more accessible and between other migrants the Romanians are highly skilled considering the easiness of learning the language. As we have seen from the Principal-Agent model in asymmetric information, the Romanians will be more likely to receive a greater wage level and this would be a pull factor when choosing Spain as the final destination. According to OECD Report Spain, Greece, Italy, and Portugal are new destination countries with many recent and low educated migrants (OECD/European Union 2015). A higher skilled mobile worker among low educated people competing for the minimum statutory wage level will normally be preferred by the employers. The accessibility of the Spanish language for a Youth Romanian worker will be an advantage on the labour market for both employer and worker.

However, as the above deduced interpretations refer to the micro level and not to the macro-level, they have to be treated cautiously and need further verification with using micro data. This will be done with the micro-data derived from the online survey in work package 4 of MOVE.



8. Conclusions and policy recommendations drawn out of the secondary macro-analysis in work package 2 (Karen Hemming, Frank Tillmann, Birgit Reißig, Zsuzsanna Dabasi-Halász, Eszter Siposné Nandori, Csaba Ilyés, Ioana Manafi, Daniela Marinescu, and Monica Roman)

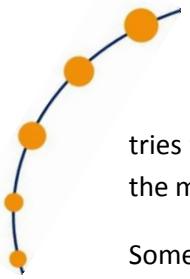
The overall ambition of MOVE was to provide research informed contribution towards improving the conditions of mobility of young people in Europe and reducing negative impacts of mobility. Therefore the main research question was: How can the mobility be good both for socio-economic and individual development of young people, and what are the factors that foster/hinder such beneficial mobility. The analysis in work package 2 contributes to this overall ambition with research results of a secondary macro analysis on European youth mobility for the past decade. It therewith provides a unique basis of compiled macro-data and accompanying results answering the MOVE research question with the focus on the relationship between socio-economic macro factors and European youth mobility.

In detail work package 2 targeted and reached numerous goals which were presented in the current report. The final chapter summarises the overall results and conclusions drawn out of the secondary macro analysis. In chapter 8.1 and 8.2 conclusions referring to the targets of work package 2 are described. In the chapters 8.3 to 8.5 comprehensive topics and accompanying conclusions linking the single results are presented, e.g. the development of a mobility typology, the centre-periphery approach, and the issue of students' mobility. In chapter 8.6 limitations of the macro-analysis are discussed followed by future perspectives of the presented results in chapter 8.7.

8.1 Quality and availability of youth mobility data for Europe

One key aim of work package 2 was the assembling and assessing relevant national quantitative, cross-sectional, and time-series datasets from all participating countries as a pre-requisite for studying factors of influence on youth mobility at the macro-level which was approached at the beginning. However, the research revealed a massive lack of reliable and accessible data. Open access migration data deriving from Eurostat is only available for the total population; no data for youth migration is available open access via Eurostat. The only accessible mobility data are that for students' mobility but this only refers to a well-educated sub-group of European youth and excludes other types of mobility that are driven by economic constraints and difficulties. In addition, the students' mobility data is comparably old (upon March 2016 latest available data was for 2012).

Thus, the mobility indicators used in work package 2 were aggregated out of the EU-LFS yearly files. Therewith a unique database was created on European youth mobility and related socio-economic indicators (MOVE-SUF, Hemming, Tillmann, and Dettmer 2016), fulfilling the work package 2 goal of providing an overall scientific use file for the researched macro-data. However, when working with the EU-LFS data, numerous challenges had to be faced: missing data, limited reliability for some countries, difficult and lengthy access process via Eurostat and the lack of a reliable outgoing youth mobility indicator. The included finished out-going/returning indicator has only limited explanatory power. Comparable outgoing youth mobility indicators with the same quality as the incoming-mobility indicators would have enriched the quality of the output. Additionally, countries of origin/target would enlighten the results further. The countries of origin were not available for incoming mobility, due to data protection issues in the micro datasets of the EU-LFS. Only the target coun-



tries for the finished outgoing/returning mobility indicator were available and appropriately used for the mapping analysis (chapter 6).

Some of the MOVE-partners were able to gather additional data from the national statistics offices on youth migration based on registration data. However, the access was difficult, generated additional expenses, and was only possible for Germany, Luxembourg, and Norway. Although registration data is also discussed critically in relation to youth mobility data (Navarrete Moreno, Cuenca Garcia, and Diaz-Catalan 2014), it is assumed to be reliable in the cases of Germany, Luxembourg, and Norway and was used for an additional country case study (chapter 7.3). The accessibility of comparable migration data for all European countries would facilitate further mobility research tremendously.

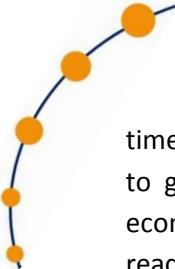
The registration data was also used to analyse the validity of EU-LFS incoming youth mobility indicator. The comparison revealed an underestimation of incoming youth mobility for Germany and Norway for the EU-LFS indicator. However, the trend of the mobility indicators was comparable and both indicators were highly correlated. The results support the usage of the mobility indicators derived from the EU-LFS, albeit considering the underestimation of the indicators. For Luxembourg the comparison was difficult because data was available only for three years. This points to the fact, that a reliable open access secondary data base for youth mobility data in Europe is needed, which is currently missing.

When considering the fundamental regional differences in the EU – below national states – regarding the dispersion of socio-economic macro factors, an analysis of youth mobility should not only focus on national level. Thus, the provision of youth mobility data on regional level (NUTS 2 or NUTS 3) would be a further recommendation for mobility data available via Eurostat.

8.2 Causes and effects of youth mobility

For working with the researched secondary macro-data work package 2 was aimed at reaching the following goals: gaining information and generating new knowledge on the causes of youth mobility through panel analyses under due consideration of fundamental determinants, i.e. macro-economic, institutional, social, and, in particular, educational variables; developing background models of youth mobility schemes, striving for a better understanding of the impact of socio-economic factors on youth mobility and vice versa; and determining the effects (positive or negative) of youth mobility on macro-level socio-economic framework conditions, especially on national labour markets. For reaching these targets a big effort has been conducted developing theoretical background models for explaining causes and effects of different kinds of youth mobility and the respective testing with complex statistical and econometric modelling. Using the neo-classical economic approach four background models for explaining causes of youth mobility and six background models for explaining effects of youth mobility on social and economic indicators have been developed and tested by panel analyses.

A main step at the beginning of the analysis has been the determination of the optimal time lag mediating the relationship between independent and dependent variables for the modelling. This analysis was in line with the macro-economic approach, assuming that changes in specific indicators (e.g. youth mobility rate) follow only with a certain delay general national economic performances. However, the analyses revealed no, or only very short, time lags between socio-economic predictors and youth mobility, and vice versa. Thus, young people react immediately and within a short period of



time to changes in the socio-economic characteristics of a country, which might be accelerated due to globalisation effects. The young generation obviously exhibits immediate responses to socio-economic indicators, which are needed in a globalised world. In line with the result, there exists already a discussion about changes needed in mobility and migration approaches, refuting the classical approaches in migration theory (chapter 4.2).

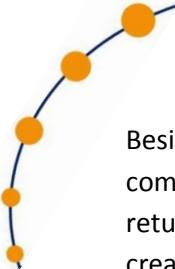
The main causes of youth mobility depend on the different kinds of mobility and the direction of the mobility flow. Additionally, the causes vary in terms of the different country cluster (chapter 8.4). For incoming youth mobility the main influencing indicators are: urbanisation, HDI, minimum wages, and expenditure on social protection, whereas different directions of the effects for the country clusters have to be considered for economic and state-related indicators. For outgoing youth mobility the main influencing indicators are: HDI, minimum wages, adult education level, and urbanisation. Again, the direction of the relationship differs in terms of HDI and minimum wages for the centre and periphery countries. For incoming students' mobility GDP and HDI are identified as the main causes with a different direction for HDI in terms of centre and periphery. For outgoing students' mobility the main causes are HDI, spending on R&D, and adult education level with a different direction for centre and periphery countries; and prosperity fostering outgoing mobilities in both country clusters. The living conditions, operationalised with the HDI, revealed to be the most influencing factor over all models, acting as both push and pull factor in the periphery and centre. The result underlines the fact that not only economic indicators foster or force young people to move abroad but also social macro characteristics captured with the Human Development Index and referring mainly to the living conditions. A further promising step in the analysis of causes of mobility within MOVE will be to link the macro-causes to individual motivations of young people for going abroad.

Regarding the potential impact of youth mobility on economic indicators, effects on youth unemployment and on GDP growth were identified for both, centre-receiving and periphery-sending countries. The results underpin that youth mobility can be beneficial – in this case positively affecting the labour markets and prosperities of EU-countries.

The effects of youth mobility on social and state-related macro indicators are again different for both country clusters: With incoming youth mobility increasing the ratio of youth only in centre-receiving countries and outgoing mobility raising the pressure on pension systems only in the periphery-sending countries. However, the relationship between incoming students' mobility and decreasing students' ratio is similar in both country-clusters, reflecting the ageing of European societies especially within the economically prospering countries. Furthermore, incoming youth increases the ratio of foreign population in both clusters, as expected. Thus, incoming youth mobility should be fostered balancing both clusters appropriately.

8.3 Mobility typology for EU/EFTA countries

The analysed macro-data on national level are especially valuable for a deeper understanding of the constellation of interests among the EU-member states regarding youth mobility. In several parts of the report ambivalence could be identified concerning benefits evolving from incoming and outgoing youth mobility. On the one hand, it can be summarised that countries profit more from long-term mobility which leads to a higher economic value creation – like for instance through thousands of young polish immigrants who are working in the UK. On the other hand, certain countries lose human capital, especially when highly qualified young people go abroad – the so called “brain drain”.



Besides, national economies take advantage of returning young people who gained knowledge and competences abroad when applying this “abroad-gained human capital” in the country of origin after returning, e.g. outgoing student mobility. In the same time, the “abroad-gained human capital” is created in countries which do not use it themselves, for instance when they host and educate young people in short-term mobility episodes or when receiving incoming students.

To reduce the complexity of this ambivalent character of youth mobility regarding its meaning for sending and receiving countries on the basis of the used macro-data on youth mobility in EU/EFTA countries (chapter 3) one can differentiate between two different patterns of youth mobility:

- mobility episodes which more deploy or exploit human capital of youth e.g. through long-term incoming youth mobility, outgoing students’ mobility or finished outgoing/returning youth mobility, and
- mobility episodes that to a vast extent create human capital in the hosting countries (but not using it) in form of short-term incoming youth mobility or incoming students’ mobility. These forms of mobility are beneficial mainly for the young peoples’ countries of origin.

A combination of these two different mobility patterns results in a typology of country patterns. This typology indicates whether, and to what extent a country is supposed to benefit from youth mobility flows in Europe. Therefore each country can be rated as being either more or less human capital creating and as either more or less human capital deploying or exploiting. To frame these observed combinations of the two dimensions the following four-panel-table was developed. It is based on recent developments including the economic crisis by referring to data from 2009-2012/13. Using the database of Tab.A.23, the countries were matched to one of the four types, although some of them had to be labelled as indefinite because of too much lacking data.

Tab.8.1 Mobility typology of EU/EFTA-countries

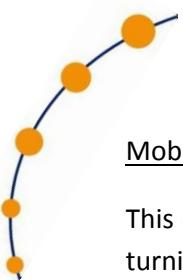
Typology of country patterns on youth mobility		Human capital creating by attracting short-term incoming/incoming student mobility	
		Less	more
Human capital deploying or exploiting by attracting long-term youth mobility or having a high ratio of returning mobility and/or outgoing students’ mobility (using Human capital from other EU-countries)	less	Mobility Promoter Poland, Romania, Slovenia, Finland, Bulgaria*, Slovakia*, Hungary, Malta, Italy*	Mobility Faller Czech Republic, Netherlands, Belgium, Sweden*
	more	Mobility Beneficiaries Latvia, France*, Estonia, Greece*, Spain*, Portugal*, Croatia	Mobility Utiliser Ireland, Norway, Germany, Cyprus, Denmark, UK, Luxembourg, Austria
Indefinite countries in cause of lacking data: Lithuania, Iceland, Switzerland			

* The assignment of the country is not unambiguous; the country shows also characteristics of the neighbouring types.

The four country-types of youth mobility exhibit the following characteristics:

Mobility promoter

The countries of this subgroup, mainly from Eastern Europe, show a low rate of both, human capital creation by hosting foreign short-term mobile youth and human capital deployment or exploitation by attracting a lot of long-term youth mobility sending youth for studying abroad. If young people from these countries go abroad they do so because they would not find a favourable economic situation in their home country. Those countries actually promoting long- and short-term youth mobility are at risk to face a continuous brain drain.



Mobility faller

This comparably small group of countries combines low rate of incoming long-term mobility and returning mobilities with a high rate of short-term incoming mobility episodes. Thus, these countries spend resources above average for the education of foreign students but do not profit from the human capital to a comparable extent. This country-type is worse off from a national economic perspective among all the four types: An ongoing development could possibly lead into a continuous downturn. Since the assignment refers just to recent data, it would be necessary to observe the development of these countries further to reflect the assumed effects of youth mobility.

Mobility beneficiaries

The countries of this type are less involved in creating human capital by hosting foreign short-term mobile youth, but rather deploying long-term mobility and education from other countries with high rates of returning and outgoing students' mobility. Thus, they are the ones which benefit the most from the youth mobility flows within the EU. For some of the cases in this pad, e.g. Spain and Greece, one can state that they used to benefit out of this balance but more and more tend to the type of the mobility fallers nowadays, since long-term incoming mobility is visibly decreasing over the last years.

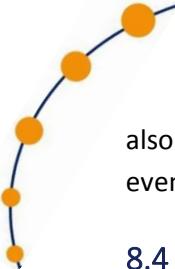
Mobility utilisers

For these countries a balanced proportion of long-term incoming and short-term incoming youth, as well as a comparable high ratio of in- and outgoing students' mobility and returning mobility, is characteristic. Most of the countries belong to the prospering central-receiving cluster and to some extent they simply utilise youth mobility for human capital deployment and exploitation. However, they also contribute to human capital creation for other countries, having also received high levels of short-term incoming youth including students' mobility.

Regarding the introduced typology, which assesses the benefits of youth mobility on national level, it seems reasonable that EU member states cannot be regarded only on a one-dimensional perspective along the opposite poles of periphery and centre, which offers limited complexity for depicting efforts and outcomes of youth mobility. Nevertheless, the centre-periphery model is of importance to analyse mobility flows in Europe taking into account the different socio-economic framework conditions on national level.

When looking at the illustrated developments of the countries within the last years it becomes obvious that the allocation to the country-types can be seen as a consequence of the financial and economic crisis. Against this backdrop of the typology of country-mobility patterns, human capital created by youth mobility can be interpreted as a collective good which is created, deployed, and exploited economically by the respective EU member states in a very unequal way. However, this typology can only be regarded preliminary until individual data of further steps in the MOVE project reveal to what extent especially short-term mobility can be regarded as a form of human capital creation.

Regarding policy making issues it can be concluded that especially the periphery-sending states should be supported in deploying human capital created by mobility episodes – e.g. by funding trainee programmes for returning young people to their home countries. Otherwise, youth mobility



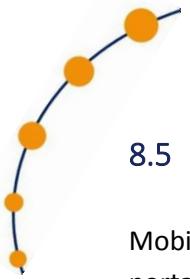
also bears the risk to promote a quite asymmetric economic autocatalytic development towards even increasing national disparities among the EU member states.

8.4 Centre-periphery model

In contrast to the above drafted typology, which pictures the collective rationality of national states, the centre-periphery model corresponds to the rationality on an individual level. The centre-periphery model by Wallerstein (1979) and Pierre and Wallerstein (1991) could be validated with the secondary macro database on European youth mobility by cluster analysis. The analysis revealed two main clusters: 1) centre-receiving countries and 2) periphery-sending countries (chapter 5.3.2). The clusters are in accordance with the social and economic development of the included countries. The analysis revealed furthermore, that the differences between the two clusters became smaller during the observed period regarding the included indicators, which means that the countries become more homogenous. Centre-receiving countries have higher incoming ratios and the difference to the periphery is growing during the observed period, especially for the long-term immigration, reflecting the better living conditions in the centre-receiving countries and the brain drain issue. Centre-receiving countries have also higher ratios of incoming students. However, this difference is getting smaller over time. This highlights the effect that due to the internationalisation of studies and the implementation of the Bologna reform, the periphery-sending countries also appear as attractive receiving countries for incoming students' mobility, and additional specific support for the periphery turns out as promising. The ratio of outgoing students' being higher in the periphery points again to the brain drain issue and the need for special programmes fostering also the return of students to these respective sending countries.

The panel models showed that youth mobility has different causes in the centre-receiving countries and in the periphery-sending countries: in periphery-sending countries, GDP growth is an important fostering factor for different types of mobility, whereas in the centre-receiving countries, well-being (measured with the HDI) fosters mobility more. The centre-periphery model can be also applied for youth mobility effects: Circular mobility is especially typical for the centre-receiving countries, i.e. incoming youth mobility decreases youth unemployment in centre countries. In peripheral-receiving countries, this effect is less typical. The favourable effect of incoming youth mobility on unemployment rate is stronger in the more developed centre countries. Also, youth mobility has a different impact on social indicators per cluster: incoming youth increases the ratio of youth only in centre-receiving countries and the hypothesis that a high level of the outgoing mobility intensifies the pressure on the pensions system only in the periphery-sending countries, which reflects the fact that the periphery-sending countries are more likely to lose their young labour force and not their old aged people, so the expenditure on pensions remains high, which is in line also with the brain-drain discussion.

Thus, following the overall MOVE question, separate European strategies are required for the support of youth mobility in the periphery-sending and the centre-receiving countries to foster beneficial mobility on a macro level appropriately in all EU countries.



8.5 Student mobility

Mobility of students is important for European population mobility. Additionally, students are an important element for national economies and the development of the EU as they are the best-trained and educated group of workers.

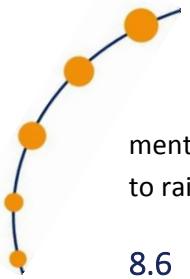
However, a reliable dataset for student mobility in Europe is currently missing as the case study of student mobility for Luxembourg revealed (chapter 7.2). Neither in the EU, nor in the national statistics can a clear working definition of mobile students be found. Information about the type of mobility – degree or credit mobility – is missing. Also, it is not clear which ‘country’-category is applied for the data of mobile students: nationality, school-leaving certificate, place of residence, or others. Inconsistent statistics and data discrepancies between different sources – especially between the national and European statistics – may cause major problems in practice as many political decisions refer to these numbers. As long as the aim of implementing unified categories on EU-level has not been reached, it is very important to make always explicit which data set has been taken into consideration and which categories have been used.

The macro-results revealed major differences between periphery-sending and centre-receiving countries. Thus, funding for student mobility should be related to the economic strength of the countries and therewith especially support periphery-sending countries. However, the support should not only focus on fostering outgoing students’ mobility, but also support returning students’ mobility and incoming students’ mobility. Furthermore, it should be politically striven to introduce EU measures fostering volatile student mobility to turn into long-term mobility, and thus be beneficiary for local economies. Such measures could be e.g. financing of grants for “enterprise-tailored” graduation or traineeships in local enterprises for employing foreign graduates.

For the *mobility promoters* (see chapter 8.2) Romania and Hungary the following recommendations were deduced regarding students’ mobility. For the target of increasing outgoing students’ mobility, the support and financial aid for students’ exchanges should increase as well as the students’ accessibility to education programmes abroad. This could be fostered by providing better information and developing and increasing the network and cooperation with new EU research and higher education institutions. Also, the processes of diploma recognition should be improved. For increasing the incoming student mobility, possible policy measures should be considered: developing international studying programmes in universities, promoting existing international programmes across Europe and in third countries, and providing adequate accommodation and administrative support for incoming students.

For the *mobility utilisers* (see chapter 8.2) Germany, Norway and Luxembourg multiple incoming mobility types and stages need to be encouraged through providing students’ facilities for integrating into the labour market after they finish their study mobility. However, this measure could be in a tense relationship to those for the mobility promoters.

In the context of an aged Europe the results of the panel models revealed that not even incoming youth mobility is able to diminish the negative effects of the aged societies on the number of students. Thus, for maintaining or increasing the number of students in the total population there should be more policies implemented for increasing the number of youth population, beside invest-



ments in mobility programmes; e.g. the implementation of a unitary policy for all European countries to raise the fertility ratios.

8.6 Limitations

The conducted analyses refer to macro data on the level of the national states only. This implies several limitations in view of gained information, possible interpretation and transnational generalisation.

First of all, the available data basis lacks in terms of observations and in terms of the content; so some countries had notable missing values within the designed set of independent variables. Within the consortium this applies mainly to Romania, which is not a member of the OECD, and Norway, which is not an EU member state. Also, the depth of information provided by the available data on dependent variables on youth mobility indicators was comparably low. Thus, the variables gained out of aggregated data from the EU-Labour Force Survey delivered no information about mobility purposes and sometimes – for reasons of confidentiality – not even about the target or destination countries. In the same time, the reported mobility periods could not be decompounded into its mobility aspects and/or partial episodes. In fact, the data cover only mobility per person on an aggregated level, but the different mobilities per person – which often appear as combined mobilities – are not monitored. So the feasibly conducted analyses are merely based on data of limited quality in view of picturing youth mobility phenomena.

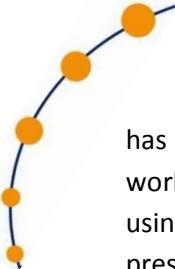
The constraints related to the data basis can also be seen in the scope of observed mobility indicators and independent framing conditions which for the most of them are only reported until the year 2012.

Furthermore, the developed macro models have to be regarded as a black box system, where correlations can be observed only between supposed causes and supposed effect (Thom 1984), but no insights regarding the actual interplay of variables describing the real phenomenon of youth mobility – which is based on a highly personal decision-making process – can be achieved. Thus, all interpretations of the revealed effects that go beyond the macro level have to be seen as a preliminary hypothetical reasoning. This applies mainly for the proposed interpretations on individual level, since correlations on the macro level do not allow causal conclusions on the micro level. If doing so, this could result in ecological fallacies. All drawn conclusions on the individual level have to be confirmed by the results of the upcoming work packages 3 and 4 in MOVE.

Limited power of interpretation is also required for any conclusions towards a causal relation between observed correlating indicators on the macro level, whereby – due to an absence of a time lag between independent and dependent macro variables – most analyses had to be conducted in a cross-sectional appraisal. This also implies limits of interpretation in view of the causal direction, because all correlations observed on the macro level – e.g. between economic prosperity and incoming youth mobility – could be interpreted in two opposite causal directions.

8.7 Future perspectives

Work package 2 focused on a quantitative secondary analysis of European macro-data on youth mobility. It thus referred to the body of nation states constituting the EU and EFTA. Although mobility

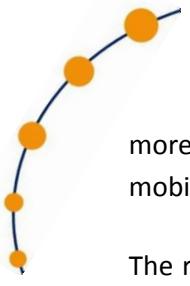


has to be seen mainly as an outcome of individuals' personal preconditions, agency, and decisions, work package 2 analysed mobility additionally at the aggregated level of the European countries by using national and other socio-economic macro-indicators. In the broader MOVE perspective, the presented results of work package 2 serve as a basis for the micro- and meso-level approaches in work package 4, where mobile youth is surveyed with an online questionnaire, and as well in work package 3, where qualitative case studies are conducted for different types of youth mobility, to answer the overall MOVE question how mobility can be good both for socio-economic and individual development of young people, and what are the factors that foster/hinder such beneficial mobility. Thus finally, the results of work packages 2, 3, and 4 are referred to each other in work package 5 to find overall MOVE answers to the raised question and to draw comprehensive conclusions and policy recommendations. Therefore specifically, the following macro-results will be analysed and linked among others with further MOVE micro- and/or meso-approaches in work packages 3 and 4:

- analysis of the motivation for mobility in relation to socio-economic push- and pull factors (chapter 5.4) on micro-level with the help of socioeconomic background variables of the online survey,
- explaining the contradictory results of youth unemployment and NEET-rate (chapter 5.4),
- analysis of the contradictory relationship between urbanisation and mobility (chapter 5.4) on a personal level,
- analysis of the inconsistent effects of foreign language proficiency on youth mobility (chapter 5.4) on individual level,
- complementation of mapping results (chapter 6) with findings of work package 4 e.g. regarding destination countries and countries of origin,
- testing the effects of socio-economic deprivations on the micro level that could be assumed through findings on the macro-causes of youth mobility (chapter 5.4),
- linking of national country case study on students' mobility in Luxembourg (chapter 7.2) with individual results on students' mobility deriving from the qualitative case study,
- using youth mobility micro-data of the online-survey to find explanations for main countries of origin for Germany, Norway, and Luxembourg (chapter 7.3), and
- testing the interpretations referring to the micro-level of the Hungarian case study (chapter 7.1) and the Romanian case study (chapter 7.4) with individual for both country deriving from the online-survey.

Thus, the macro-results add explanatory power to the micro- and meso-level approaches and vice versa. Additionally, they provide access to information for policymakers on mobility-related processes of the past decade, and will therewith contribute to drafting Human Resource Development strategies by the European Union. Human Resource Development planners should aim at maximising social and economic returns from the in- and outflow of youth mobility, with special attention to circular mobility, i.e. providing guidance and financial support to potential mobile youth.

The statistical modelling of youth mobility in Europe provides new results about the relationship between youth mobility and socio-economic indicators. The analysis supplements mobility research work for an especially important group of the population – the young aged 15 to 29 years old. However, it would be important to repeat the analyses, approximately five years later, as a continuously improving statistical data collection of the European countries would make the future results even



more reliable and exact, especially for analysing the effect of long-term youth unemployment rate on mobility, which should be the topic of further studies.

The results reveal that youth mobility in Europe – analysed on the macro level – has an ambivalent character for the EU member states. When looking in detail at the different country clusters and national mobility types, mostly strong economies profit from the mobility flows on macro-level. However, as modern societies are mobile societies, policies have to be developed to support the EU member states individually, based on their specific needs regarding mobile youth. This support should not only focus on political systems as framework conditions for mobility but also on economic aspects and national regulations within the countries.

In addition to support-measures on a national level, the European Union, as a political actor, should attract, retain and motivate the actual and potential labour force in the EU countries. Thus, the EU should develop an effective youth mobility policy that serves as a basis for sustainable development considering the specific needs of the described country patterns and country clusters. Therefore, we recommend the EU as an institution to take over more responsibility for policy making on European youth mobility.

9. Annex

9.1 EU-LFS datasets: corresponding Ns and reliability threshold

Tab.A.1: EU-LFS yearly samples, total weighted samples per year/country with marked reliability thresholds:
limit a) should not be published; limit b) may be published with a warning concerning their limited reliability

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
DE	83652	83500	83259	83183	83055	82803	82801	82515	82798	82963
HU	9942	9931	9921	9907	9893	9867	9852	9832	9802	9779
LU	446 ^{a)}	450 ^{a)}	457 ^{a)}	465 ^{a)}	467 ^{a)}	485 ^{a)}	494 ^{a)}	502 ^{b)}	516 ^{b)}	527 ^{b)}
NO	3283 ^{b)}	3314 ^{b)}	3397 ^{b)}	3445 ^{b)}	3505 ^{b)}	3559 ^{b)}	3618 ^{b)}	3680 ^{b)}	3743 ^{b)}	4725 ^{b)}
RO	21711	21641	21597	21551	21517	21484	21447	21384	21336	21286
ES	42467	43330	44025	44874	45589	45965	46149	46307	46325	46146
AT	8058	8132	8182	8214	8241	8262	8283	8316	8351	8375
BE	10394	10477	10546	10614	1908 ^{a)}	10796	10892	10989	11063	11125
BG	1585 ^{a)}	7761 ^{b)}	7719 ^{b)}	7679 ^{b)}	6617 ^{b)}	7607 ^{b)}	7564 ^{b)}	7333 ^{b)}	7278 ^{b)}	7242 ^{b)}
HR	4227 ^{b)}	4227 ^{b)}	4227 ^{b)}	4225 ^{b)}	4225 ^{b)}	4225 ^{b)}	4225 ^{b)}	4225 ^{b)}	4225 ^{b)}	4253 ^{b)}
CY	714 ^{b)}	737 ^{b)}	746 ^{b)}	761 ^{b)}	767 ^{b)}	785 ^{b)}	806 ^{b)}	829 ^{b)}	842 ^{b)}	838 ^{b)}
CZ	10210	10229	10265	10320	10422	10499	10522	10496	10515	10521
DK	5398 ^{b)}	5417	5434	5440	5488	5520	5544	5568	5588	5610
EE	1366 ^{a)}	1359 ^{a)}	1351 ^{a)}	1343 ^{b)}	1338 ^{b)}	1336 ^{a)}	1333 ^{b)}	1330 ^{b)}	1325 ^{b)}	1320 ^{b)}
FI	5224	5241	5262	5286	5312	5337	5362	5386	5411	5437
FR	59117 ^{b)}	59732	60125	60546	60842	61144	61452	61751	62016	62201
EL	10921	10963	10999	11035	11059	11061	11029	10998	10967	10921
IE	4044 ^{b)}	4131	4233	4339	4422	4539	4560	4577	4590	4602
IT	57487	58135	58435	58880	59336	59752	60051	60328	60515	60668
LV	2247 ^{a)}	2220 ^{b)}	2199 ^{b)}	2180	2163	2135 ^{b)}	2093 ^{b)}	2050 ^{b)}	2016 ^{b)}	1995 ^{b)}
LT	3399 ^{a)}	3355 ^{a)}	3290 ^{a)}	3250 ^{a)}	3213 ^{a)}	3184 ^{a)}	3142 ^{a)}	3032 ^{a)}	2991 ^{a)}	2960 ^{a)}
MT						404 ^{b)}	406 ^{b)}	408 ^{b)}	410 ^{b)}	414 ^{b)}
NL	16109	16107	16142	16180	16190	16223	16350	16400	16507	16622
PL	31096	31258	37446	37277	37158	37196	36585	36600	36610	36586
PT	10479	10500	10522	10542	10557	10566	10569	10553	10508	10449
SK	5379	5382	5389	5391	5396	5409	5422	5392	5404	5411
SI	1996 ^{b)}	1999 ^{b)}	2006 ^{b)}	2015 ^{b)}	2033 ^{b)}	2037 ^{b)}	2048 ^{b)}	2051 ^{b)}	2056 ^{b)}	2059 ^{b)}
SE	9006	9043	9092	9153	9209	9301	7022	7074	7115	7156
UK	59005	59370	59744	60114	60593	61019	11636 ^{b)}	61775	62208	62674
CH	6151	6210	6266	6326	6417	6523	6612	6690	6747	6829
IS	199 ^{a)}	202 ^{a)}	210 ^{a)}	218 ^{a)}	223 ^{a)}	223 ^{a)}	223 ^{a)}	224 ^{a)}	224 ^{a)}	227 ^{a)}

9.2 Tables of mobility indicators (chapter 3)

Tab.A.2: Data for incoming youth mobility

Short-term incoming youth mobility (1-3years) from EU-28/EFTA countries (ratio/1.000)										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	5,7	7,8	7,0	4,8	8,8	8,1	5,2	7,4	12,4	15,4
Hungary	1,4	2,5	1,6	1,5	2,6	2,3	2,0	1,6	0,9	1,0
Luxembourg	n.a.	93,9	101,4	89,8						
Norway	6,5	5,0	5,0	4,0	7,1	7,6	15,2	18,1	19,9	22,6
Romania	n.a.	n.a.	0,0	0,0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Spain	15,9	16,9	15,9	17,2	16,0	8,9	8,1	4,5	6,7	3,2
Mean EU-28/EFTA	9,2	10,1	10,7	13,4	14,4	13,5	13,4	13,1	13,5	12,9
Long-term incoming youth mobility (more than 3 years) from EU-28/EFTA countries (ratio/1.000)										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	6,1	8,3	6,9	5,3	15,3	14,8	18,6	17,2	16,4	16,4
Hungary	1,2	2,4	2,7	1,6	0,4	3,8	3,0	4,1	3,2	2,6
Luxembourg	n.a.	179,2	182,4	196,3						
Norway	4,9	7,0	4,7	5,3	7,3	7,2	5,0	9,7	13,8	20,6
Romania	n.a.	0,1	0,1	0,1						
Spain	7,7	14,6	19,7	27,7	32,4	38,1	41,0	46,4	37,2	41,6
Mean EU-28/EFTA	10,5	10,5	10,3	10,5	18,2	19,7	20,6	23,0	23,4	24,6
Incoming students' mobility - inflow of students from EU-28, EFTA and candidate countries (number of students in thousands)										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	125,4	121,6	119,3	115,7	108,1	112,9	116,4	n.a.	121,0	n.a.
Hungary	8,2	8,7	9,2	9,4	9,6	10,6	11,0	11,1	12,1	n.a.
Luxembourg	n.a.	n.a.	1,0	n.a.	n.a.	n.a.	n.a.	2,3	2,5	n.a.
Norway	4,9	5,1	5,3	5,5	5,7	5,9	6,1	6,5	7,1	n.a.
Romania	1,9	1,9	1,6	1,8	2,3	3,1	3,9	4,8	5,5	n.a.
Spain	10,9	12,3	13,8	16,2	17,1	23,0	27,6	30,9	30,5	n.a.
Incoming students' mobility - inflow of students from EU-28, EFTA and candidate countries (ratio: number of incoming students/total number of students)										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	5,4	5,4	5,2	5,1	4,8	4,6	4,6	n.a.	4,1	n.a.
Hungary	1,9	2,0	2,1	2,2	2,3	2,7	2,8	2,9	3,2	n.a.
Luxembourg	n.a.	42,6	41,0	n.a.						
Norway	2,3	2,4	2,5	2,6	2,7	2,7	2,7	2,8	3,0	n.a.
Romania	0,3	0,3	0,2	0,2	0,2	0,3	0,4	0,6	0,8	n.a.
Spain	0,6	0,7	0,8	0,9	1,0	1,3	1,5	1,6	1,6	n.a.
Mean EU-28/EFTA	2,3	2,4	2,7	2,9	2,9	3,1	3,4	4,9	5,1	n.a.

Tab.A.3: Data for outgoing youth mobility

Outgoing youth mobility to EU-28/EFTA countries, one year before survey (ratio/1.000)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	0,9	1,0	n.a.	1,0	1,3	1,7	1,1	2,2	2,0	1,5
Hungary	0,1	0,1	0,4	0,2	0,3	0,6	1,3	n.a.	0,5	1,8
Luxembourg	n.a.	3,8	6,0	3,4						
Norway	n.a.	0,5	n.a.							
Romania	1,2	1,3	0,9	1,3	2,2	3,7	2,0	0,9	1,3	0,9
Spain	0,5	2,1	2,9	2,1	1,4	1,9	0,7	1,3	1,1	0,8
Mean EU-28/EFTA	2,1	2,2	2,0	2,3	2,2	2,5	2,5	2,2	2,1	2,3

Outgoing students' mobility - outflow of students to EU-28, EFTA and candidate countries (number of students in thousands)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	40,8	46,2	57,9	65,4	71,5	80,9	91,8	100,4	107,2	n.a.
Hungary	6,4	6,5	7,1	7,4	7,5	8,2	9,0	7,2	9,7	n.a.
Luxembourg	6,5	6,8	6,6	6,8	6,9	7,1	7,4	4,5	7,8	n.a.
Norway	10,0	10,0	10,4	10,6	10,5	11,4	12,2	12,8	14,5	n.a.
Romania	16,3	17,3	18,9	20,3	21,5	25,3	28,8	29,4	37,5	n.a.
Spain	21,0	20,3	23,3	23,5	21,6	22,3	23,8	20,9	29,6	n.a.

Outgoing students' mobility - outflow of students to EU-28, EFTA and candidate countries (ratio: number of incoming students/total number of students)

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Germany	1,8	2,0	2,5	2,9	3,2	3,3	3,6	3,6	3,6	n.a.
Hungary	1,5	1,5	1,6	1,7	1,8	2,1	2,3	1,9	2,5	n.a.
Luxembourg	n.a.	83,3	127,9	n.a.						
Norway	4,7	4,7	4,8	4,9	4,9	5,2	5,4	5,6	6,1	n.a.
Romania	2,4	2,3	2,3	2,2	2,0	2,3	2,9	3,4	5,3	n.a.
Spain	1,1	1,1	1,3	1,3	1,2	1,2	1,3	1,1	1,5	n.a.
Mean EU-28/EFTA	6,8	7,3	7,4	7,9	8,1	7,8	7,7	9,9	12,3	n.a.

9.3 Additional tables for statistical modelling (chapter 6)

Tab.A.4: List of all indicators included in the statistical analyses of chapter 5 (time lag, cluster, correlation and panel analysis)

Label of indicator	Name and short description of indicator (for further description see Hemming, Tillmann, and Dettmer 2016)
Ec111	Youth unemployment rate (% of 15 - 24 year-olds of youth labour force)
Ec112	Youth not in employment, education or training (NEET,% of 15 - 29 year-olds)
Ec132	Inactive population as a percentage of the total population (% of 15-64 year-olds)
Ec141	Real minimum wages (in 2013 constant prices at 2013 USD PPPs)
Ec142	Average wage (total, US Dollars)
Ec214	GDP at market prices (EURO per capita)
Ec221	Foreign direct investment (FDI) - outward (% of GDP)
Ec224	Employment in foreign controlled enterprises as a share of total domestic employment
St111	Adult education level (tertiary,% of 25-64 years-olds)
St113	Number of students (persons (1.000)
St121	Students at ISCED level 3-VOC (% of all students at ISCED level 3)
St131	Foreign languages learnt per pupil (average number of foreign languages learned per pupil at ISCED level 2)
St132*	Foreign languages learnt per pupil (average number of foreign languages learned per pupil at ISCED level 3)
St133	Pupils learning English (% of upper secondary general education, ISCED 3)
St212*	Expenditure on social protection (% of GDP)
St214	Expenditure on social protection per inhabitant (PPS per inhabitant)
St221	Income inequality (GINI coefficient 0 = complete equality; 1 = complete inequality)
St224	GINI index (World Bank estimate)
St231	Poverty rate (% of total population)
St233	At-risk-of-poverty rate (% of total population)
St411	Gross domestic spending on R&D (% of GDP)
So111	Human development index Version 1 (status quo from 15th August 2015)
So122	Overgrowing rate (% of total population)
So211	Population (total, persons)
So221*	Population by age group (15 to 24 years,% of total population)
So222	Ratio of young people in the total population on 1 st January (%, from 15 to 29 year-olds)
So232*	Median age of population
So241	Foreign population (% of total population)
So251*	Urban population (% of total population)
So252	Annual percentage of population at mid-year residing in urban areas (% of total population)
So261	Fertility rates (total number, children/woman)
So271	Population density (Persons per km ²)
So313	Hospital beds by type of care (number of available beds)
So321	Infant mortality rate (ratio per 1.000 live births)
So412	Expenditure on pensions (% of GDP, current prices)
Mo311*	Mobility of students in Europe - inflow of students (ISCED 5-6) from EU-28/EFTA and candidate countries (number of Students in 1.000s)
Mo312*	All incoming youth mobility from EU-28/EFTA countries (ratio per 1.000 persons of 15 - 29 year-olds)
Mo313	Short-term incoming youth mobility (up to 3 years) from EU-28/EFTA countries (ratio per 1.000 persons of 15-29 year-olds)
Mo317	Ratio of incoming students (% of total number of students)
Mo322	All out-going youth mobility to EU-28/EFTA countries, one year before survey (ratio per 1.000 persons of 15-29 year-olds)
Mo325	Ratio of out-going students (% of total number of students)
Mo341	International emigration (total number of persons)

Notes: * variable not in panel modelling

Tab.A.5: Time lag analyses: Results of the OLS models, calculations per model

	R ²	p	R ²	p	R ²	p	R ²	p	R ²	p	R ²	p
	0 years		1 year		2 years		3 years		4 years		5 years	
Causes 1	0,391	0,000	0,123	0,0026	0,277	0,000	0,267	0,000	0,188	0,000	0,153	0,000
Causes 2	0,323	0,0002	0,730	0,000	0,220	0,038	0,633	0,000	0,409	0,000	0,469	0,000
Causes 3	0,380	0,000	0,150	0,3002	0,150	0,058	0,260	0,000	0,110	0,000	0,115	0,000
Causes 4	0,395	0,000	0,360	0,000	0,200	0,000	0,056	0,000	0,098	0,005	0,099	0,005
Effect 1	0,216	0,000	0,109	0,000	0,168	0,000	0,155	0,000	0,093	0,000	0,041	0,000
Effect 2	0,699	0,000	0,143	0,000	0,180	0,000	0,178	0,000	0,412	0,000	0,124	0,000
Effect 3	0,220	0,000	0,191	0,000	0,187	0,000	0,185	0,000	0,198	0,000	0,155	0,000
Effect 4	0,778	0,000	0,735	0,000	0,550	0,000	0,432	0,000	0,521	0,000	0,513	0,000
Effect 5	0,400	0,000	0,412	0,000	0,395	0,000	0,480	0,000	0,240	0,000	0,112	0,000
Effect 6	0,917	0,000	0,865	0,000	0,775	0,000	0,681	0,000	0,752	0,000	0,885	0,000

Notes: Time lags of the models marked in yellow are chosen for the panel analysis.

Tab.A.6: Unstandardised cluster solution

	Country	2013	2012	2011	2010	2009	2007	2005
1	DE	1	1	1	1	1	1	1
2	HU	2	2	2	2	2	2	2
3	LU	3	3	3	3	3	3	3
4	NO	3	3	3	3	3	3	3
5	RO	2	2	2	2	2	2	-
6	ES	2	2	2	2	1	1	1
7	AT	1	1	1	1	1	1	1
8	BE	1	1	1	1	1	1	1
9	BG	2	2	2	2	2	2	-
10	HR	2	2	2	2	-	-	-
11	CZ	2	2	2	2	2	2	2
12	DK	1	1	1	1	1	1	1
13	EE	2	2	2	2	2	2	2
14	FI	1	1	1	1	1	1	1
15	FR	1	1	1	1	1	1	1
16	EL	-	2	2	2	1	2	2
17	IE	1	1	1	1	1	1	1
18	IT	1	1	1	1	1	1	1
19	LV	2	2	2	2	2	2	2
20	LT	2	2	2	2	2	2	2
21	MT	2	2	2	2	2	2	2
22	NL	1	1	1	1	1	1	1
23	PL	-	2	2	2	2	2	2
24	PT	2	2	2	2	2	2	2
25	SK	2	2	2	2	2	2	2
26	SI	2	2	2	2	2	2	2
27	SE	1	1	1	1	1	1	1
28	UK	1	1	1	1	1	1	1

Tab.A.7: Bivariate correlations for relevant indicators 2005

	Ec11	Ec12	Ec32	Ec41	Ec42	Ec214	Ec221	Ec224	St111	St113	St121	St131	St133	St214	St221	St224	St231	St233	St411	So111	So122	So211	So222	So232	So241	So252	So261	So271	So313	So321	So412	So413	Mo313	Mo322	Mo325	Mo341
Ec11	1																																			
Ec12		1																																		
Ec32			1																																	
Ec41				1																																
Ec42					1																															
Ec214						1																														
Ec221							1																													
Ec224								1																												
St111									1																											
St113										1																										
St121											1																									
St131												1																								
St133													1																							
St214														1																						
St221															1																					
St224																1																				
St231																	1																			
St233																		1																		
St237																			1																	
St411																				1																
So111																					1															
So122																						1														
So211																							1													
So222																								1												
So232																									1											
So241																										1										
So252																											1									
So261																												1								
So271																													1							
So313																														1						
So321																															1					
So412																																1				
So413																																	1			
Mo313																																		1		
Mo322																																		1		
Mo325																																		1		
Mo341																																		1		

Tab.A.8: Bivariate correlations for relevant indicators 2007

	Ec11	Ec12	Ec13	Ec14	Ec42	Ec24	Ec221	Ec224	St11	St13	St121	St131	St133	St214	St221	St224	St231	St233	St411	So11	So12	So211	So222	So232	So241	So252	So261	So271	So313	So321	So412	So413	Mo313	Mo322	Mo325	Mo341																			
Ec11	1																																																						
Ec12	,768**	1																																																					
Ec13	,557**	,719**	1																																																				
Ec14	-,223	-,358	-,192	1																																																			
Ec42	-,364	-,566**	-,405	,794**	1																																																		
Ec214	-,300	,608**	,495**	,686**	,894**	1																																																	
Ec221	-,234	,437*	-,449	,626**	,613**	,368	1																																																
Ec224	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1																																														
St111	-,331*	-,532	*,591**	,578	,583**	,533**	,649**	n.a	1																																														
St113	,318	,506*	,065	,132	,062	,093	,057	n.a	,045	1																																													
St121	,063	,310	-,069	,247	,259	,193	,196	n.a	,072	-,083	1																																												
St131	-,148	-,398	,033	,184	,270	,215	,038	n.a	,126	-,383	,183	1																																											
St133	,007	-,337	-,554**	,383	,260	,286	,203	n.a	,283	,187	,337	-,128	1																																										
St124	-,172	-,565**	,510**	,754**	,916**	,917**	,516*	n.a	,450*	,230	,343	,153	,302	1																																									
St1221	,250	,382	-,099	,086	,009	-,025	,109	n.a	,128	,513	,800**	-,370	-,785**	-,008	1																																								
St1224	,300	,534*	,301	,199	-,027	,225	-,057	n.a	-,114	,440*	,527**	-,091	-,248	,251	,956**	1																																							
St1231	,178	,430	-,058	,118	-,109	,196	,101	n.a	,151	,242	,767**	-,055	-,602	,166	,820**	,745**	1																																						
St1233	,304	,584**	,384*	,051	,123	,425*	,136	n.a	,006	,201	,422*	-,024	,119	,540**	,864**	,742**	,903**	1																																					
St1411	-,331	-,558**	*,663**	,479	,527*	,498*	,479*	n.a	,482*	-,060	,295	,250	,249	,661**	-,220	-,416*	-,241	-,478*	1																																				
So111	-,090	-,055	,149	,155	,079	-,069	,006	n.a	-,133	,291	,133	,179	-,076	,000	-,293	-,205	-,074	-,024	,188	1																																			
So122	,158	,486*	,459*	,694**	,840**	,746**	,692**	n.a	,567**	-,170	-,235	-,074	,025	,819**	-,198	,179	,006	,426*	,662**	,042	1																																		
So211	,228	,468*	-,019	,132	,041	,031	,015	n.a	,050	,966**	-,047	-,367	,153	,203	,524	,385	,312	,161	,042	-,203	-,220	1																																	
So222	,038	,222	,317	-,346	-,509*	-,473*	-,382	n.a	-,154	-,220	-,268	-,303	-,186	-,687**	-,132	-,135	-,200	-,205	,595**	-,162	-,553**	-,304	1																																
So232	,046	,017	-,094	,026	,053	-,090	,125	n.a	-,069	,097	,215	,236	,024	,169	,021	,142	,235	,010	,502	,269	-,087	,220	,772**	1																															
So241	-,120	-,237	,068	,538*	,483*	,619**	,003	n.a	,206	-,049	,018	,432	,081	,449*	-,028	,120	-,053	,144	,038	,096	-,269	,151	-,149	-,083	1																														
So252	-,161	-,361	-,205	,461	,608*	,523**	,665**	n.a	,620**	,055	,056	,235	,256	,563**	,075	-,208	,042	,286	,577**	-,085	,663**	,046	,469*	,229	,308	1																													
So261	-,270	-,528*	-,579*	-,571*	-,593**	-,618**	-,621**	n.a	,817**	-,022	-,015	-,017	,371	,540**	,145	-,209	,049	-,215	,530**	-,008	,537**	-,016	-,178	-,181	,151	,462*	1																												
So271	-,081	-,078	,336	,498*	,358	-,025	,603**	n.a	,102	-,027	,084	,185	,811**	-,024	,124	,046	-,042	-,113	-,012	-,104	-,335	,003	-,041	,020	,047	,473*	-,138	1																											
So313	,155	,320	-,015	,133	,021	,001	-,015	n.a	-,094	,837**	-,005	-,270	,110	,175	,418	,287	,197	,060	,109	-,027	-,157	,918**	-,242	,237	-,136	,010	,050	,000	1																										
So321	,153	,475*	,457*	-,449	-,551**	-,653**	-,167	n.a	-,232	-,082	-,120	-,013	-,296	-,725**	,185	,397*	-,209	,602**	-,493*	-,016	,686**	-,080	,449*	-,125	-,441*	-,340	-,322	,085	-,031	1																									
So412	,292	,197	-,086	,058	,116	,200	,127	n.a	-,231	,463*	,182	,002	,070	,519**	,294	-,008	,288	-,310	,356	,063	-,432	,479*	,692**	,502**	-,280	,216	-,078	,101	,430*	-,468*	1																								
So413	,368	,124	,199	-,044	-,044	,229	,348	n.a	-,383	,423*	,246	-,088	,088	,373	-,113	-,136	-,275	-,406	-,041	-,089	-,096	,292	-,183	,042	,011	-,056	-,222	-,044	,327	-,290	,597**	1																							
Mo313	,255	-,104	-,162	,422	,422	,396	,198	n.a	,267	,016	,258	,-384	,106	,164	,171	,149	,007	,089	,010	,038	-,360	,015	,328	-,591**	,402	,045	,433*	,014	-,081	,203	-,307	-,324	1																						
Mo317	,320	-,332	-,349	,566*	,531*	,466*	,463*	n.a	,136	,023	,347	-,409	,065	,579**	-,024	-,240	-,097	-,384*	,488*	,327	-,471*	,093	,379	,180	,268	,422*	,262	,114	,108	,317	,354	,143	,238	1																					
Mo322	,295	-,273	-,339	,504	-,115	,150	-,186	n.a	,001	-,174	-,137	,245	,079	,184	,075	-,037	,026	,059	,154	,131	,165	,175	,004	,091	,070	-,026	,037	-,370	-,142	,178	,164	,338	-,247	,143	1																				
Mo325	-,003	,004	,184	,057	,005	-,029	,134	n.a	-,012	-,443*	-,036	,006	,483*	-,226	,-131	-,136	-,088	,053	-,243	-,186	-,033	,403*	,503**	-,486*	,186	-,174	,033	,201	-,308	,116	,449*	-,270	,552**	-,123	-,171	1																			
Mo341	-,020	,161	-,262	,349	,219	,146	,174	n.a	,159	,725**	-,027	-,349	,095	,298	,554*	,327	,305	,086	,232	-,143	-,372	,840**	-,314	,253	,019	,163	,047	,051	,873**	-,163	,327	,079	,080	,272	-,128	,276	1																		

Tab.A.9: Bivariate correlations for relevant indicators 2009

	Ec11	Ec12	Ec13	Ec14	Ec42	Ec24	Ec221	Ec224	St11	St13	St121	St131	St133	St214	St221	St224	St231	St233	St411	So11	So12	So211	So222	So232	So241	So252	So261	So271	So313	So321	So412	So413	Mo313	Mo322	Mo325	Mo341																					
Ec11	1																																																								
Ec12	,850**	1																																																							
Ec13	,296	,516*	1																																																						
Ec14	-,219	-,207	-,193	1																																																					
Ec42	-,387	-,393	-,412	,785**	1																																																				
Ec214	-,418*	-,509*	-,470*	,669**	,878**	1																																																			
Ec221	-,134	-,339	-,050	,692**	,714**	,750**	1																																																		
Ec224	,046	-,091	,137	-,104	-,216	,119	,380	1																																																	
St111	-,126	-,245	,549**	,649**	,634**	,562**	,530*	,064	1																																																
St113	,050	,307	,035	,167	,044	,069	,138	,432*	,063	1																																															
St121	-,420*	-,474*	,043	,196	,165	,203	,151	,071	-,159	-,169	1																																														
St131	-,038	-,330	-,137	,190	,336	,391*	,380	,086	,242	-,160	,170	1																																													
St133	,262	,158	,161	,491	-,028	,227	,158	,041	-,135	,160	,334	,089	1																																												
St124	-,451*	-,531*	,518**	,751**	,903**	,944**	,688**	,043	,513*	,240	,228	,325	-,088	1																																											
St221	,412	,582*	-,135	,129	,051	-,098	-,105	,180	,154	,591*	,840**	-,066	,581*	-,024	1																																										
St224	,425*	,489*	,155	,260	,095	,213	,050	,283	-,050	,333	,516**	,010	,110	,216	,922**	1																																									
St231	,610*	,627*	,108	,003	-,059	-,214	-,209	,435	-,022	,541	,543*	,061	-,511	,130	,749**	,780**	1																																								
St233	,519**	,578**	,219	,126	,058	,422*	,037	,169	,009	,119	,405*	,159	,106	,481**	,839**	,754**	,905**	1																																							
St411	,325	-,419	,661**	,347	,474*	,477*	,202	,323	,446*	,137	,141	,152	,098	,605**	-,287	,208	,337	-,322	1																																						
So111	-,088	,041	,134	,135	,090	,022	,061	,014	-,137	,266	,199	,099	,087	,010	,326	,090	,191	,012	,211	1																																					
So122	,361	,271	,428*	,682**	,836**	,747**	,521*	,179	-,521*	,146	,242	,126	,053	,818**	-,210	,100	,048	,466*	,627**	,013	1																																				
So211	,013	,321	-,036	,145	,025	,021	-,200	,515*	-,088	,970**	,163	-,222	,127	,208	,589*	,290	,519*	,069	,001	-,184	-,206	1																																			
So222	,310	,165	,192	-,214	-,330	-,374	-,125	,458*	,007	,265	-,272	-,441*	,006	,496**	-,103	,057	,301	,055	-,377	-,159	,409*	-,342	1																																		
So232	-,200	,155	,062	,002	-,035	-,118	-,165	,511*	-,167	,140	,263	,270	,183	,041	-,064	,044	,212	,195	,390	,239	,006	,249	,767**	1																																	
So241	,011	-,090	,021	,538*	,491*	,646**	,807**	,460*	,352	-,050	,011	,417	,104	,509*	,035	,250	-,033	,232	,023	,125	-,292	-,157	,120	-,112	1																																
So252	,228	,274	-,229	,463	,575*	,540**	,580**	,057	,628**	,052	,080	,261	,013	,596**	,079	,082	,051	,220	,513*	,073	,669**	,052	,306	,130	,310	1																															
So261	-,179	-,226	,446*	,537*	,545**	,470*	,356	,023	,782**	-,074	-,029	,099	-,143	,442*	,034	-,267	,316	-,236	,427*	-,073	-,422*	-,063	,012	-,281	,067	,363	1																														
So271	-,317	-,271	,324	,504*	,337	,003	,384	-,137	,113	-,027	,167	,006	,243	,039	,068	-,066	,009	-,161	-,072	-,148	,335	,001	,018	,014	,054	,477*	-,144	1																													
So313	-,124	,127	-,031	,135	-,005	,002	-,184	,435*	-,117	,850**	-,078	-,244	,103	,172	,429	,152	,417	,004	,071	-,005	-,131	,910**	-,273	,288	-,154	,007	,107	-,002	1																												
So321	,164	,269	,446*	-,284	-,446*	,618**	-,338	,007	,280	,033	,116	-,126	,049	,682**	,222	,228	,104	,591**	,541**	-,019	,681**	-,065	,300	-,001	-,397	,353	-,198	,044	-,011	1																											
So412	-,196	-,067	-,118	,111	,057	,180	-,165	,455*	-,276	,465*	,152	,182	,219	,428*	,210	,083	,398	-,134	,350	,129	,313	,481**	,672**	,552**	-,225	,169	-,118	,012	,428*	-,377*	1																										
So413	-,144	-,038	,233	,154	,105	,346	,159	,070	-,216	,467*	,132	,112	-,106	,400*	,052	,242	,124	-,370	,262	-,228	,214	,345	-,303	-,090	,201	-,090	-,086	-,028	,317	-,224	,384*	1																									
Mo313	,050	,238	-,133	,444	,550*	,500*	,089	,423	-,040	-,254	-,338	,012	,285	,183	,139	,178	,065	,093	,041	-,384	-,031	,290	,579**	,613**	,063	,499*	,103	-,089	,292	-,258	-,033	1																									
Mo317	,507**	-,315	-,341	,430	,442	,453*	,321	,017	,049	,009	,315	-,366	,088	,554**	-,049	-,159	,216	-,363	,350	,367	,432*	,057	-,222	,092	,225	,349	,111	,102	,062	-,271	,321	,021	,228	1																							
Mo322	-,034	,026	-,101	,381	-,063	-,076	-,228	,101	-,259	,317	-,176	,000	-,042	-,101	,249	,137	,122	,188	,116	,078	,232	,272	-,116	,138	,073	-,278	,276	,105	,152	,017	,021	1																									
Mo325	,034	,176	,261	-,022	-,022	-,119	,044	,394	-,041	,472*	,068	-,262	,110	-,293	-,137	,013	-,309	-,044	-,212	,100	-,003	,423*	,552**	,484*	,129	-,175	,031	,278	-,321	,206	,567**	-,279	,331	-,153	-,312	1																					
Mo341	,125	,299	-,046	,197	,118	,094	-,093	,415	,140	,874**	-,181	-,328	,189	,040	,570*	,356	,495	,255	-,110	-,307	-,128	,826**	-,142	,043	-,086	,017	,043	-,040	,701**	,196	,175	,261	,075	,055	,371	-,424*	1																				

Tab.A 10: Bivariate correlations for relevant indicators 2011

	Ec11	Ec12	Ec13	Ec14	Ec42	Ec24	Ec221	Ec224	St11	St13	St121	St131	St133	St14	St221	St224	St231	St233	St411	So11	So12	So211	So222	So232	So241	So252	So261	So271	So313	So321	So412	So413	Mo313	Mo322	Mo325	Mo341																								
Ec11	1																																																											
Ec12	,276	1																																																										
Ec13	,359	-,177	1																																																									
Ec14	-,370	-,340	-,118	1																																																								
Ec42	-,450*	-,094	-,341	,767**	1																																																							
Ec214	,488**	-,028	-,443*	,643**	,854**	1																																																						
Ec221	-,230	-,066	,010	,716**	,760**	,698**	1																																																					
Ec224	-,182	-,005	,029	-,040	-,116	,228	,304	1																																																				
St111	-,259	,061	,504*	,596*	,612*	,556**	,553**	,219	1																																																			
St113	,035	-,012	-,076	,063	,020	,031	,211	,400*	,080	1																																																		
St121	-,248	-,098	-,112	,252	,216	,221	,172	,061	,133	,064	1																																																	
St131	-,078	,031	-,020	,140	,145	,267	,232	,266	,261	-,255	,006	1																																																
St133	,112	,148	,046	,331	,041	,170	,147	,103	,044	,172	,422*	,068	1																																															
St124	,511**	-,035	,483**	,727**	,916**	,923**	,679**	,028	,475*	,175	,287	,161	-,027	1																																														
St221	,602**	,048	,212	,079	-,306	,398	,143	,170	,094	,493*	,673**	,101	,110	-,335	1																																													
St224	,562**	-,041	,161	,127	-,079	,230	,035	,231	,117	,317	,551**	,042	,060	,190	,913**	1																																												
St1231	,787**	,217	,407	-,033	,374	,411	,211	,215	,237	,274	,483*	,007	,081	,409	,789**	,729**	1																																											
St1233	,665**	,130	,427*	-,052	,271	,553**	,175	,317	,202	,164	,261	,029	,097	,560**	,817**	,664**	,933**	1																																										
St411	,554**	,202	,676**	,324	,376	,361	,115	,172	,413	,122	,215	,073	,177	,497*	,414	,265	,485*	,428*	1																																									
So111	-,121	,393	,196	,142	,081	-,047	,088	,013	,189	,229	,194	,159	,212	,029	-,176	,093	,165	,036	,258	1																																								
So122	,422*	,054	,558**	,658**	,738**	,654**	,537**	,066	,611**	-,080	,049	-,106	,190	,729**	,061	,072	,269	,509**	,631**	,059	1																																							
So211	-,009	-,026	-,074	,118	,021	,002	-,186	,444*	-,102	,982**	-,057	-,250	,158	,211	,461*	,309	,224	,142	-,060	-,166	-,123	1																																						
So222	,027	,092	,090	-,132	-,216	-,224	,001	,536**	,166	,288	-,253	-,082	,079	,384*	-,183	-,174	-,225	-,166	-,184	-,203	,234	-,368	1																																					
So232	-,108	-,012	-,075	,006	,062	-,178	,252	,536**	-,273	,190	,175	,143	,144	,002	,079	,164	,140	,309	,396	,285	,052	,259	,691**	1																																				
So241	-,105	-,114	,037	,547*	,498*	,646**	,758**	,509	,354	-,192	,044	,432*	,122	,519*	,046	,230	,021	,036	,012	,090	,380	-,147	,097	-,109	1																																			
So252	,354	,099	-,255	,403	,577**	,540**	,582**	,073	,616**	,050	-,120	,251	,101	,593**	-,102	,010	,204	,326	,426*	,066	,617**	,059	-,173	,079	,334	1																																		
So261	-,324	,180	-,437	,546*	,572**	,508**	,389	-,006	,732**	-,006	,075	-,016	,038	,510**	-,243	-,288	,438*	-,411*	,475*	-,092	,572**	,012	,112	-,347	,041	,386*	1																																	
So271	-,327	-,298	,277	,495	,336	-,009	,434*	-,108	,107	-,015	,291	,196	,218	,033	,024	-,079	,155	-,132	-,062	-,100	,293	,001	,104	,011	,080	,482**	-,054	1																																
So313	-,178	-,108	-,088	,132	,021	-,007	,174	,373	,136	,865**	-,014	-,236	,154	,201	,230	,166	,037	,052	,041	,028	-,072	,898**	-,292	,312	-,153	,013	,054	,004	1																															
So321	,122	,231	,516**	-,124	-,089	,463*	,124	,013	-,208	,101	,165	-,004	,050	,557**	-,107	,143	,023	,516**	,556**	-,007	,661**	-,111	,268	-,009	,033	-,224	-,336	,207	-,047	1																														
So412	-,013	-,005	-,076	,082	,015	,101	,179	,508**	-,359	,435*	,183	-,001	,048	,401*	,289	,230	,299	,037	,172	,150	-,207	,443*	,681**	,519**	-,221	,167	-,079	,003	,359	-,377*	1																													
So413	,042	-,058	,233	,274	,157	,236	,208	,075	,199	,296	,059	,139	,020	,213	,133	,054	,067	,011	,413	-,256	,143	,300	-,101	,172	,355	-,205	-,150	-,137	,280	,134	1																													
Mo313	,201	-,148	-,043	,515*	,660**	,753**	,847**	,679**	,409	,158	,098	,248	,057	,627**	-,108	,017	,186	,240	,068	,016	,368	-,137	,090	,401	,940**	,297	,230	-,029	-,157	,082	-,222	,403	1																											
Mo317	-,324	-,207	-,049	,466	,533*	,672**	,759**	,547**	,206	,165	,229	,229	,137	,606**	-,185	,002	,267	,303	,054	,118	,293	,146	,052	,175	,876**	,340	,043	,051	,162	,067	-,011	,354	,929**	1																										
Mo322	-,129	-,299	,304	-,077	,271	,222	,331	,330	,136	,126	,148	,131	,117	,101	,155	,252	,405	,133	,120	,257	,037	,094	,048	-,074	,486*	,065	,115	,234	,028	,102	,212	,081	,326	,359	1																									
Mo325	-,086	-,134	,153	,336	,375	,538**	,706**	,566**	,201	-,261	,050	,440*	,042	,358	-,122	,068	,125	,139	-,139	,043	-,130	,235	,101	,266	,882**	,204	,042	,090	-,191	,080	-,249	,410*	,883**	,875**	,328	1																								
Mo341	,184	-,001	-,114	,110	,050	-,089	-,094	,319	,119	,878**	-,132	-,327	,177	,062	,548*	,379	,333	,293	,203	,328	-,070	,817**	-,152	,026	,105	,053	,054	-,053	,663**	,071	,230	,293	-,100	-,133	-,066	-,235	1																							

Tab.A 11: Bivariate correlations for relevant indicators 2012

	Ec11	Ec12	Ec13	Ec14	Ec42	Ec24	Ec221	Ec224	St11	St13	St121	St131	St133	St14	St221	St224	St231	St233	St411	So11	So12	So211	So222	So232	So241	So252	So261	So271	So313	So321	So412	So413	Mo313	Mo322	Mo325	Mo341																				
Ec11	1																																																							
Ec12	,893**	1																																																						
Ec13	,401*	,577**	1																																																					
Ec14	-,397	-,401	-,138	1																																																				
Ec42	-,442*	-,457*	-,375	,775**	1																																																			
Ec214	-,444*	-,564**	-,470*	,644**	,850**	1																																																		
Ec221	-,215	-,299	-,001	,709**	,754**	,669**	1																																																	
Ec224	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1																																															
St111	-,306	-,336	-,486*	,587*	,637**	,575**	,578**	n.a.	1																																															
St113	,052	,210	-,102	,079	-,008	,017	,228	n.a.	,076	1																																														
St121	-,189	-,485*	-,100	,264	,205	,188	,125	n.a.	,160	,054	1																																													
St131	-,110	-,203	-,095	,070	,108	,261	,209	n.a.	,304	,136	,001	1																																												
St133	,028	,078	,171	,333	,018	,277	,139	n.a.	,038	,125	,199	,130	1																																											
St124	-,428*	-,562**	-,495**	,718**	,913**	,914**	,661**	n.a.	,482*	,194	,281	,191	,104	1																																										
St1221	,560**	,589**	,190	,142	-,199	,246	-,011	n.a.	,016	,436*	,614**	,116	,055	,214	1																																									
St1224	,590**	,622**	,240	,092	-,102	,220	,102	n.a.	,107	,201	,607**	,027	,034	,215	,900**	1																																								
St1231	,001	,050	,206	-,402	,129	,064	-,024	n.a.	,067	-,095	-,219	,086	,040	,111	,099	,085	1																																							
St1233	,670**	,757**	,447*	,098	-,261	,504**	-,109	n.a.	,183	,137	-,272	,014	,149	,510**	,779**	,705**	,085	1																																						
St1411	-,130	-,069	-,093	,278	,128	,081	-,015	n.a.	,084	,318	-,073	-,114	,153	,257	-,008	,060	-,038	-,183	1																																					
So111	-,112	-,002	,216	,146	,076	-,072	,092	n.a.	,200	,203	,203	,408*	,148	,018	,184	,108	,147	,043	,190	1																																				
So1222	,357	,395	,571**	-,621*	,726**	,636**	-,521*	n.a.	,632**	-,098	,063	,135	,098	,707**	-,015	,103	,079	,468*	,245	,077	1																																			
So2111	,030	,209	-,075	,130	,019	-,002	,207	n.a.	,104	,986**	-,045	-,143	,119	,210	,429*	,201	,100	,137	,367	,164	-,112	1																																		
So2222	-,248	-,198	,018	-,013	-,089	-,094	,106	n.a.	,241	-,288	-,207	,139	,270	-,272	-,251	-,201	-,131	-,222	-,072	-,216	,166	-,354	1																																	
So2323	-,030	-,065	-,061	-,040	-,100	-,223	,312	n.a.	,326	,215	,144	,025	,113	,019	,095	,185	,076	,285	,046	,302	,057	,263	-,638**	1																																
So2421	-,101	-,207	,072	,537*	,461*	,605**	,754**	n.a.	,361	-,139	,027	,381	,126	,490*	,217	,362	-,103	,153	-,091	,053	,314	,124	,105	,193	1																															
So2522	,322	,287	-,279	,391	,588*	,538**	,551**	n.a.	,609**	,070	-,132	,282	,046	,600**	-,027	,019	,194	-,310	,172	,062	,624**	,062	-,078	,055	,288	1																														
So2621	,368	-,343	-,389	,584*	,628*	,526**	,433*	n.a.	,744**	,001	,031	,022	,014	,506*	-,181	,305	,012	-,397*	,443*	-,087	,521*	,025	,149	-,351	,043	,383*	1																													
So2721	-,280	-,234	,257	,506*	,335	-,008	,401	n.a.	,114	-,010	,287	,239	,173	,037	,035	-,131	-,044	,160	-,071	-,090	,295	,000	,162	,007	,076	,484**	-,079	1																												
So3133	-,174	,008	-,115	,073	,049	,002	,197	n.a.	,134	,876**	-,027	-,193	,122	,236	,196	,079	,013	,067	,419	,058	-,074	,889**	-,304	,334	-,132	,045	,041	-,003	1																											
So3231	,055	,310	,390*	-,251	-,350	,516**	-,144	n.a.	,190	-,072	,158	-,067	,115	,600**	,104	,117	,031	,442*	,119	-,013	,640**	-,064	,326	-,081	,267	-,241	,244	,115	-,029	1																										
So4142	,214	,195	-,077	,056	,021	,104	,196	n.a.	,308	,416*	,188	,099	,029	,407*	,292	,180	,202	,104	,281	,122	-,226	,416*	,636**	,489**	-,201	,197	-,086	-,001	,418*	-,428*	1																									
So4343	,213	,132	,210	,249	,175	,309	,183	n.a.	,155	,309	,075	,148	-,147	,322	,334	,167	-,234	,118	,110	-,248	,101	,307	-,289	-,155	,390	-,087	,109	-,097	,220	-,087	,359	1																								
Mo3133	-,202	,293	-,038	,492	,644**	,739**	,839**	n.a.	,428	-,139	,089	,297	,031	,642**	,078	,185	,045	,054	,121	,034	-,324	,129	,181	,330	,951**	,289	,205	,044	-,119	,241	,184	,429*	1																							
Mo3737	-,274	-,387	-,078	,482	,528*	,647**	,773**	n.a.	,236	-,158	,221	,227	,097	,597**	-,036	,075	,011	,226	,084	,112	,293	,145	,058	,203	,868**	,336	,096	,062	,124	-,222	,009	,358	,942**	1																						
Mo3222	-,154	-,214	-,195	,056	,291	,405	,505*	n.a.	,291	-,275	-,307	,289	,005	,173	,069	,399	,443	,122	,081	,198	-,077	,256	,186	,152	,720**	,220	,012	,231	-,100	,078	-,327	,032	,743**	,578**	1																					
Mo3252	-,076	-,239	,114	,347	,367	,518*	,717**	n.a.	,226	-,240	,076	,426*	,076	,374*	,046	,205	-,099	-,031	-,100	-,039	-,111	-,220	,134	-,238	,904**	,200	-,020	,052	-,191	-,103	,181	,382*	,888**	,881**	,638**	1																				
Mo3411	,245	,336	-,111	,087	,028	,055	,124	n.a.	,089	,867**	-,123	-,156	,153	,102	,514*	,269	,040	,253	,265	-,321	-,122	,815**	-,201	-,026	,050	,069	,023	-,046	,650**	-,002	,307	,390*	-,075	-,143	-,219	,215	1																			

Tab.A.12: Bivariate correlations for relevant indicators 2013

	Ec11	Ec12	Ec13	Ec14	Ec42	Ec24	Ec221	Ec224	St11	St13	St24	St121	St131	St133	St221	St224	St231	St233	St411	So11	So12	So211	So222	So232	So241	So252	So261	So271	So313	So321	So412	So413	Mo313	Mo322	Mo325	Mo341																		
Ec11	1																																																					
Ec12	,910**	1																																																				
Ec13	,468*	,619**	1																																																			
Ec14	-0,35	-0,47	-0,15	1																																																		
Ec42	-0,39	,516*	-0,37	,785**	1																																																	
Ec214	-,409*	,597**	-,462*	,651**	,862**	1																																																
Ec221	-0,16	-0,38	-0,08	,655*	,801**	,844**	1																																															
Ec224	n.a	n.a	1																																																			
St111	-0,27	-0,4	,488*	,590*	,636**	,574**	,610**	n.a	1																																													
St113	n.a	n.a	n.a	1																																																		
St124	-,398*	,584**	-,476*	,688**	,899**	,915**	,624**	n.a	,435*	n.a	1																																											
St121	n.a	n.a	n.a	n.a	1																																																	
St131	n.a	n.a	n.a	n.a	n.a	1																																																
St133	n.a	n.a	n.a	n.a	n.a	n.a	1																																															
St221	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1																																														
St224	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1																																													
St231	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1																																												
St233	,561**	,626**	,441*	-0,08	-0,28	,474*	-0,2	n.a	-0,18	,527**	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1																																				
St411	,562**	,581**	,569**	0,3	,41	,32	-0,05	n.a	,0,24	,479*	n.a	n.a	n.a	n.a	n.a	n.a	n.a	,545**	1																																			
So111	-0,07	-0,04	0,2	0,14	0,06	-0,07	-0,07	n.a	-0,22	n.a	0	n.a	n.a	n.a	n.a	n.a	n.a	-0,04	,427*	1																																		
So222	0,3	0,41	,554**	,628**	,771**	,662**	,510*	n.a	,613**	n.a	,731**	n.a	n.a	n.a	n.a	n.a	n.a	,488**	,616**	0,07	1																																	
So221	0,06	0,23	-0,06	0,13	0,02	-0,01	-0,24	n.a	-0,11	n.a	,0,23	n.a	n.a	n.a	n.a	n.a	n.a	0,1	-0,01	-0,16	-0,14	1																																
So222	,408*	-0,42	-0,07	0,06	0,02	0,02	0,31	n.a	0,31	n.a	-0,11	n.a	n.a	n.a	n.a	n.a	n.a	-0,23	-0,07	-0,2	0,15	-0,33	1																															
So232	0,01	0,06	-0,03	-0,09	-0,14	-0,26	,557*	n.a	-0,39	n.a	-0,09	n.a	n.a	n.a	n.a	n.a	n.a	0,34	0,37	0,3	0,09	0,27	,592**	1																														
So241	-0,2	-0,35	0,05	,577*	,519*	,656**	,832**	n.a	,0,37	n.a	,543*	n.a	n.a	n.a	n.a	n.a	n.a	,0,18	-0,1	0,06	-0,32	-0,1	,15	-0,22	1																													
So252	-0,31	-0,3	-0,31	0,39	,584**	,541**	0,4	n.a	,585**	n.a	,590**	n.a	n.a	n.a	n.a	n.a	n.a	-0,3	,39	,0,07	,645**	,0,06	,0,02	,0,02	,0,33	1																												
So261	-0,33	,422*	,421*	,593*	,617**	,515**	,45	n.a	,714**	n.a	,472*	n.a	n.a	n.a	n.a	n.a	n.a	,456*	,461*	-0,03	,507*	,0,02	,0,22	-0,36	,0,08	,382*	1																											
So271	-0,26	-0,18	0,21	,511*	,34	0	0,25	n.a	,0,1	n.a	,0,02	n.a	n.a	n.a	n.a	n.a	n.a	-0,13	0,07	-0,09	-0,32	-0	,22	-0,01	0,1	,484**	-0,1	1																										
So313	-0,16	-0,01	-0,13	0,15	0,02	-0,02	-0,23	n.a	-0,12	n.a	,0,23	n.a	n.a	n.a	n.a	n.a	n.a	,0,03	,0,12	,0,04	-0,09	,906**	-0,23	,0,31	-0,08	,0,03	-0,02	-0,01	1																									
So321	0,01	0,19	,532**	-0,16	-0,14	,401*	0,2	n.a	-0,25	n.a	,478*	n.a	n.a	n.a	n.a	n.a	n.a	,382*	,569**	-0,08	,583**	-0,09	,0,28	-0,12	-0,04	-0,18	-0,28	,0,31	0	1																								
So412	0,07	0,09	-0,16	0,13	0,11	0,17	-0,36	n.a	-0,32	n.a	,495*	n.a	n.a	n.a	n.a	n.a	n.a	-0,14	0,42	0,1	-0,37	,458*	,606**	,499**	-0,19	,21	-0,02	0,01	,31	,391*	1																							
So413	0,29	0,24	0,27	0,18	0,13	,27	,31	n.a	-0,19	n.a	,35	n.a	n.a	n.a	n.a	n.a	n.a	,0,1	,557**	-0,23	,0,09	,0,29	-0,27	-0,19	,35	-0,11	-0,17	-0,14	,21	,0,14	,0,24	1																						
Mo313	-0,31	,466*	-0,13	0,51	,700**	,791**	,834**	n.a	,0,4	n.a	,674**	n.a	n.a	n.a	n.a	n.a	n.a	-0,16	0,04	,0,06	-0,38	-0,12	,16	-0,31	,888**	,0,35	,0,26	-0,02	-0,1	-0,03	,18	,32	1																					
Mo371	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1																										
Mo322	-0,12	-0,17	-0,21	-0,14	0,09	0,14	0,36	n.a	,0,09	n.a	,0,02	n.a	n.a	n.a	n.a	n.a	n.a	,0,05	-0,01	0,13	0,14	-0,09	0,21	-0,17	,504*	-0,01	,13	-0,32	0,02	-0,06	-0,22	-0	,524*	n.a	1																			
Mo325	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1																										
Mo341	0,28	0,38	-0,09	0,08	0,03	-0,05	-0,17	n.a	0,08	n.a	,0,15	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	1																	

Tab.A.13: Panel analyses of Model "Causes 1" explaining the effects of social, national and economic macro-indicators on "Short-term incoming youth mobility" for two clusters and total sample

Model "Causes 1"	Dependent Variable: Mo313 Short-term incoming youth mobility				
	Independent Variable	Coefficient	p-value	VIF test	Other characteristics
EU/EFTA centre-receiving countries ¹	Ec111: Youth unemployment rate	1,282	0,419	4,425	<i>R</i> ² 0,936
	Ec112: Youth not in employment, education or training (NEET)	0,135	0,727	2,365	
	Ec141: Real minimum wages	22,334	0,092	1,509	
	Ec214: GDP at market prices (EURO per capita)	-0,077	0,982	4,569	
	Ec221: Foreign direct investment - outward	-2,855	0,153	2,365	
	Ec224: Employment in foreign controlled enterprises as a share of total domestic employment	-0,488	0,020	3,245	
	St133: Pupils learning English (% of upper secondary general education)	0,022	0,899	3,689	
	St131: Foreign languages learnt per pupil	-3,041	0,613	2,587	
	St214: Expenditure on social protection per inhabitant	2,978	0,495	4,814	
	St221: Income inequality	0,373	0,876	4,257	
	St231: Poverty rate (%)	-0,161	0,888	1,336	
	So111: Human Development Index	76,515	0,046	3,201	
	So252: Annual percentage of population at mid-year residing in urban areas	-74,263	0,079	4,487	
EU/EFTA periphery-sending countries ²	Ec111: Youth unemployment rate	0,430	0,351	2,042	<i>R</i> ² 0,964
	Ec112: Youth not in employment, education or training (NEET)	0,035	0,762	4,614	
	Ec141: Real minimum wages	-3,748	0,086	3,259	
	Ec214: GDP at market prices (EURO per capita)	1,295	0,237	3,227	
	Ec221: Foreign direct investment – outward	-0,595	0,334	4,355	
	Ec224: Employment in foreign controlled enterprises as a share of total domestic employment	0,043	0,763	2,974	
	St133: Pupils learning English (% of upper secondary general education)	0,416	0,135	1,028	
	St131: Foreign languages learnt per pupil	-1,867	0,278	3,695	
	St214: Expenditure on social protection per inhabitant	-1,324	0,483	1,028	
	St221: Income inequality	3,112	0,335	3,085	
	St224: GINI index	0,781	0,741	1,082	
	St231: Poverty rate (%)	-1,685	0,336	1,423	
	So111: Human Development Index	16,512	0,426	1,634	
	So252: Annual percentage of population at mid-year residing in urban areas	-24,740	0,245	1,587	
Total ³	Ec111: Youth unemployment rate	0,338	0,322	2,818	<i>R</i> ² 0,900
	Ec112: Youth not in employment, education or training (NEET)	-0,005	0,977	3,825	
	Ec141: Real minimum wages	-1,389	0,567	3,285	
	Ec214: GDP at market prices (EURO per capita)	1,833	0,148	3,285	
	Ec221: Foreign direct investment – outward	-0,978	0,055	4,853	
	Ec224: Employment in foreign controlled enterprises as a share of total domestic employment	0,005	0,961	1,479	
	St133: Pupils learning English (% of upper secondary general education)	0,059	0,639	2,730	
	St131: Foreign languages learnt per pupil	-0,510	0,603	2,678	
	St224: GINI index	-0,089	0,648	2,044	
	St231: Poverty rate (%)	-0,003	0,973	1,911	
	So111: Human Development Index	3,961	0,809	1,768	

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 13 independent variables, 11 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 14 independent variables, 11 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 11 independent variables, 11 years

Tab.A.14: Panel analyses of Model “Causes 2” explaining the causes of all “outgoing youth mobility” for two clusters and total sample

Model “Causes 2”	Dependent Variable: Mo322 All outgoing youth mobility to EU-28/EFTA countries, one year before survey				
	Independent Variable	Coefficient	p-value	VIF test	Other characteristics
EU/EFTA centre-receiving countries ¹	Ec111: Youth unemployment rate	-0,896	0,153	1,190	R^2 0,815
	Ec112: Youth not in employment, education or training (NEET)	0,139	0,481	1,140	
	Ec141: Real minimum wages	3,826	0,444	2,430	
	Ec214: GDP at market prices (EURO per capita)	-0,102	0,951	3,765	
	St111: Adult education level (tertiary)	1,095	0,650	2,867	
	St121: Students at ISCED level 3-VOC	-1,260	0,091	2,744	
	St131: Foreign languages learnt per pupil	0,041	0,974	2,528	
	St133: Pupils learning English (% of upper secondary general education)	-0,079	0,222	1,045	
	St231: Poverty rate (%)	0,052	0,536	2,343	
	So111: Human Development Index	0,130	0,990	4,895	
	So241: Foreign population	-0,085	0,701	4,891	
	So252: Annual percentage of population at mid-year residing in urban areas	-0,892	0,924	3,598	
EU/EFTA periphery-sending countries ²	Ec111: Youth unemployment rate	-0,309	0,098	1,952	R^2 0,645
	Ec112: Youth not in employment, education or training (NEET)	0,156	0,159	1,305	
	Ec141: Real minimum wages	-1,722	0,090	1,207	
	Ec214: GDP at market prices (EURO per capita)	0,506	0,198	3,035	
	St111: Adult education level (tertiary)	1,024	0,222	1,204	
	St121: Students at ISCED level 3-VOC	0,051	0,846	1,882	
	St131: Foreign languages learnt per pupil	0,233	0,708	4,433	
	St133: Pupils learning English (% of upper secondary general education)	-0,017	0,855	4,730	
	St231: Poverty rate (%)	0,074	0,394	4,444	
	So111: Human Development Index	-10,974	0,152	2,854	
	So241: Foreign population	-0,234	0,119	1,879	
	So252: Annual percentage of population at mid-year residing in urban areas	13,254	0,047	2,578	
Total ³	Ec111: Youth unemployment rate	-0,197	0,127	2,755	R^2 0,832
	Ec112: Youth not in employment, education or training (NEET)	0,090	0,332	5,070	
	Ec141: Real minimum wages	-1,939	0,004	1,708	
	Ec214: GDP at market prices (EURO per capita)	0,130	0,668	5,049	
	St133: Pupils learning English (% of upper secondary general education)	0,011	0,781	2,272	
	St131: Foreign languages learnt per pupil	-0,490	0,136	2,346	
	St231: Poverty rate	0,032	0,489	1,865	
	So111: Human Development Index	-3,223	0,492	1,272	
	St111: Adult education level (tertiary)	2,177	<0,0001	4,545	
	St121: Students at ISCED level 3-VOC	-0,160	0,149	3,780	
	So241: Foreign population	-0,243	0,032	2,725	

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 12 independent variables, 11 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 11 independent variables, 11 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 11 independent variables, 11 years

Tab.A.15: Panel analyses of Model “Causes 3” explaining the causes of “short-term incoming student mobility” for two clusters and total sample

Model “Causes 3”	Dependent Variable Mo317 <i>Incoming student mobility</i>	Independent Variable	Coefficient	p-value	VIF test	Other characteristics
EU/EFTA centre- receiving countries ¹	Ec111: Youth unemployment rate	0,453	<0,0001	1,889	R^2 0,752	
	Ec214: GDP at market prices (EURO per capita)	1,863	<0,0001	2,286		
	St133: Pupils learning English (% of upper secondary general education)	-0,120	0,8524	1,825		
	St131: Foreign languages learnt per pupil	0,343	0,161	1,703		
	St411: Gross domestic spending on R&D	-0,002	0,443	1,974		
	St231: Poverty rate	-0,009	0,911	1,388		
EU/EFTA periphery- sending countries ²	Ec111: Youth unemployment rate	0,066	0,004	1,628	R^2 0,7699	
	Ec214: GDP at market prices (EURO per capita)	2,193	<0,0001	1,620		
	St133: Pupils learning English (% of upper secondary general education)	-0,221	0,614	2,518		
	St131: Foreign languages learnt per pupil	0,652	0,121	1,184		
	St231: Poverty rate	0,772	0,158	2,754		
	St411: Gross domestic spending on R&D	-0,520	0,168	1,546		
Total ³	Ec111: Youth unemployment rate	0,605	<0,0001	1,363	R^2 0,7133	
	Ec214: GDP at market prices (EURO per capita)	2,201	<0,0001	1,507		
	St133: Pupils learning English (% of upper secondary general education)	-0,438	0,216	1,709		
	St131: Foreign languages learnt per pupil	0,652	0,027	1,718		
	St231: Poverty rate	0,073	0,519	1,171		
	St411: Gross domestic spending on R&D	-0,102	0,371	1,589		
	So111: Human Development Index	-0,272	0,942	1,102		

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 6 independent variables, 11 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 6 independent variables, 11 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 6 independent variables, 11 years

Tab.A.16: Panel analyses of Model "Causes 4" explaining the causes of "outgoing students' mobility" for two clusters and total sample

Model "Causes 4"	Dependent Variable: Mo325 Outgoing students' mobility				
	Independent Variable	Coefficient	p-value	VIF	Other characteristics
EU/EFTA centre-receiving countries ¹	Ec111: Youth unemployment rate	0,928	0,411	1,887	R^2 0,5218
	Ec214: GDP at market prices (EURO per capita)	1,397	0,686	3,639	
	St111: Adult education level (tertiary)	-2,580	0,639	2,978	
	St131: Foreign languages learnt per pupil	0,846	0,665	1,888	
	St133: Pupils learning English (% of upper secondary general education)	0,242	0,952	1,652	
	St231: Poverty rate	0,234	0,720	1,693	
	St411: Gross domestic spending on R&D	-0,810	0,714	1,947	
	So111: Human Development Index	16,83	0,262	1,812	
EU/EFTA periphery-sending countries ²	Ec111: Youth unemployment rate	-0,126	0,327	1,631	R^2 0,986
	Ec214: GDP at market prices (EURO per capita)	0,384	0,108	1,713	
	St111: Adult education level (tertiary)	0,677	0,109	4,586	
	St131: Foreign languages learnt per pupil	-0,265	0,357	2,576	
	St133: Pupils learning English (% of upper secondary general education)	0,078	0,704	3,371	
	St231: Poverty rate	0,024	0,935	4,325	
	St411: Gross domestic spending on R&D	0,476	0,024	3,006	
	So111: Human Development Index	-8,646	0,048	1,202	
Total ³	Ec111: Youth unemployment rate	0,113	0,527	1,377	R^2 0,9744
	Ec214: GDP at market prices (EURO per capita)	0,427	0,215	2,151	
	St111: Adult education level (tertiary)	0,187	0,763	2,132	
	St131: Foreign languages learnt per pupil	0,0342	0,922	1,482	
	St133: Pupils learning English (% of upper secondary general education)	0,134	0,675	1,346	
	St231: Poverty rate	-0,069	0,798	1,420	
	St411: Gross domestic spending on R&D	0,094	0,722	1,598	
	So111: Human Development Index	1,455	0,764	1,116	

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 7 independent variables, 11 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 7 independent variables, 11 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 7 independent variables, 11 years

Tab.A.17: Panel analyses of Model "Effects 1" explaining the effects of incoming mobility and other controlled indicators on "Youth unemployment rate" for two clusters and total sample

Model "Effects 1"	Dependent Variable: Ec111 Youth unemployment rate				
	Independent Variable	Coefficient	p-value	VIF test	Other characteristics
EU/EFTA centre-receiving countries ¹	Mo313: Short-term incoming youth mobility	-0,111	0,004	3,532	R^2 0,936
	Ec214: GDP at market prices (EURO per capita)	-2,138	<0,0001	2,644	
	Ec221: Foreign direct investment - outward	-0,028	0,277	4,111	
	Ec141: Real minimum wages	1,558	0,148	1,299	
	So252: Urban population	-0,006	0,861	1,666	
	St111: Adult education level (tertiary)	2,283	<0,0001	2,268	
EU/EFTA periphery-sending countries ²	Mo313: Short-term incoming youth mobility	-0,090	0,112	4,292	R^2 0,709
	Ec214: GDP at market prices (EURO per capita)	-0,255	0,219	4,107	
	Ec221: Foreign direct investment - outward	-0,245	0,027	2,058	
	Ec141: Real minimum wages	-0,030	0,951	2,910	
	So241: Urban population	0,044	0,588	3,043	
	St111: Adult education level (tertiary)	1,865	<0,0001	4,308	
Total ³	Mo313: Short-term incoming youth mobility	-0,121	0,009	1,970	R^2 0,923
	Ec214: GDP at market prices (EURO per capita)	-1,890	<0,0001	2,591	
	Ec221: Foreign direct investment - outward	-0,023	0,504	5,052	
	Ec141: Real minimum wages	0,773	0,005	1,483	
	So241: Urban population	0,513	0,001	2,700	
	St111: Adult education level (tertiary)	2,155	<0,0001	3,329	

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 6 independent variables, 11 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 6 independent variables, 11 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 6 independent variables, 11 years

Tab.A.18: Panel analyses of Model "Effects 2" explaining the effects of incoming mobility and other controlled indicators on "GDP at market prices" for two clusters and total sample

Model 1.2	Dependent Variable Ec214 GDP at market prices (EURO per capita)				
	Independent Variable	Coefficient	p-value	VIF test	Other characteristics
EU/EFTA centre-receiving countries ¹	Mo313: Short-term incoming youth mobility	0,001	0,952	1,547	R^2 0,951
	Ec221: Foreign direct investment - outward	-0,276	<0,0001	1,771	
	Ec224: Employment in foreign controlled enterprises	0,005	0,747	1,416	
	So111: Human Development Index	0,718	0,711	1,697	
	St111: Adult education level (tertiary)	0,868	0,009	1,672	
EU/EFTA periphery-sending countries ²	Mo313: Short-term incoming youth mobility	0,036	0,324	1,849	R^2 0,990
	Ec221: Foreign direct investment - outward	-0,047	0,674	4,193	
	Ec224: Employment in foreign controlled enterprises	-0,019	0,427	4,044	
	St111: Adult education level (tertiary)	0,351	0,249	3,503	
	So111: Human Development Index	0,401	0,896	3,534	
Total ³	Mo313: Short-term incoming youth mobility	0,051	0,034	1,566	R^2 0,996
	Ec221: Foreign direct investment - outward	-0,179	0,001	4,574	
	Ec224: Employment in foreign controlled enterprises	-0,014	0,876	1,820	
	So111: Human Development Index	-0,521	0,775	1,377	
	St111: Adult education level (tertiary)	0,602	0,003	3,975	

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 5 independent variables, 11 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 5 independent variables, 11 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 5 independent variables, 11 years

Tab.A.19: Panel analysis of Model "Effects 3" explaining the effects of incoming mobility and other controlled indicators on "Ratio of young people in total population" for 2 clusters and total sample

Model "Effects 3"	Dependent Variable: So222 Ratio of young people in the total population				
	Independent Variables	Coefficient	p-value	VIF test	Other characteristics
EU/EFTA centre-receiving countries ¹	So321: Infant mortality rate	-0,022	<0,0001	1,173	R^2 0,621
	So261: Fertility rate	0,351	<0,0001	1,015	
	Mo313: Short-term incoming youth mobility	0,040	<0,0001	1,177	
EU/EFTA periphery-sending countries ²	So321: Infant mortality rate	0,198	<0,0001	1,507	R^2 0,498
	So261: Fertility rate	0,192	<0,0001	1,323	
	Mo313: Short-term incoming youth mobility	-0,019	<0,0001	1,162	
Total ³	So321: Infant mortality rate	0,183	<0,0001	1,113	R^2 0,253
	So261: Fertility rate	0,113	<0,0001	1,261	
	Mo313: Short-term incoming youth mobility	-0,011	<0,0001	1,164	

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 3 independent variables, 10 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 3 independent variables, 10 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 3 independent variables, 10 years

Tab.A.20: Panel analysis of Model "Effects 4" explaining the effects of incoming mobility and other controlled indicators on "Ratio of foreign population in total population" for two clusters and total sample

Model "Effects 4"	Dependent Variable: So241 Ratio of foreign population in the total population				
	Independent Variables	Coefficient	p-value	VIF test	Other characteristics
EU/EFTA centre-receiving countries ¹	So111: Human Development Index	1,574	<0,0001	1,012	R^2 0,712
	So122: Overgrowing rate	0,104	<0,0001	1,123	
	So271: Population density	0,052	<0,0001	1,167	
	Mo313: Short-term incoming youth mobility	0,275	<0,0001	1,062	
EU/EFTA periphery-sending countries ²	So111: Human Development Index	4,147	<0,0001	1,749	R^2 0,823
	So122: Overgrowing rate	-0,716	<0,0001	3,559	
	So271: Population density	-1,412	<0,0001	1,921	
	Mo313: Short-term incoming youth mobility	0,370	<0,0001	2,478	
Total ³	So111: Human Development Index	1,300	<0,0001	1,063	R^2 0,658
	So122: Overgrowing rate	-0,139	<0,0001	1,521	
	So271: Population density	-0,069	<0,0001	1,048	
	Mo313: Short-term incoming youth mobility	0,440	<0,0001	1,504	

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 4 independent variables, 10 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 4 independent variables, 10 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 4 independent variables, 10 years

Tab.A.21: Panel analysis of Model "Effects 5" explaining the effects of incoming mobility and other controlled indicators on "Students' ratio" for two clusters and total sample

Model "Effects 5"	Dependent Variable: St113/So211 Ratio of students in the total population				
	Independent Variables	Coefficient	p-value	VIF test	Other characteristics
EU/EFTA centre-receiving countries ¹	So222: Ratio of young people in total population	0,254	<0,0001	1,542	R² 0,594
	So321: Infant mortality rate	-0,505	<0,0001	1,324	
	St111: Adult education level (tertiary)	0,294	<0,0001	1,770	
	St233: At-risk-of-poverty rate	0,041	<0,0001	1,438	
	Mo317: Ratio of incoming students	-0,016	<0,0001	1,395	
EU/EFTA periphery-sending countries ²	So222: Ratio of young people in total population	0,652	<0,0001	3,372	R² 0,413
	So321: Infant mortality rate	-0,072	<0,0001	2,548	
	St111: Adult education level (tertiary)	0,325	<0,0001	1,525	
	St233: At-risk-of-poverty rate	0,053	<0,0001	2,830	
	Mo317: Ratio of incoming students	-0,040	<0,0001	2,316	
Total ³	So222: Ratio of young people in total population	0,572	<0,0001	1,615	R² 0,395
	So321: Infant mortality rate	-0,134	<0,0001	1,563	
	St111: Adult education level (tertiary)	0,226	<0,0001	1,197	
	St233: A- risk-of-poverty rate	-0,046	<0,0001	1,352	
	Mo317: Ratio of incoming students	-0,134	<0,0001	1,600	

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 5 independent variables, 10 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 5 independent variables, 10 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 5 independent variables, 10 years

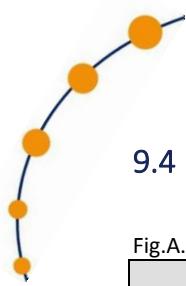
Tab.A.22: Panel analysis of Model "Effects 6" explaining the effects of incoming mobility and other controlled indicators on "Expenditure on pensions (as % of GDP)" for two clusters and total sample

Model "Effects 6"	Dependent Variable: So412 Expenditure on pensions (as % of GDP)				
	Independent Variables	Coefficient	p-value	VIF test	Other characteristics
EU/EFTA centre- receiving countries ¹	So111: Human Development Index	0,831	<0,0001	1,902	R² 0,854
	So313: Hospital beds	-0,054	<0,0001	4,288	
	So321: Infant mortality rate	0,612	<0,0001	3,034	
	St214: Expenditure on social protection per in-habitant	1,550	<0,0001	2,259	
	St224: GINI index	0,034	<0,0001	3,105	
	Ec132: Inactive population	0,260	<0,0001	2,742	
	Ec142: Average wage	-1,439	<0,0001	6,077	
EU/EFTA periphery- sending countries ²	Mo341/So211: International emigration (ratio of total population)	-0,126	<0,0001	3,544	R² 0,825
	So111: Human Development Index	-3,583	<0,0001	2,879	
	So313: Hospital beds	-0,061	<0,0001	2,239	
	So321: Infant mortality rate	-0,261	<0,0001	5,222	
	St214: Expenditure on social protection per in-habitant	0,781	<0,0001	6,398	
	St224: GINI index	1,109	<0,0001	1,636	
	Ec132: Inactive population	1,710	<0,0001	3,522	
Total ³	Ec142: Average wage	-0,858	<0,0001	8,058	R² 0,496
	Mo341/So211: International emigration (ratio of total population)	0,068	<0,0001	2,939	
	So111: Human Development Index	0,208	<0,0001	1,144	
	So313: Hospital beds	0,067	<0,0001	1,526	
	So321: Infant mortality rate	-0,063	<0,0001	2,051	
	St214: Expenditure on social protection per in-habitant	0,628	<0,0001	10,803	
	St224: GINI index	0,343	<0,0001	1,296	

¹ Fixed-effects, 11 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK), 8 independent variables, 10 years

² Fixed-effects, 15 countries (HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI), 8 independent variables, 10 years

³ Fixed-effects, 30 countries (DE, AT, BE, DK, FI, FR, IE, IT, NL, SE, UK, HU, RO, ES, BG, HR, CZ, EE, EL, LV, LT, MT, PL, PT, SK, SI, LU, NO, CH, IS), 8 independent variables, 10 years



9.4 Mobility indicators for typology (chapter 8)

Fig.A.23 Youth mobility indicators for 31 EU/EFTA countries with median and rating as basis for mobility typology (for description of indicators see chapter 3 and Tab.9.3)

	Incoming students' mobility (Mo317,%)					Outgoing students' mobility (Mo325,%)					Finished outgoing/returning mobility (Mo322, ratio/1.000)					Short-term incoming you mobility (Mo313, ratio/1.000)					Long-term incoming youth mobility (Mo314, ratio/1.000)							
	2009	2010	2011	2012	rating	2009	2010	2011	2012	rating	2009	2010	2011	2012	2013	rating	2009	2010	2011	2012	2013	rating	2009	2010	2011	2012	2013	rating
Median	2,44	2,72	2,73	2,91		3,16	3,59	3,37	4,45		1,30	1,15	1,00	1,10	1,20		4,35	3,50	4,10	4,00	3,25		7,50	7,30	9,70	10,60	11,30	
AT	14,37	14,88	15,01	15,72	+	3,76	3,63	1,38	4,04	o-	1,70	0,80	1,10	1,30	1,20	o+	18,50	16,50	19,50	22,30	25,80	+	34,40	36,40	37,00	37,80	38,30	+
BE	7,29	7,88	7,44	7,91	+	2,26	2,31	2,21	2,47	-	0,70	0,40	0,50	0,70	0,60	-	17,80	18,90	20,40	21,40	21,70	+	18,30	21,10	23,60	25,30	26,20	+
BG	2,70	2,72	2,73	2,95	o	8,39	8,50	6,31	9,54	+	n.a.	1,20	1,30	2,70	0,80	o+	0,00	0,00	0,00	0,00	n.a.	-	0,00	n.a.	n.a.	0,00	0,00	-
CH	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0,70	0,90	0,50	0,90	0,90	-	41,70	250,8	47,20	45,30	48,10	+	57,70	52,10	59,80	62,10	61,50	+
CY	5,16	5,90	7,79	9,75	+	83,87	79,81	80,37	80,19	+	28,40	28,10	26,80	21,30	20,80	+	55,60	66,20	66,10	64,60	36,00	+	51,70	59,80	75,60	80,80	76,90	+
CZ	5,54	5,92	7,79	6,47	+	2,62	2,77	2,40	2,95	-	2,60	1,80	2,30	1,40	2,20	+	3,30	2,40	1,80	2,10	n.a.	-	7,10	6,60	6,40	5,70	5,80	-
DE	4,63	4,55	n.a.	4,12	+	3,32	3,59	3,63	3,65	o+	1,70	1,10	2,20	2,00	1,50	+	8,10	5,20	7,40	12,40	15,40	+	14,80	18,60	17,20	16,40	16,40	+
DK	6,44	7,32	8,11	8,55	+	2,30	2,29	2,20	2,15	-	3,90	3,70	4,40	4,50	3,30	+	11,00	15,10	17,40	22,10	25,90	+	11,20	10,00	14,20	16,40	18,50	+
EE	1,32	1,16	1,30	1,63	-	5,26	5,65	5,35	6,95	+	n.a.	6,00	2,50	3,60	1,90	+	n.a.	0,90	n.a.	n.a.	0,90	-	n.a.	1,60	1,50	n.a.	2,50	-
EL	n.a.	2,38	2,35	2,28	o-	n.a.	5,22	4,43	5,76	+	0,50	0,60	0,40	n.a.	n.a.	-	9,60	5,80	4,90	4,90	3,90	+	10,40	10,40	11,60	8,70	11,20	o-
ES	1,28	1,47	1,58	1,55	-	1,24	1,27	1,07	1,51	-	1,90	0,70	1,30	1,10	0,80	o	8,90	8,10	4,50	6,70	3,20	o+	38,10	41,00	46,40	37,20	41,60	+
FI	1,21	1,25	1,33	1,46	-	2,80	2,83	2,56	2,95	-	0,00	0,00	0,00	0,00	0,00	-	n.a.	0,80	1,20	2,50	1,30	-	2,20	3,30	4,00	3,30	3,90	-
FR	2,06	2,06	2,16	2,19	o-	2,19	2,27	2,03	2,40	-	2,70	2,60	2,40	2,00	3,10	+	3,90	2,80	3,70	4,20	3,80	o+	7,60	9,10	10,10	10,30	9,70	o
HR	0,14	0,13	0,13	0,19	-	6,83	6,47	3,38	6,36	+	1,10	1,40	1,00	n.a.	1,40	+	0,00	0,00	0,00	0,40	0,00	-	0,00	0,00	0,00	0,00	0,00	-
HU	2,67	2,83	2,91	3,18	o+	2,06	2,31	1,89	2,55	-	0,60	0,80	n.a.	0,50	1,80	o-	2,30	2,00	1,60	0,90	1,00	-	3,80	3,00	4,10	3,20	2,60	-
IE	2,68	5,31	4,99	6,59	+	13,03	12,73	12,68	13,14	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	86,50	55,20	34,60	30,40	28,40	+	59,30	77,80	81,90	86,30	78,80	+
IS	4,14	4,42	4,79	4,71	+	23,08	19,89	18,62	18,85	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
IT	0,93	0,85	0,98	1,03	-	2,05	2,35	2,09	2,83	-	n.a.	0,20	0,10	0,10	0,10	-	6,20	5,80	4,50	4,10	3,30	o	23,20	27,00	30,60	31,60	32,20	+
LT	0,19	0,15	0,16	0,23	-	4,18	5,21	6,09	8,85	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	
LU	n.a.	n.a.	42,59	40,98	+	n.a.	n.a.	83,33	127,9	+	n.a.	n.a.	3,80	6,00	3,40	+	n.a.	n.a.	93,90	101,4	89,80	+	n.a.	n.a.	197,2	182,4	196,3	+
LV	0,56	0,62	0,87	1,55	-	3,35	4,71	5,29	7,53	+	1,50	3,90	5,30	3,80	6,20	+	0,00	0,00	0,00	n.a.	n.a.	-	0,00	n.a.	0,70	n.a.	n.a.	-
MT	1,92	n.a.	1,74	2,46	-	11,54	12,04	12,17	11,48	+	0,00	0,00	0,00	n.a.	0,00	-	1,10	2,30	0,90	2,10	3,10	-	3,80	3,50	2,90	5,10	5,30	-
NL	5,13	5,53	5,35	5,59	+	2,36	2,46	1,97	2,39	-	0,00	0,00	n.a.	0,00	0,00	-	4,80	4,10	3,70	2,40	3,10	o-	8,80	9,50	9,70	10,90	11,40	o
NO	2,69	2,71	2,83	2,98	o	5,20	5,43	5,57	6,09	+	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	7,60	15,20	18,10	19,90	22,60	+	7,20	5,00	9,70	13,80	20,60	o+
PL	0,26	0,25	0,37	0,43	-	2,00	2,06	1,54	2,17	-	2,40	1,50	1,20	1,10	1,50	+	0,10	0,20	0,10	n.a.	0,20	-	0,10	0,10	0,10	0,20	0,30	-
PT	0,78	0,99	1,24	2,36	-	4,40	4,64	4,29	4,87	+	2,20	2,30	1,30	1,50	1,60	+	1,90	2,90	2,00	0,80	1,60	-	7,70	4,80	3,20	4,30	4,10	-
RO	0,28	0,39	0,55	0,78	-	2,30	2,88	3,37	5,32	-o+	3,70	2,00	0,90	1,30	0,90	o	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0,10	0,10	0,10	-
SE	2,82	2,81	2,80	2,91	o+	3,01	2,99	3,00	3,35	o-	1,00	0,00	0,00	n.a.	n.a.	-	6,90	5,50	7,70	6,10	7,80	+	7,40	8,00	8,00	11,00	11,60	o
SI	1,14	1,22	1,31	1,63	-	2,27	2,26	2,05	2,60	-	0,80	0,80	0,50	0,30	0,10	-	n.a.	0,50	0,70	0,90	1,10	-	1,40	1,80	0,60	1,00	0,80	-
SK	2,21	3,03	3,45	3,71	+	12,51	13,77	14,80	16,00	+	1,00	0,90	0,50	0,90	1,10	o-	0,80	0,70	n.a.	0,00	0,80	-	n.a.	0,30	0,20	0,30	n.a.	-
UK	7,25	7,52	7,84	8,24	+	0,49	0,58	0,53	0,70	-	1,30	2,30	0,40	0,60	1,30	+	27,80	26,80	24,80	23,00	26,00	+	25,60	28,10	33,80	30,70	32,90	+



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