


How did the Youth Labour Market Situation Evolve between 2012 and 2013?

Second Release of the KOF Youth Labour Market Index

Report

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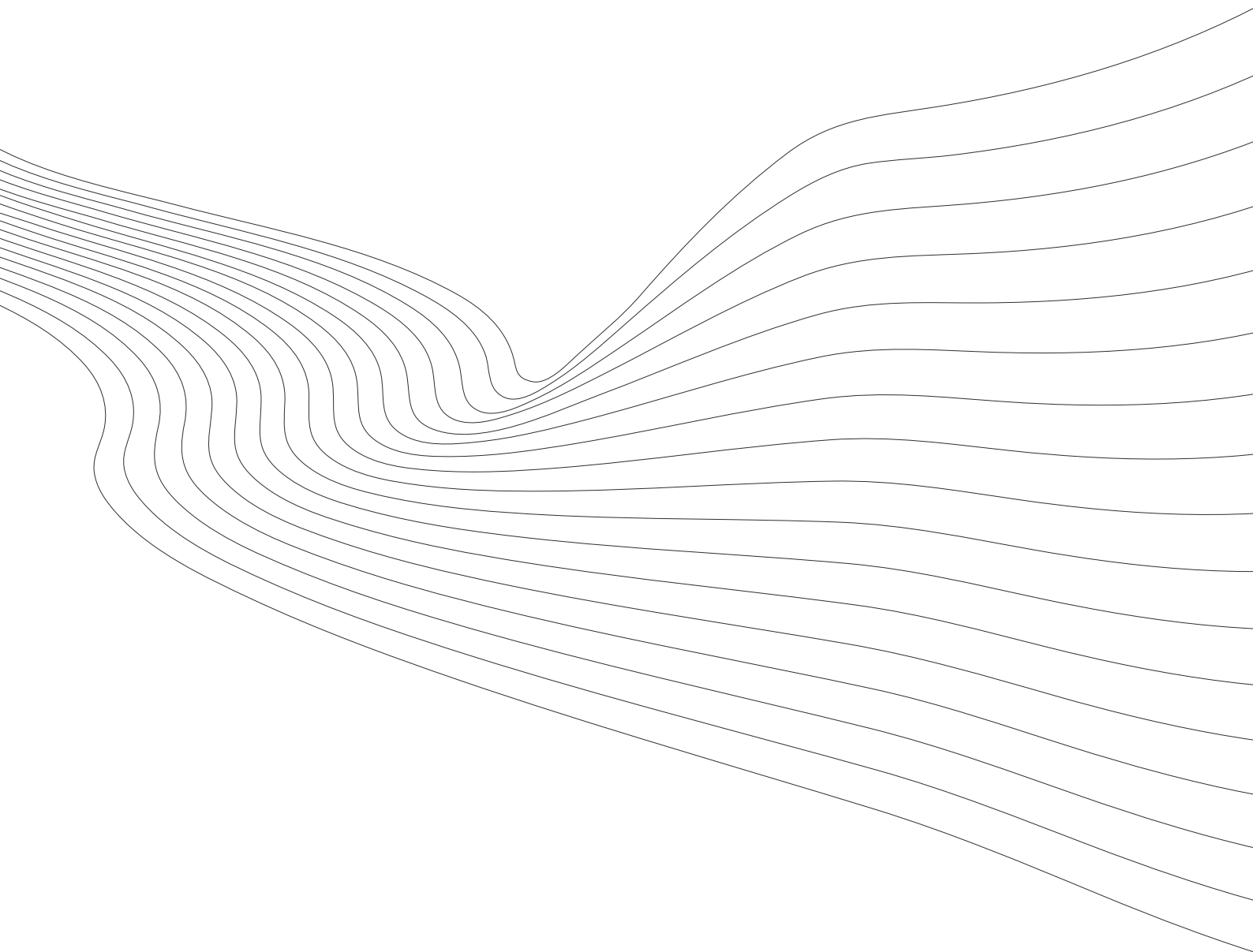
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How did the Youth Labour Market Situation Evolve between 2012 and 2013?

Second Release of the KOF Youth Labour Market Index[†]

October 15, 2015

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1 Introduction

The KOF Youth Labour Market Index (hereafter abbreviated KOF YLMI) is a multidimensional tool that allows comparisons of the youth situation on the labour market across countries and over time. This second release follows the first version launched in September 2014. The media attention received by the first release and the recognition of the tool’s relevance from international institutions has encouraged us at the KOF Research Division on Education Systems to develop this second release of the index, presented in this manual.

Since there were no particular remarks on the conceptual composition of the index, the structure of the index has not changed. The basic idea is as follows: 12 indicators — subdivided in four categories — cover up to 178 countries for the time period from 1991-2013. Crucial aspects of the index, such as the weighting process, remain unaffected in this second release. With respect to indicators’ definitions, we altered only the definition of *Involuntary Part-time Worker Rate*. The OECD shifted the definition of part-time working hours from an international threshold of 35 hours per week to the national definitions, and we do the same. The definition of all other indicators is unchanged. Data sources for four indicators were partially modified. To increase data coverage, we meticulously compared datasets of different institutions and, when common values were almost identical, we merged them. This guarantees the best comparability with the first release. We are grateful for the help and technical support offered by these international institutions, which include the International Labour Organization, the Organisation for Economic Co-operation and Development, Eurostat, and the Swiss Federal Statistic Offices; and we thank them for providing data.

One of the main criticism of the first release was the excessive attention it put on developed countries, with information about developing economies rather limited. Even though we were able to slightly enhance the number of covered countries, this second release still mainly focuses on developed economies. Unfortunately, data availability for developing countries is scarce and limited in its actual applications. In the future, some aspects of the KOF YLMI like the way it accounts for working conditions might be reconsidered or adapted when data start to be accessible. Culture-bound comparisons and deepening discussions will be topics of future releases of the index. Nevertheless, the KOF YLMI represents a useful tool for comparisons across countries.

This report mainly focuses on data availability and on the calculation process of the index. In particular, the manual is aimed at users interested in detailed definitions of the indicators and in the possibility of checking the country-specific data sources. Please see the KOF study *On the multiple dimension of the KOF Youth Labour Market* (Renold et al., 2014) for arguments about the indicator’s selection process and its interpretation possibilities. Users can access the data through the interactive web application available at <http://kof.ethz.ch/en/indicators/ylm-index/>. The tool allows users to look at the youth labour market situation across both time and countries. Graphs and detailed scoreboard are free to access. Users can make their own custom selections and download the graphs they generate.

The rest of the report is organised in the following way. Section 2 recalls the definition and

collection methods of the 12 indicators and illustrates the improvements in data availability in this second release. Section 3 presents the evolution of the index and its components for the year 2013 for a selection of countries. Furthermore, this section reports descriptive analyses for some selected countries. These examples show the potential of the tool in the future and demonstrate how graphs should be interpreted. Section 4 concludes and briefly suggests future areas of work.

2 Indicator Definition and Data Availability

This section presents definitions and data sources for each indicator included in the index. The only major change to the indicators in this second release is that we adapted the definition of the *Involuntary Part-time Worker Rate*. The OECD shifted the definition of part-time from an international threshold of 35 hours per week to the national definitions, and so do we. In addition, we modify the data sources for four indicators in order to enlarge countries' coverage. We guarantee complete comparability with the previous release.

Table 1 shows that the data used to build the scoreboard and the KOF YLMI are essentially taken from three international institutions: the International Labour Organisation¹ (ILO), the Organisation for Economic Co-operation and Development (OECD), and Eurostat. In some cases these values are completed by data from national institutions such as the Swiss Federal Statistical Office (SFSO). However, the data provided by those institutions are not always exactly the same due to different calculation methods or rounding processes. In the first release of the index we decided not to mix the data from diverse sources inside the same indicator. In that release, data about unemployment rates were only taken from the ILO and not the result of a matching process between data sets. In cases where several data sources for an indicator existed, we choose the one with the larger data set with more countries or a longer time series. In this second release, moved by the intention to increase geographical coverage, we act differently. We meticulously compared datasets of different institutions and, when common values were almost identical, we merged the data. This was the case for the indicators *NEET Rate* and *Incidence of Long-Term Unemployment Rate*.

Our approach to age restriction is the same as the one adopted in the first release. The reference age is 15 to 24 years. However, since this age range is sometimes suboptimal, we allowed some exceptions. Concretely, the indicator *Vulnerable Employment Rate* refers to the total working population, while the age range is 15-29 for the *Skills Mismatch Rate*. The first

Indicator	Source	Time coverage	No. of countries
Unemployment Rate	ILO	1991 - 2013	up to 178
Relaxed Unemployment Rate	Eurostat	2005 - 2013	up to 33
NEET Rate	ILO & Eurostat	1997 - 2013	up to 42
Temporary Worker Rate	Eurostat	1991 - 2013	up to 32
Involuntary Part-Time Workers Rate	OECD & SFSO	1991 - 2013	up to 41
Atypical Working Hours Rate	Eurostat	1992 - 2013	up to 33
In Work at Risk of Poverty Rate	Eurostat	2004 - 2013	up tp 34
Vulnerable Employment Rate	ILO	1991 - 2013	up to 154
Formal Education and Training Rate	Eurostat & SFSO	1996 - 2013	up to 33
Skills Mismatch Rate	ILO	2001 - 2013	up to 48
Relative Unemployment Ratio	ILO	1991 - 2013	up to 178
Long-Term Unemployment Rate	ILO & OECD	1991 - 2013	up to 53

Table 1: Summary of data availability

¹Data are taken from the website of Ilostat as well as from Key Indicators of the Labour Market, a further data collection of the ILO.

exception is motivated by the impossibility of finding values for the 15 to 24 age range, while the second exception avoids extreme results due to small sample size of youth under 24 who have already finished tertiary education².

As explained in the first release, the indicators display relative values (shares or ratios) to enable comparisons across countries with different population sizes. Crucial aspects of the index, such as indicator definitions and the weighting process are unaffected in the second release. Please see Renold et al. (2014) for arguments about the indicator selection process and interpretation possibilities.

In the following, we briefly review the definition of each indicator and describe any modifications to data sources. Please see Appendix A for a summary of data sources. Methodical limitations for all indicators remain unchanged in the second release. The indicators are grouped by category.

2.1 Activity State

The category *Activity State* describes the extent to which young people participate in the labour market. It entails the widely used indicator *Unemployment Rate* as well as *Relaxed Unemployment Rate* and *NEET Rate*. These three indicators characterise in different ways the extent to which youth operate on the labour market.

2.1.1 Unemployment Rate

According to the ILO (2013), the unemployment rate of a country is a measure for its use of its disposable labour supply. The definition we use for youth *Unemployment Rate* is the following:

$$\mathbf{Unemployment\ Rate} = \frac{\mathbf{Unemployed}}{\mathbf{Labour\ force}} * 100$$

where the denominator is calculated as:

$$\mathbf{Labour\ Force} = \mathbf{Employed} + \mathbf{Unemployed}$$

In the second release we again use the ILO as the data source for this indicator. The data for 2013 cover all 178 countries considered previously. There are no particular changes to this indicator; the only alteration is that the values for 2013 are added.

2.1.2 Relaxed Unemployment Rate

The *Relaxed Unemployment Rate* expands the definition of the *Unemployment Rate* to encompasses the so-called discouraged worker rate. These are people who are considered inactive because they are not actively seeking work, but who are actually available for work at the time. In accordance to Elder (2009) and Puerto et al. (2011) the *Relaxed Unemployment Rate* is defined as:

²See Renold et al. (2014) for a detailed argumentation supporting this relaxation.

$$\text{Relaxed Unemployment Rate} = \frac{\text{Unemployed} + \text{Discouraged workers}}{\text{Labour force}} * 100$$

The number of countries with values available remains constant in the second release. Up to 33 countries provide values from 2005 to 2013. As in the first version, the repository is Eurostat.

2.1.3 NEET Rate

The Rate of Young People Neither in Employment nor in Education and Training, abbreviated as *NEET Rate*, completes the *Activity State* category by describing the issue of youth inactivity. The indicator is defined as:

$$\text{NEET Rate} = \frac{\text{Youth Neither in Employment nor in Education and Training}}{\text{Young Population}} * 100$$

The data source in the first release was Table 10c of the Key Indicators of the Labour Market (KILM), a data collection provided by the ILO. Unfortunately, values for NEET have not been updated since then. Therefore, we looked at other repositories. The data source reported in the KILM was primarily Eurostat, while a few countries indicated the ILO as the origin of their data. In order to be as conservative as possible, we looked at the original sources country by country. Because of the mostly identical values for the common shared observations, we decided to merge the Eurostat dataset with the one provided by Ilostat³. This merging allows to double the available countries in the KOF YLMI. The number of countries with data about NEET Rates soars from 41 to 79. Furthermore, the total number of observations increases by two thirds from 342 to 570 for the time period 1998-2013.

2.2 Working Conditions

The *Working Conditions* category relates to the quality of labour. It complements the preceding category by describing the context in which work takes place. For example, large share of a country's cohort may be active, but mainly in an environment dominated by informal work arrangements and characterised by precarious and poorly paid conditions. Should we not prefer a situation in which only a relatively small share of youth is employed but work in favourable situations? These kinds of questions can be answered by the indicators *Temporary Worker Rate*, *Involuntary Part-Time Workers Rate*, *Atypical Working Hours Rate*, *In Work at Risk of Poverty Rate*, and *Vulnerable Employment Rate*.

³See appendix for detailed information about data sources.

2.2.1 Temporary Worker Rate

The *Temporary Worker Rate* is calculated by dividing all employees with contracts shorter than 18 months by the total number of employees:

$$\text{Temporary Contract Workers Rate} = \frac{\text{Employees with a contract} < 18 \text{ m}}{\text{Total number of employees}} * 100$$

The reason for including only workers with contracts shorter than 18 months is to exclude apprentices from the group of workers under this condition. See Renold et al. (2014) for a detailed explanation about this restriction.

In the second release, the data source for this indicator is Eurostat again, since no other international institution provides data disaggregated by the length of the contract. The data set for this release is enlarged by 2013 values for 32 European countries.

2.2.2 Involuntary Part-Time Workers Rate

Another dimension that describes the quality of work is the possibility of finding a full-time job. The indicator *Involuntary Part-Time Workers Rate* describes this facet by highlighting its negative component. It is defined as the number of involuntary part-time employees in proportion to total employees.

$$\text{Involuntary Part-Time Workers Rate} = \frac{\text{Involuntary part time employment}}{\text{Total employment}} * 100$$

In 2015, the OECD backward-revised its definition of *incidence of involuntary part-time*. It now considers the national definitions⁴ of part-time instead of its previous fixed threshold of 35 hours per week. The motivation is that threshold definitions like the one previously used undermine the extent of underemployment in countries with varying legal and contractual provisions defining part-time. Data availability is assured for 40 countries — two more than in the first release — by the OECD. In addition, the Swiss Federal Statistical Office provided compatible values for Switzerland for the time periods 2004-2006 and 2010-2013.

2.2.3 Atypical Working Hours Rate

This indicator is calculated on the basis of the Eurostat (2009) definition of *atypical working hours*. The definition includes people working shifts, in the evening, at night, on Saturday, or on Sunday. As discussed in the manual of the first release, we consider neither working in the evening nor on Saturday as atypical times. The reasons are to allow for full-time students to combine work and education, and to account for the now-common tendency to work on Saturday. The *Atypical Working Hours Rate* is hence defined as:

$$\text{A.W.H. Rate} = \left(\frac{\text{Working on Sunday}}{\text{Tot. employees}} + \frac{\text{Working at night}}{\text{Tot. employees}} + \frac{\text{Working shift}}{\text{Tot. employees}} \right) * \frac{1}{3} * 100$$

⁴See http://www.oecd.org/els/emp/LFSNOTES_SOURCES.pdf for detailed information about national thresholds.

In the second release of the KOF YLMI we keep Eurostat as repository. We enhanced the number of observations by adding the 2013 values for 31 countries.

2.2.4 In Work at Risk of Poverty Rate

The *In Work at Risk of Poverty Rate* is the fourth dimension describing work quality. According to Eurostat (2013), the indicator classifies as *in-work-at-risk-of-poverty* young people earning less than 60% of the national median equalised disposable income:

$$\text{In Work at Risk of Poverty Rate} = \frac{\text{In work at risk of poverty employees}}{\text{Total number of employees}} * 100$$

The number of countries with available data for this indicator is slightly increased in the second release. Now up to 34 countries dispose have values through 2013, up from 32 in the first release.

2.2.5 Vulnerable Employment Rate

According to the ILO (2011, 2013) self-employed and unpaid family workers are the categories of workers most vulnerable on the market. This last indicator of the *Working Conditions* category describes how large the share of employment is in these two status conditions. *Vulnerable Employment Rate* is calculated as:

$$\text{Vulnerable Employment Rate} = \frac{\text{Own account workers} + \text{Unpaid family workers}}{\text{Total employment}} * 100$$

We improved data availability in this second release for both the number of countries — raised from 145 to 154 — and the absolute number of observations — increased from 1601 up to 1779. The repository for this indicator is still Table 3 of the KILM.

2.3 Education

The third category of the KOF YLMI is *Education*. It considers the significant aspects of an education system such as the school attendance rate — without penalising countries with widespread dual apprenticeship system — and the extent to which the skills acquired at school match the labour market demand for skills. This category hence describes the levels of qualification acquired by youth and how these relate with the requirements of labour demand.

2.3.1 Formal Education and Training Rate

Education provides young people with a chance to further increase their skills and, later on, their chances to get a good job. Education can be subdivided in three types: formal, non-formal and informal. In the KOF YLMI we only consider formal education, the reason being that this education is intentional, has a defined structure, and offers certificates spendable on the labour market. The indicator *Formal Education and Training Rate* accounts for this, including youth enrolled in dual training programmes. The rate of people in formal education and training is

hence calculated as:

$$\text{Formal Education and Training Rate} = \frac{\text{Particip. in formal edu. \& training}}{\text{Young Population}} * 100$$

The repository for this indicator is again Eurostat. The majority of labour force surveys conducted by European national statistical offices started to distinguish between formal and non-formal education only in 2003 or 2004. In contrast, the Swiss Federal Statistical Office began differentiating in 1996. In order to maximise data coverage, the second release of the KOF YLMI includes data for Switzerland since 1996 and for all other European countries since 2003 or 2004.

2.3.2 Skills Mismatch Rate

The indicator *Skills Mismatch* describes the disequilibrium between the skills acquired through schooling and the ones required on the labour market. As the concept of skills is multi-dimensional, direct measurements of their mismatch do not exist. There are however different proxies for it. See ILO (2014) for part of the broader discussion about this topic. The definition adopted in the KOF YLMI refers to the ILO (2013). Discrepancies between skills offered and required are calculated according to the following index of dissimilarity:

$$\text{Skills Mismatch Rate} = \frac{1}{2} * \sum_{k=1}^3 \left| \left(\frac{\text{Emp. with edu. } k}{\text{Total emp.}} - \frac{\text{Unemp. with edu. } k}{\text{Total unemp.}} \right) \right|$$

where k is the level of education (primary or less; secondary; tertiary).

In the first release data for *Skills Mismatch* were gathered in Table 15a of the KILM tool. The dataset covered years 2001-2012 in 48 countries; mainly European countries with the addition of few developing economies for which data were available through the "School to Work Transition Survey". Unfortunately, this institution does not provide data for European countries for the year 2013, instead focusing on values for the developing countries involved in the "School to work Transition Survey" project. In order to extend our time series with data for 2013 in European countries, we applied the above defined formula to Eurostat's "raw" data about active population and employment by educational attainment⁵. The results of our calculation are perfectly compatible to the preceding values published in the KILM. The repositories for 2013 in this case are both the ILO and Eurostat. Among the 33 European countries, cross-national comparison will still be accurate. Thanks to the "School to work Transition Survey" the second release now covers 59 countries, up from 47.

2.4 Transition Smoothness

The category *Transition Smoothness* describes the dynamics of the transition process between school and work. It can, for example, be that the school-to-work transition occurs slowly de-

⁵See appendix for the directories of the used data.

spite an efficient education system and good labour market conditions. Long unemployment spells might characterise the beginning of careers, or unemployment might affect youth disproportionately more than adults. Considering indicators such as *Relative Unemployment Ratio* and *Long-Term Unemployment Rate* allows us to account for these cases. These two dynamic components complete the set of indicators.

2.4.1 Relative Unemployment Ratio

The *Relative Unemployment Ratio* describes how youth are affected by unemployment relative to adults. This indicator shows whether unemployment spells are specific to young people — which would indicate a relatively poor transition to the job market — or whether all age groups are equally affected by the economic situation. The *Relative Unemployment Ratio* is calculated as:

$$\text{Relative Unemployment Ratio} = \frac{\text{Young unemployment rate (15–24)}}{\text{Adult unemployment rate (25+)}}$$

The data source for this indicator is, as it was in the case of the first release, Table 10a of the KILM. The dataset covers all 178 countries considered in the index for the time period from 1991-2013.

2.4.2 Incidence of Long-Term Unemployment Rate

This second indicator of the category *Transition Smoothness* accounts for the length of unemployment spells. Concretely, youth are considered long-term unemployed if they are continuously unemployed for 52 weeks or longer. Duration of unemployment allows us to check whether young people are "just" in a temporary position while searching for a new job or whether unemployment instead represents a phenomenon of unfavourable match between supply and demand on the labour market. The calculation formula is:

$$\text{Incidence of Long-Term Unemployment} = \frac{\text{Unemployed longer than one year}}{\text{Total unemployed}} * 100$$

In the first release of the index data for this indicator were provided by the ILO (Table 11a of the KILM). Unfortunately, this dataset does not contain values for 2013 and, since no update has occurred, we decided to look for a different data source. We proceeded in the following way: we looked country by country at the repository indicated in the KILM for year 2012. In the vast majority of the cases, the data source was the OECD, for some countries the KILM used Eurostat, and national statistics offices were reported in just few countries. We then checked directly with these institutions, established the comparability of past values with the ones reported in the KILM and, in case of match, we included the values for 2013 in the KOF YLMI.

3 The Youth Labour Market Situation in 2013

This section presents the changes in KOF YLMI scores between 2012 and 2013 in the countries where data availability is sufficiently high — where there are values for at least nine indicators. The aim is to provide a first overview about the evolution occurring in those countries. As already stressed in the first release⁶, the user should not restrict their interest to single index value but rather use it only as an initial insight. For this reason, this section has a detailed discussion about the evolution of KOF YLMI indicators in some selected countries after the general overview. The goal is to show the potential of the tool and demonstrate how graphs can be interpreted. Of course, these assessments offer a descriptive overview and not attempt to be exhaustive. The KOF Research Division on Education Systems encourages further discussions and deeper analyses.

3.1 General Overview

Table 2 shows not only the evolution of the index, but also the evolution of the four categories that compose it. The web application (<http://kof.ethz.ch/en/indicators/ylm-index/>) allows interested readers to visualize the evolution of each indicator.

Country	KOF YLM Index				Activity State		Working Conditions		Education		Transition Smoothness	
	2013	2012	Rank	Change	Score	Direction*	Score	Direction*	Score	Direction*	Score	Direction*
Switzerland	5,66	5,63	1	= 0	5,96	→	5,65	→	5,61	→	5,43	→
Denmark	5,59	5,44	2	▲ 1	5,73	→	5,17	↗	5,62	→	5,84	→
Germany	5,44	5,35	3	▲ 2	6,17	→	5,37	→	4,82	↗	5,38	→
Austria	5,43	5,31	4	▲ 2	5,96	→	5,48	→	4,66	↗	5,60	→
Netherlands	5,41	5,52	5	▼ 3	5,89	→	4,97	→	5,15	→	5,62	→
Norway	5,24	5,36	6	▼ 2	5,93	→	4,83	→	4,39	↘	5,83	→
Lithuania	5,18 ^{††}	5,10 ^{††}	7	▲ 1	5,23	→	5,30	→	4,78	→	5,40	↗
Luxembourg	5,16	5,20	8	▼ 1	5,31	→	5,46	→	5,22	↘	4,65	→
Estonia	5,09	4,87	9	▲ 3	5,07	↗	5,47	→	5,24	↑	4,57	↘
Iceland	5,05	5,05	10	▼ 1	5,88	→	4,18	→	4,31	↘	5,81	→
Czech Republic	4,93	4,82	11	▲ 3	5,40	→	4,98	→	4,93	↗	4,40	→
Slovenia	4,91	5,05	12	▼ 2	4,95	→	4,00	→	6,42	→	4,28	↘
Finland	4,90	4,95	13	▼ 2	5,08	→	4,05	→	4,65	→	5,83	→
Latvia	4,89	4,68	14	▲ 5	4,74	↗	5,40	→	4,48	↗	4,93	→
Belgium	4,74	4,82	15	▼ 2	4,86	→	5,23	→	4,41	→	4,47	→
Poland	4,74	4,79	16	▼ 1	4,62	→	4,13	→	5,41	→	4,80	→
France	4,73	4,72 [†]	17	▲ 1	5,14	→	4,23	→	4,69	→	4,86	→
Turkey	4,70 ^{††}	4,58 ^{††}	18	▲ 3	4,37	→	4,85	→	4,32	↑	5,24	→
Hungary	4,58	4,75	19	▼ 2	4,37	→	4,99	→	4,55	↘	4,41	→
Malta	4,56	4,67 [†]	20	= 0	5,65	→	4,95	→	2,70	↓	4,95	↗
United Kingdom	4,49	4,43	21	▲ 2	5,02	→	4,60	→	3,93	→	4,42	→
Bulgaria	4,36	4,35	22	▲ 3	3,72	→	5,39	→	4,42	→	3,92	→
Cyprus	4,33	4,79	23	▼ 7	3,47	↓	4,10	↓	5,22	→	4,53	↘
Sweden	4,33	4,38	24	= 0	4,93	→	3,17	→	3,72	→	5,49	→
Ireland	4,30	3,95	25	▲ 5	4,56	↗	4,21	↗	4,14	↗	4,29	↗
Portugal	4,27	4,46	26	▼ 4	3,66	→	3,65	↘	5,35	→	4,43	→
Slovakia	4,27	4,32	27	▼ 1	4,27	→	4,45	→	5,04	→	3,31	↘
Romania	4,13	4,10	28	= 0	4,39	→	3,09	→	5,15	→	3,91	↗
Croatia	3,98	4,17	29	▼ 2	2,55	↓	4,49	→	5,45	→	3,43	↗
Macedonia	3,94 [†]	3,97 ^{††}	30	▼ 1	2,95	→	4,09	→	5,32	→	3,40	→
Italy	3,70	3,84	31	▲ 1	2,76	↘	3,52	→	5,31	→	3,23	→
Greece	3,69	3,91	32	▼ 1	2,49	↘	3,00	↓	5,57	→	3,69	→
Spain	3,61	3,73	33	= 0	2,45	↘	3,05	↘	4,63	→	4,31	→

[†] Only 11 indicators out of 12 available.

^{††} Only 10 indicators out of 12 available.

* The directions describe the changes in the categories score in 2013 relative to the year before. The key of lecture is the following: ↑ score changes > +10%; ↗ score changes by > +5% to +10%; → score remains stable between +5% and -5%; ↘ score changes by > -5% to -10%; ↓ score changes > -10%.

Table 2: Evolution of the KOF YLMI in 2013

⁶See Section 6 in Renold et al. (2014) for further examples of multidimensional analyses.

Table 2 reports the evolution between 2012 and 2013 of the 33 countries that have at least nine indicators in 2013. The best performer in 2013 is Switzerland, with an index value of 5.66 — slightly higher than the year before. The Netherlands fall from the second to the fifth position. There was, however, no drop bigger than 5% in any of the four categories. In contrast, Denmark, Germany, and Austria show improved scores in certain categories. In particular, *Working Conditions* improved in Denmark, while both Germany and Austria partially raised their relatively low values in *Education*. Norway also changes by more than 5% in this category, however their change in *Education* is a decrease, and Norway loses three positions on the ranking. In the middle range of the ranking it is worth highlighting the marked improvement of Latvia — driven by an increase in almost all categories — and the deterioration of Cyprus — a loss of seven positions in the rank. Finally, on the lower end of the ranking, we observe a moderate recovery of the youth situation in Romania — mainly driven by *Transition Smoothness* — and Ireland — due to a general improvement in all fields.

Our last remark addresses the direction of evolution. From a general perspective and by looking at the table vertically, one can see that there are relatively few changes in the *Activity State* category between 2012 and 2013. *Working Conditions* seem to be relatively stable as well, while the categories *Education* and *Transition Smoothness* are more volatile.

For the time being, this description focuses mainly on aggregated scores and general trends. The aim of the KOF YLMI is, however, to foster a multidimensional approach. The next section provides four examples — some of them related to the countries previously mentioned — of the type of analyses allowed by this tool.

3.2 Specific cases

Until now, we have presented an overview of the changes in the index value and how its components evolved between 2012 and 2013. It is worth highlighting that the purpose of our index goes further. The multidimensional approach is the key to understanding the youth situation across countries and over time. In the following, some examples from the countries listed in Table 2 are used to illustrate these points. The assessment is not exhaustive but rather provides some initial evidence.

3.2.1 The polarised context of Greece

Since the beginning of the Great Recession, the media has highlighted the difficult situation for youth of Southern European countries. In particular, data about the youth unemployment rate in Spain, Italy, and Greece has shocked public opinion. In the following, we look in detail at the KOF YLMI indicators for this latter country. Figure 1 presents the evolution of Greece for the time period from 2010-2013 in spider web form.

The indicators in the *Activity State* category show a constant deterioration over time. The *Unemployment Rate*, *Relaxed Unemployment Rate*, and *NEET Rate* increased over time, creating diminishing scores.

The indicators describing working quality also deteriorate. The only exception in this category is the *Temporary Worker Rate*, which actually increases moderately.

The category *Education*, in contrast to the others, shows a relatively positive evolution. The indicator describing participation in education and training slightly increases over time, while *Skills Mismatch* decreases from very good to good. The moderately good scores in *Skills Mismatch* suggest that the youth unemployment rate in Greece is mainly a consequence of aggregate labour demand rather than a particular problem of educational choices. In other words, youth make the right decisions for educational attainment. The subdivision in education programs almost reflects the education levels of employed people. It is unfortunately labour market conditions that penalise young people, with high unemployment rates regardless of educational attainment.

Lastly, the category *Transmission Smoothness* shows interesting patterns. On one hand,

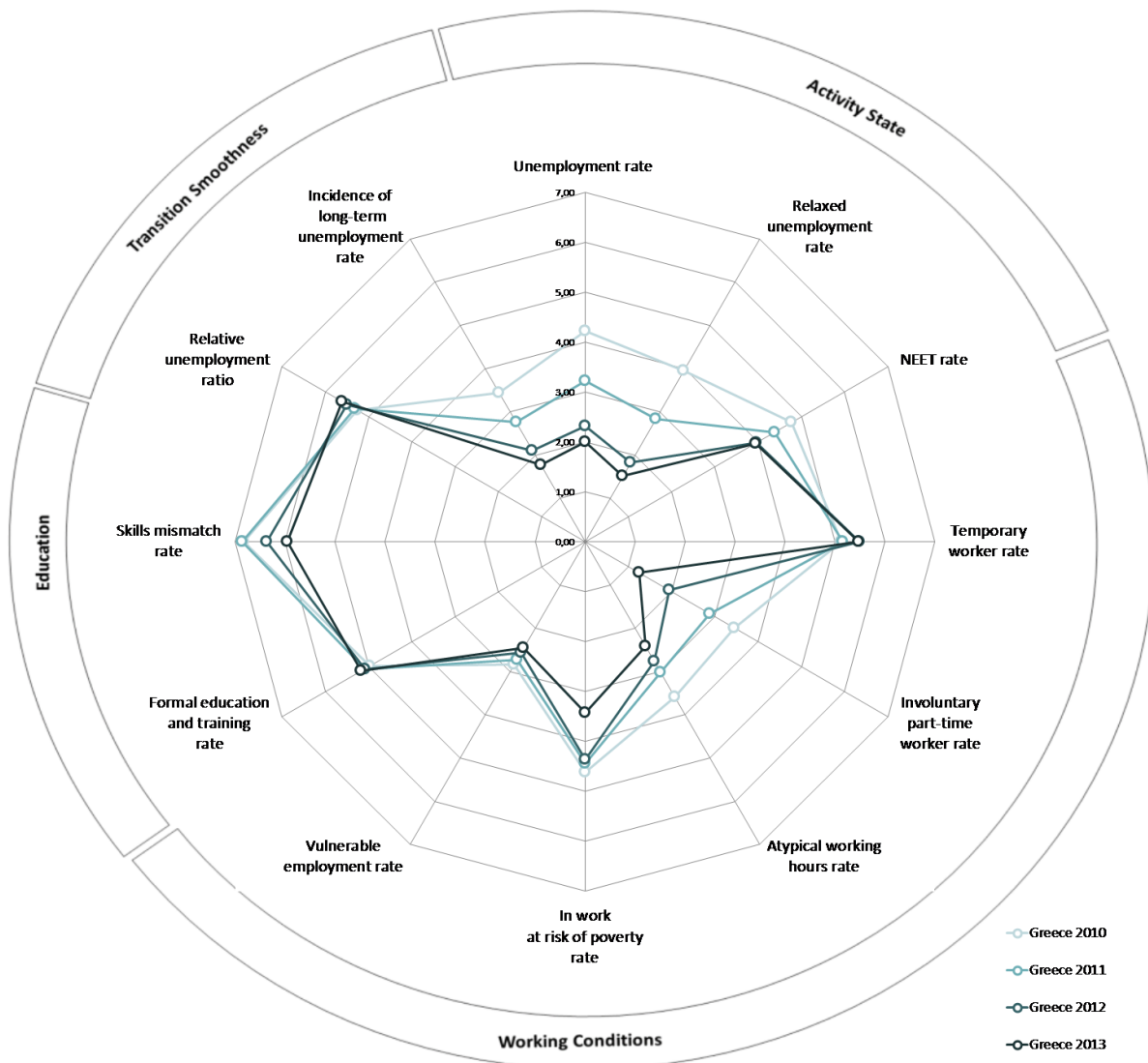


Figure 1: The evolution in Greece between 2010 and 2013

youth are increasingly more exposed to long spells of unemployment. On the other hand, the *Relative Unemployment Ratio* tells us that the unemployment phenomena actually seems to affect youth less proportionally than adults. The labour market is weak overall, but youth transitioning into the workforce are not necessarily worse off.

Finally, from a more general perspective, the form of the graphs reported in Figure 1 allows us to identify one more point of discussion. It can be easily observed that Greece reports an increasing unbalanced picture over time: in 2013, some indicators have quite positive values with scores even above the EU-28 average in three cases⁷, while others are dramatically and increasingly dire.

3.2.2 How Ireland overcame to the crisis

Ireland is another European country that was heavily affected by the economic downturn in the years following 2008. In contrast to the previously presented case of Greece, Ireland apparently overcame the crisis more quickly. The results on the youth labour market presented in the following confirm that (partial) trend of recovery.

Figure 2 illustrates the evolution of the KOF YLMI in two-year intervals between 2007 and 2013. Starting with the category *Activity State*, one can observe substantial worsening in scores for the *Unemployment Rate*, *Relaxed Unemployment Rate*, and *NEET Rate* between 2007 and 2011. The values for 2013, however, show a slight and favourable trend reversal.

The evolution of indicators in the *Working Condition* category is more cloudy. While the *Temporary Worker Rate* and *Vulnerable Employment Rate* remain almost constant, some others — especially those describing involuntary part-time jobs and atypical working time — shrank markedly. In particular, the tremendous evolution of the *Involuntary Part-Time Worker Rate* suggests a change in paradigm that must not go unnoticed. Finally, a last noteworthy aspect is the positive evolution of the indicator *In Work at Risk of Poverty Rate* that, after the contraction in year 2011, reached a higher-than-pre-crisis level in 2013.

With respect to the category *Education*, Ireland's *Formal Education and Training Rate* is a positive signal. Here, it is possible to observe a steady increase in the score from 2007 to 2009. In contrast, the evolution of the *Skills Mismatch* indicators is less clear. By looking at the different components of the index of dissimilarity⁸, it is possible to gain some insights: between 2007 and 2009, the share of youth with only a primary education among the unemployed decreased and became closer to the share of young people employed with primary education. The increase between 2009 and 2011 was, in contrast, mainly driven by an augmented discrepancy between employed and unemployed people with a secondary education. More precisely, the share of unemployed youth with secondary education increases, while the share of employed youth at that educational level actually decreases during the same period.

Lastly, in the category *Transition Smoothness* the indicator *Relative Unemployment Ratio*

⁷Indicators *Temporary Worker Rate*, *Skills Mismatch*, and *Formal Education and Training Rate*.

⁸The values presented in the following are not contained in the spider web but come from author's calculation based on Eurostat data (Tables *lfsa_agaed* and *lfsa_eagaed* both accessed on 24.06.2015). Detailed calculation available upon request from the author.

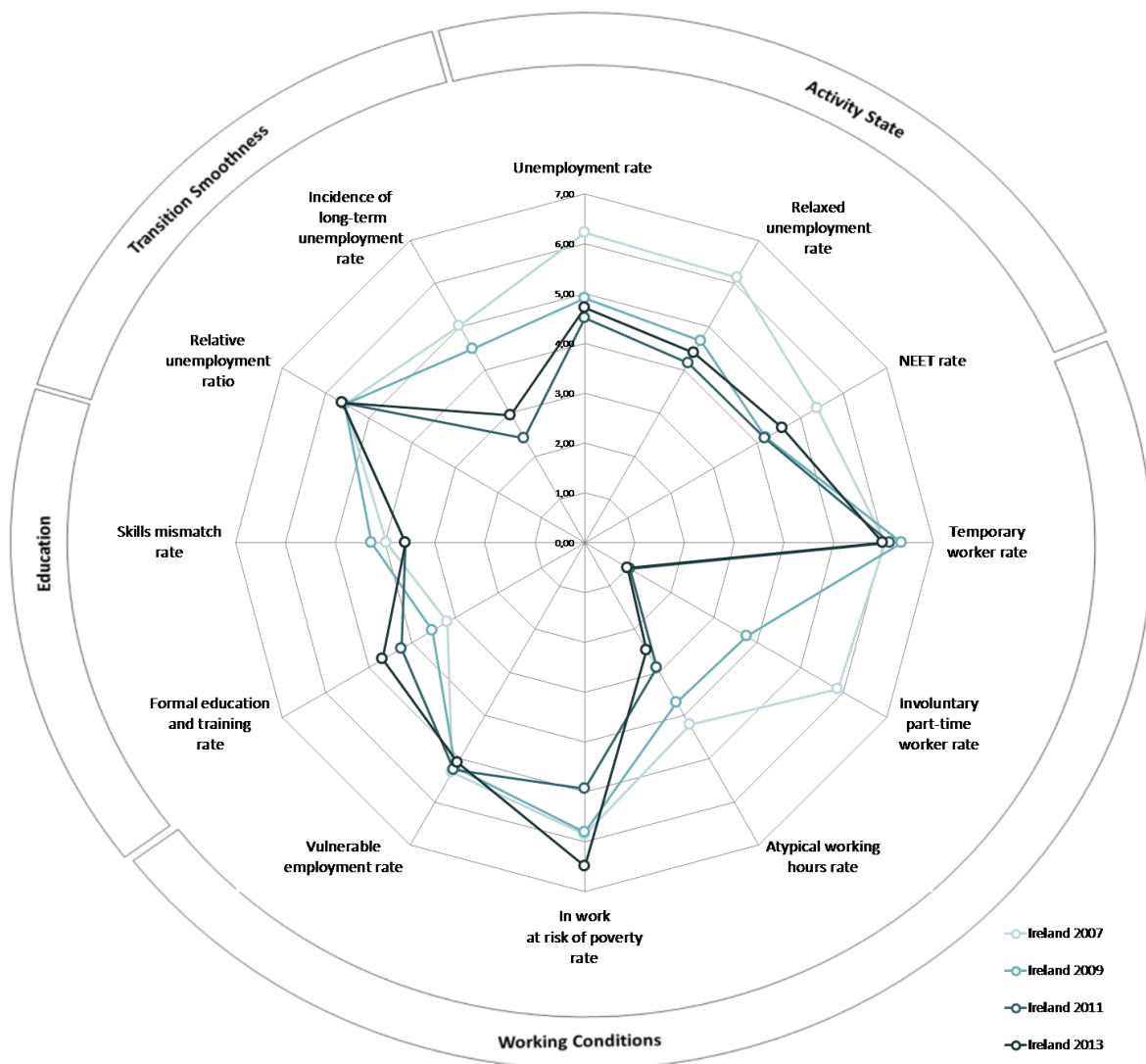


Figure 2: The evolution in Ireland between 2007 and 2013

shows a stable value over time. In contrast, the impact of long-term unemployment soars between 2007 and 2011. The value for 2013 suggests a slight improvement in this field.

3.2.3 Similarities and differences between Germany and the Netherlands

So far, we have focused on countries with poor YLMI situations or where changes in the youth labour market situation have been great. Next, we turn our attention to Germany and the Netherlands, two of the countries achieving very high scores in the KOF YLMI.

Figure 3 reports a spider web showing the evolution of Germany and the Netherlands on the KOF YLMI between 2012 and 2013. At first sight, this figure has two main features. First, both countries presents only slight changes in scores between 2012 and 2013. Second, the profiles of Germany and the Netherlands are very close for the majority of indicators. Differences occur only in a few domains.

With regard to *Activity State*, Figure 3 shows Germany's strong and stable position. On the

contrary, these condition slightly deteriorate in the Netherlands in 2013. Note, however, that the Netherlands still performs better than Germany in terms of *NEET Rate*.

In *Working Conditions*, we see the biggest differences between Germany and the Netherlands. Here it is worth highlighting the better-off position of Germany on *Incidence of Part-time Employment* and in *Vulnerable Employment*. Conversely, the Netherlands scores better on *In Work at Risk of Poverty Rate*.

Another interesting discussion point is in *Education* category. The surprising result here is not the similarity in trends, but rather the low values in *Skills Mismatch* in both countries. Indeed, given their relatively good performances in *Activity State* and very high values in *Formal Education and Training Rate*, one should expect a relatively good match of skills. However, the indicator *Skills Mismatch* exposes some asymmetry between the level of education of employed people and that of the jobless. In other words, the share of youth unemployed in Germany and in

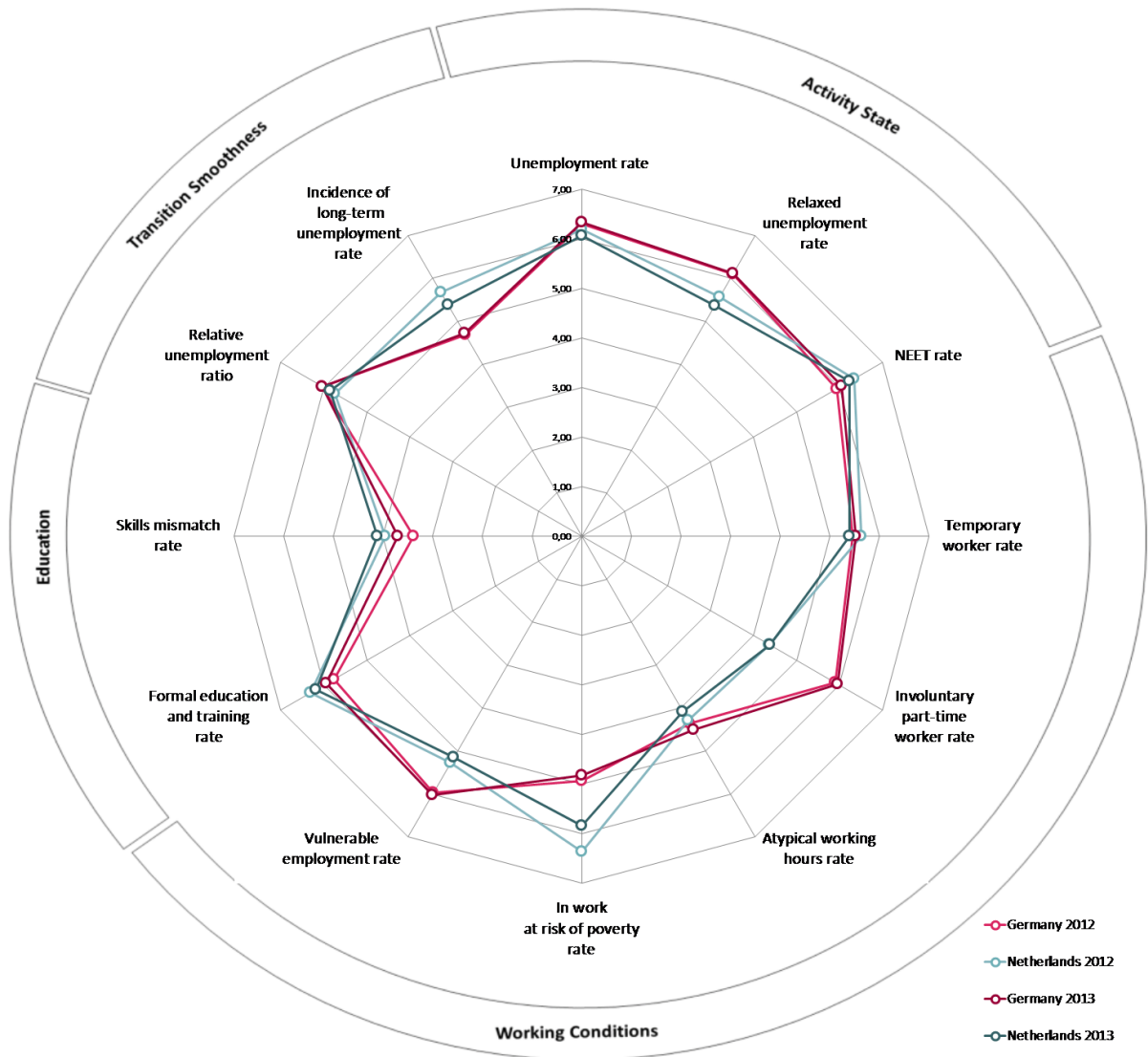


Figure 3: The evolution of Germany and the Netherlands between 2012 and 2013

the Netherlands is relatively low, but the education levels of the unemployed differ strongly from the ratios of education attainment across the employed. In order to disentangle this particular pattern — which is also observable in other European countries — further research will be needed beyond the scope of this technical manual.

Lastly, in the *Transition Smoothness* category Germany scores slightly better on *Relative Unemployment Ratio*, or the way in which youth are affected by unemployment relative to adults. On the other side, young Germans are more exposed to long unemployment spells than are the young Dutch.

3.2.4 Baltic republics on a glance

Baltic republics, in particular Estonia and Lithuania, have recently seen growing interest from the international community in their education systems and labour market performances. With respect to education, these countries are distinguished by high results on the Program for International Student Assessment (PISA test) in 2012. For instance, the Center on International Education Benchmarking⁹ recognised these improvements by including Estonia among its 10 best-performing countries. One of the future applications of the KOF YLMI will be to analyse the relationship between how education is provided and young people’s labour market outcomes. From this perspective, looking at the various dimensions of the index for these countries represents a preliminary step.

Figure 4 reports the evolution of the KOF YLMI and the number of its components for Estonia, Latvia and Lithuania over the time period 2004-2013. The average of the 28 members of the European Union is additionally reported as benchmark. To begin, it is important to note that these countries do not always have a full sets of indicators. As the secondary y-axis highlights, the number of available indicators used in the calculation process of the index was

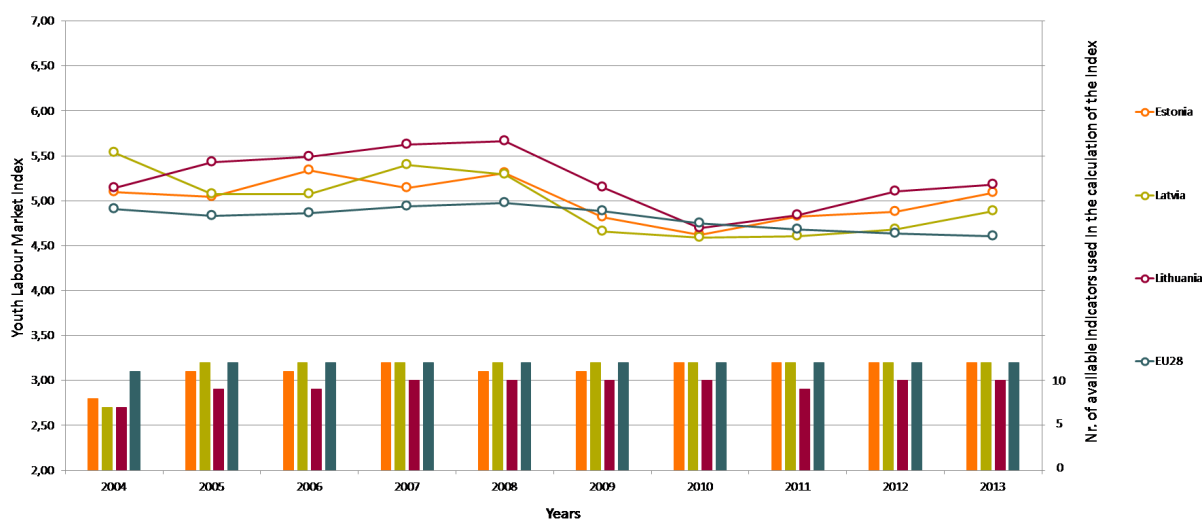


Figure 4: YLMI over time in Latvia, Lithuania, Estonia and the OECD average

⁹See <http://www.ncee.org/programs-affiliates/center-on-international-education-benchmarking/top-performing-countries/>

smaller than 12 in some years. This may provide misleading information as comparisons are not made on the same set of indicators. Nevertheless, since the missing values are few, changes in index scores should be minimal and comparisons across countries should still be reliable. Even without a not complete set of indicators, the lines in the graph tell an interesting story. First, one can observe a generally constant trend for the period 2004-2008. During this period, Lithuania clearly performed better than Estonia and Latvia, and all three countries present an aggregate index score above the EU 28 average. In 2009, at the beginning of the Great Recession, the conditions on the youth labour market in the Baltic countries started to deteriorate before reaching their minimum in 2010. After, the index steadily recovers in Estonia, Latvia, and Lithuania. On the contrary, the EU average continues to deteriorate after 2008. To sum up, Figure 4 suggests a strong impact of the Great Recession on the youth labour market situation in the Baltic countries, but also a quick recovery. Contrary to the evolution of the other EU member, the trends for Estonia, Lithuania, and Latvia are positive since 2010.

As previously stressed, comparisons based only on the index scores — particularly when those are determined by incomplete sets of indicators — are only informative of the general situation in a given country. The true added value of the KOF YLMI is its ability to visualize all dimensions in a single graph. Figure 5 reports the spider webs of all three Baltic countries in 2010 and in 2013. Again, the EU averages are reported for benchmarking purposes. Unlike the previous representations, the graphs here show all countries in the same period: 2010 in the upper spider web and 2013 in the bottom one.

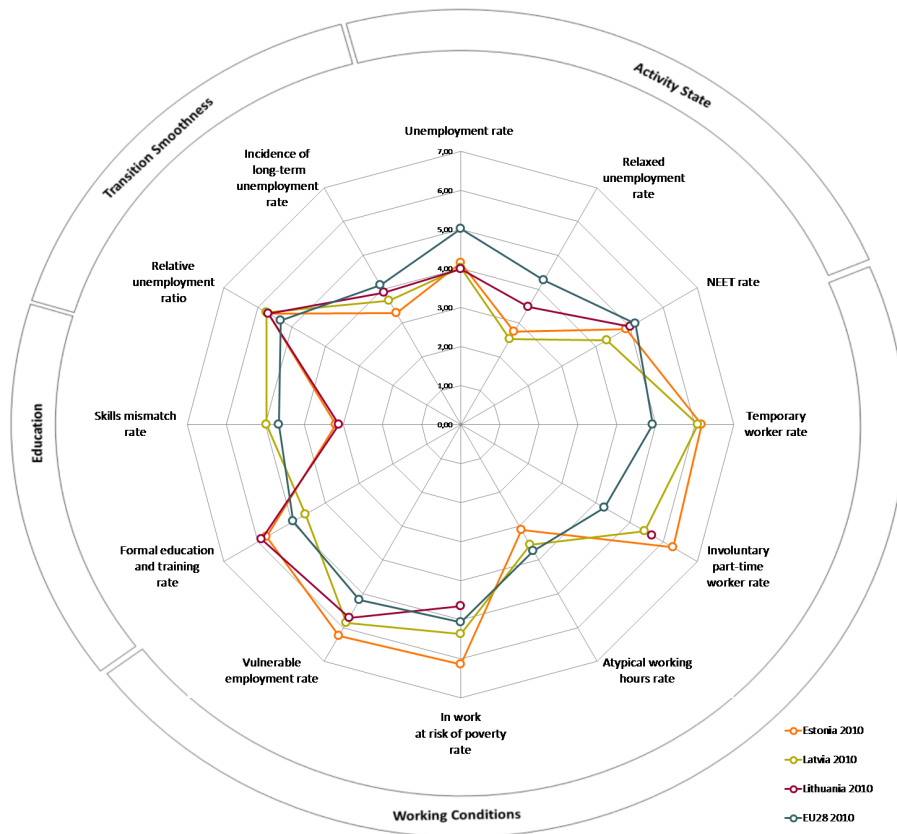
Starting from Sub-figure 5a, one can immediately observe some common patterns shared by the three Baltic republics. In more detail, the indicators for *Activity State* register clearly below-average scores. The opposite applies instead for the components of *Working Conditions* category. In these fields, with the only exception being the indicator *Atypical Working Hours*, the Baltic countries are in a relatively better situation than EU average. However, in this category Lithuania has only three indicators.

Let us focus now on *Education*; the category in which most differences arise. The very similar configurations of Estonia and Lithuania are especially remarkable: both countries achieve very high scores in *Formal Education and Training Rate*, while their performances on *Skills Mismatch* are considerably below European average. On the contrary, the score of Latvia in its *Formal Education and Training Rate* is below average, whilst *Skills Mismatch* is slightly above average.

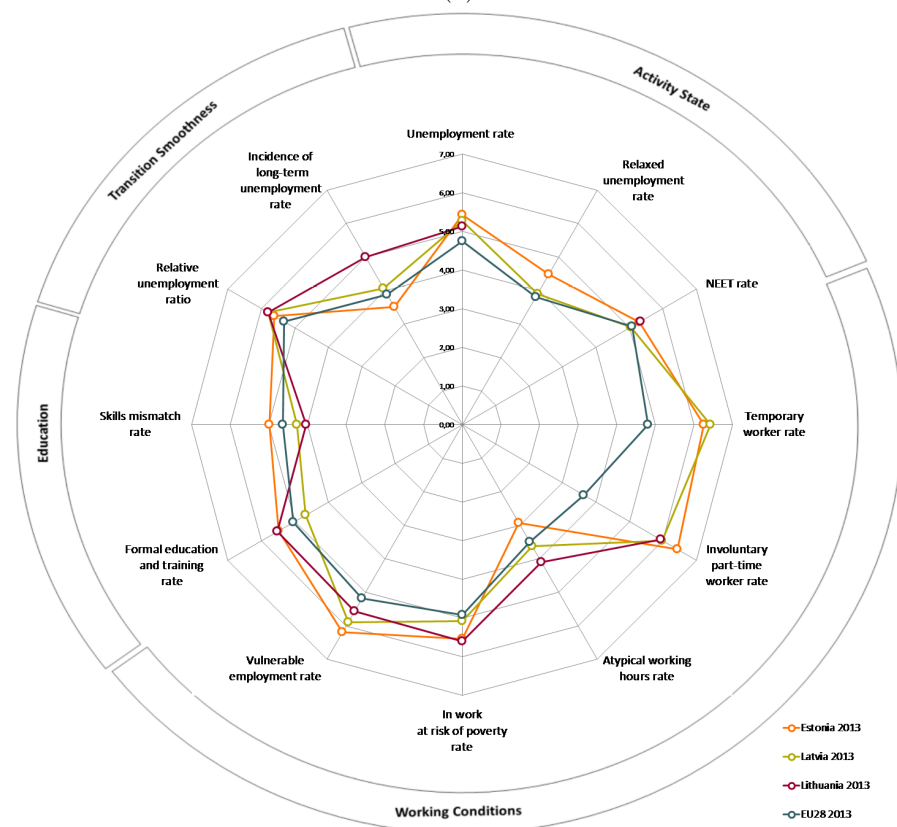
Finally, the category *Transition Smoothness* suggests relatively small exposure of youth to unemployment, but a higher than average impact of its long-term form in the Baltic republics.

Sub-figure 5b, reporting the values for 2013, enables us to identify the indicators at the foundation of the general improvement previously described in Figure 4. The *Activity State* in Estonia, Lithuania, and Latvia clearly improved relative to year 2010. The indicators contained in the *Working Conditions* confirm the positive framework of the Baltic republics, with the only exception being the indicator *Atypical Working Hours*. It is, however, the *Education* category that offers the most interesting points of discussion. Lithuania confirms the observed pattern of having good score in *Formal Education and Training Rate*, while still being below average in *Skills Mismatch*. On the contrary, Estonia considerably increases its score in *Skills Mismatch*,

showing a higher than average position for both indicators. Lastly, *Skills Mismatch* in Latvia shows a worse match of skills in 2013 than three years before. The picture of *Transition Smoothness* in 2013 is a clear improvement for long-term unemployment in Lithuania whilst Estonia and Latvia show conditions similar to those of 2010.



(a)



(b)

Figure 5: The youth labour market situation in the Baltic republics in 2010 (a) and in 2013 (b).

4 Outlook

The second release of the KOF YLMI focuses on the extension of the time series to the year 2013. We also succeed at enlarging data availability for some countries in certain indicators. In addition, we revise past values in accordance with the methods adopted by the international institutions providing data. Our approach was strictly conservative. We assured best comparability with the first release both across time and countries. Only in the case of two indicators¹⁰ we merged datasets provided by different institutions in order to enlarge countries' coverage. The merge was only performed for almost-identical datasets.

The updated values of the index are available in the web application <http://kof.ethz.ch/en/indicators/ylm-index/>. This interactive tool allows time series as well as cross country comparisons of the youth labour market situation. Graphs and detailed scoreboards are free to access. Users can make their own custom selections and download the graphs they generate. Additionally, the tool allows users to adjust the weighting process according to their own requirements.

Our assessment of evolving index scores between 2012 and 2013 confirms the leading position of Switzerland in the group of countries with sufficiently high data availability. Denmark, Germany, Austria, and the Netherlands complete the group of top performers. In the bottom of the rankings are the Mediterranean countries — in particular Spain, Greece and Italy — with further deterioration of the youth labour market situation. One should, however, not restrict the analysis to the single index values but rather adopt the multidimensional approach offered by the spider web representation. In this regard, the direction of each category's evolution presented in the table at the beginning of Section 3 offers only a first insight. The subsequent analyses provide concrete examples on how the tool can be used.

The next steps are, first, continued periodic updating of the indicator values and, where possible, enlargement of data coverage. Since research about the youth situation in developing countries depends upon the availability of data, the focus of future analyses will therefore remain on developed countries. Nevertheless, as soon as reliable data is available, the Research Division on Education Systems will investigate and disentangle culture-bound components that link education with labour market outcomes. A first step in this direction is a forthcoming research project based on KOF YLMI data that investigates the linkage between labour market integration or job quality and education programs — academic education, school-based VET, and dual VET. A further area of work is a factor analysis of KOF YLMI components that should reveal additional insight into the optimal weighting schema. Finally, the Research Division on Education Systems also aims to deepen its exploration of education attainment and asymmetries between demanded and supplied skills shown in the *Skills Mismatch* indicator.

¹⁰ *NEET rate and Incidence of Long-Term Unemployment.*

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A Data availability

Indicator	Source	Years
Unemployment Rate	ILO - <i>KILM 8th Edition Table 10a: Youth unemployment (ILO estimates) [Youth unemployment rate; Sex: MF; Year: 1991-2013]</i> Extracted on 27.01.2015	1991 - 2013
Relaxed Unemployment Rate	Eurostat - <i>Unemployment [lfsa_ugan; Age: 15-24; Citizen: Total; Geo: Select all; Sex: Total; Time: 1990-2012]; Supplementary indicators to unemployment [lfsi_sup_age_a; Age: 15-24; Geo: Select all; INDIC_EM: NSEE_AV; Sex: Total; Time: 2005-2013; Unit: 1000Pers]; Population [lfsa_pganws; Age: 15-24; Citizen: Total; Geo: Select all; Sex: T; Time: 1990-2013; WSTATUS: ACT]</i> Last update 15.01.2015	2005 - 2013
NEET Rate	ILO - <i>ILOSTAT; Dataset: Annual indicators [Share of youth not in employment and not in education by sex; Sex: MF; Age: 15-24; Year: 1998-2013; exclude: Samoa]</i> Extracted on 02.02.2015	1998 - 2013
	Eurostat - <i>Young people neither in employment nor in education and training by sex and age (NEET rates) [NEET rate; Sex: Total; Age: 15-24; Year: 2000-2013; Unit: Percentage]</i> Last update 07.01.2015	2000 - 2013
Temporary Worker Rate	Eurostat - <i>Temporary employees as percentage of the total number of employees [lfsa_etpga; Age: 15-24; Duration: Less than 1 month, From 1 to 3 months, From 4 to 6 months, From 7 to 12 months, From 13 to 18 months; Geo: Select all; Sex: T; Time: 1991-2013]</i> Last update 09.01.2015	1991 - 2013
Involuntary Part-Time Workers Rate	OECD - <i>Incidence of involuntary part time workers [Country: Select all; Time: 1991-2013; Sex: All persons; Age: 15-24; Employment status: Total Employment; Series: Share of involuntary part-timers in total employment]</i> Extracted on 31.08.2015	1991 - 2013
	Swiss Federal Statistical Office - <i>Involuntary part-time workers (INVPT) [Involuntary part-time workers are part-timers (working less than 30-usual hours per week) because they could not find a full-time job]; Data available upon request</i>	2004 - 2006 2010 - 2013

Atypical Working Hours Rate	Eurostat - <i>Employees working shifts as a percentage of the total of employees [lfsa_ewpshi; Age: 15-24; Geo: Select all; Sex: T; Time: 1992-2013], Employed persons working at nights as a percentage of the total employment [lfsa_ewpnig; Age: 15-24; Frequenc: Usually; Geo: Select all; Sex: T; Time: 1992-2013; WStatus: EMP], Employed persons working on Sundays as a percentage of the total employment [lfsa_ewpsun; Age: 15-24; Frequenc: Usually; Geo: Select all; Sex: T; Time: Select all; WStatus: EMP]</i> Last update 13.01.2015	1992 - 2013
In Work at Risk of Poverty Rate	Eurostat - <i>In-work at-risk-of-poverty rate for young people [yth_incl_130; Age: 15-24; Geo: Select all; Sex: T; Time: 2004-2013; Unit: PC_POP; WSTATUS: EMP]</i> Last update 30.03.2015	2004 - 2013
Vulnerable Employment Rate	ILO - <i>KILM 8th Edition Table 3: Status in Employment [Share of vulnerable employment in total employment; Sex: MF; Year: 1991-2013; exclude: American Samoa, Anguilla, Antigua and Barbuda, Aruba, British Virgin Islands, Cayman Islands, Cook Islands, Djibouti, Dominica, French Guiana, French Polynesia, Germany (Federal Republic of), Grenada, Guam, Isle of Man, Kosovo, Marshall Islands, Montserrat, Netherlands Antilles, New Caledonia, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Samoa, San Marino, Sao Tome and Principe, Tonga, Turks and Caicos Islands, Tuvalu, Vanuatu]</i> Extracted on 02.02.2015	1991 - 2013
Formal Education and Training Rate	Eurostat - <i>Participation in education and training [trng_lfs_09; Age: 15-24; Geo: Select all; Sex: T; Time: 2003-2013; TYPTRAI: Formal education and training; Unit: PC]</i> Last update 13.10.2014	2003 - 2013
	Swiss Federal Statistics Office - <i>Participation rate in formal education and training (last 4 weeks) [by sex and age (15-24), frequencies in percent]</i> Data available upon request	1996 - 2002
Skills Mismatch Rate	ILO - <i>KILM 8th Edition Table 15a: Skills mismatch between labour supply and demand by educational attainment [Skills mismatch; Sex: MF; Year: 2000-2013; exclude: Samoa]</i> Extracted on 02.02.2015	2000 - 2013

	Eurostat - <i>Active population by sex, age and educational attainment level (1 000) [lfsa_agaed; Sex: Total; Age: From 15 to 24 years & from 25 to 29 years; Unit: Thousand; Year: 1992-2013] Last update: 17.06.2015 - Employment by sex, age and educational attainment level (1 000) [lfsa_egaed; Sex: Total; Age: From 15 to 24 years & from 25 to 29 years; Unit: Thousand; Year: 1992-2013] Last update: 17.06.2015</i>	1992 - 2013
Relative Unemployment Ratio	ILO - <i>KILM 8th Edition Table 10a: Youth unemployment (ILO estimates) [Ratio of youth unemployment rate to adult unemployment rate; Sex: MF; Year: 1991-2013] Extracted on 03.02.2015</i>	1991 - 2013
Incidence of Long-Term Unemployment Rate	ILO - <i>KILM 8th Edition Table 11a: Long-term unemployment [Incidence of long-term unemployment; Year: 1991-2012; Sex: MF; Age: Youth; exclude: French Polynesia, Germany (Federal Republic of)] Extracted on 27.01.2014</i>	1991 - 2012
	OECD - <i>OECD.Stat [Unemployment by duration; Year: 1991-2013; Sex: All Person; Age: 15 to 24; Frequency: Annual ; Unit: Persons, thousands] Extracted on 06.07.2015</i>	1991-2013
	OECD - <i>OECD.Stat [Incidence of unemployment by duration; Year: 1991-2013; Sex: All Person; Age: 15 to 24 ; Unit: Percentage] Extracted on 06.07.2015</i>	1991-2013
	Eurostat - <i>Long-term unemployment (12 months or more) as a percentage of the total unemployment, by sex, age and nationality (%) [lfsa_upgan; Year: 1995-2013; Sex: Total; Age: From 15 to 24 years; Unit: Percentage; Citizen: Total] Last update 07.07.2015</i>	1995-2013

Table 3: Detailed information about the data sources