Lost in Transition -
Labour Market Entry Sequences
of School Leavers in Europe

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CONTENT

ABSTRACT

For TLM policies it is necessary not to focus on single transitions or points of time, but on transition periods. Such a period can contain more than one single transition adding up to an overall sequence type. In particular, the process of labour market entry is characterised by considerable insecurity and by more or less long duration. From a European perspective, it seems to be appropriate not to focus policies on the unique national level, but have a more differentiated view on these transition sequences.

The paper examines sequences of school-to-work transitions in ten European countries using explorative methods of optimal matching and cluster analysis. The process of labour market entry is observed for five years after leaving school by looking at monthly labour market statuses. The sequences are classified by similarity and certain sequences types along with their distribution are described. The resulting picture offers a strong variation across countries that can only partly be captured by classical typologies of school-to-work transition regimes. Apart from that, the quality of the coordination process between education system and labour market can be assessed by taking into account indicators derived from transition sequences.

1. INTRODUCTION

The transition between school and work remains a very critical period in the life of young people, because the first access to the labour market has got a remarkable effect on employment history over the life course. The school-to-work transition is more than a certain point in time for many reasons. For example, finding a satisfying job can take a lot of time and a lot of uncertainties usually occur during this process, because it is characterised by the simultaneity of other important decisions like leaving the household, family forming etc. Apart from that, youth labour markets react more sensitive to the socio-economic changes, because young peoples' labour market status is less protected (Gangl 2002: 69). Last, but not least, is the integration into the labour market not necessarily finished by entering the first job or taking up an apprenticeship. In consideration of these facts, transitional labour market policies that aim to facilitate a good school-to-work transition cannot be focussed on one single transition.

Therefore, the school-to-work transition must be examined as a period, which involves more than one single transition between education and employment or unemployment (Hillmert 2002: 676). Research should focus on the whole sequence of changes in labour market status. Adopting this, one is confronted with the problem of complexity, because variation in time and type creates a huge number of theoretically possible sequences. Consequently, it seems to be interesting, how those transition sequences look like and how they vary according to different institutional settings. Another important point to mention is that, as a rule, classifications and descriptions of school-to-work transition regimes are accomplished on national basis. This may lead to inaccurate policy implications in terms of targeting only major groups or people that are 'typical' for a particular institutional setting. The aim of the paper is to conduct a classification on a basis of groups containing similar sequences across countries. This may help policy makers to adjust their policies to specific target groups from a European level (cp. McVicar / Anyadike-Danes 2002) and, above all, it is easier to develop that change sequences rather than institutions. According to this, the main questions are: Are there distinct groups of labour market entry sequences of school leavers and, if so, how country-specific are they? Furthermore, the subject will be addressed, which types of sequences lead to failure or success regarding the integration into the labour market.

For this purpose, a longitudinal dataset is needed, which allows to identify sequences of labour market statuses as well as contains comparable information of European countries. Both is provided by the European Community Household Panel (ECHP). Additionally, the comparison and classification of sequences requires an explorative method that meets the following demands: first, it should be able to compare a large number of different individual transition sequences and second, it should be able to group those sequences that are most similar. The techniques of optimal matching and cluster analysis, which both are used here, satisfy all these demands.

In the next section the theoretical framework and hypotheses about transition sequences will be explained in more detail. The data and the methodology are the subject of the following two sections. And finally the empirical results are presented and discussed.

2. THEORETICAL FRAMEWORK

This chapter provides an overview about recent research activities regarding labour market entry and its institutional preconditions and after that hypotheses applied to the research design will be derived.

Research Review

There is already a large literature on school-to-work transitions on the micro-level. However, you'll find a crucial gap which can be filled by using the methodology proposed here. Nearly all research work on this field is dealing with single events like the transition from one labour market status to the other, e.g. from education to unemployment or employment, their effects and their preconditions (cp. Scherer 2005). The sequences of school-to-work transitions are hardly examined as whole sequences. Exceptions are the work of McVicar and Anyadike-Danes (2002), who examines school-to-work transitions of one cohort of school leavers in Northern Ireland and Scherer (2001), who compares patterns of transition processes in Germany and Great Britain. Both use optimal matching to calculate distances between the transition sequences, but apart from that there is no comparison of sequences for more than two countries.

There are some important differences between the work of Scherer (2001) and the one in hand. First of all, only Great Britain and West-Germany are compared, but on a more detailed level that is not at least the result of the higher potential of the datasets used. The second main difference is the fact, that apprenticeships are taken as education and therefore not appearing in the sequences. Therefore, the focus here is extended in two ways: first, a comparison of more countries is aspired and second, the relevance of apprenticeship becomes more visible.

The analysis of labour market sequences in general is a relatively new approach, whose theoretical foundation is developed by sociological life course research (cp. Sackmann / Wingens 2003). Sequences are seen as a concept that connects the macro-level represented by the concept of trajectories and the micro-level, for which the single transition stands. A sequence is defined as "any life-course movement that includes at least two transitions between states (in a given state space)" (Sackmann / Wingens 2003: 96). Within this concept, a group of sequence types is constructed to capture policy-relevant forms of sequences. The type 'rupture' reflects only a single change with an absorbing status at the end. 'Interruption' means a continuation of a status after an interlude, whereas 'change' has a different status at the end than the beginning one. The other three statuses contain a combined status, which with respect to school-to-work transitions is apprenticeship or further education, because it can be seen as a combination of education and employment. In the 'bridge' type, apprenticeship is going to lead from the status education to employment, whereas in the 'return' type apprenticeship leads back to education. The last type is called 'fusion' and describes a combined state after the experience of the two pure states. In the case of school-to-work transitions the 'fusion' type is finished with (further) education. This theoretical sequence typology will be applied within this paper for the description of sequence clusters.

From an economic perspective, two types of school-to-work transition regimes are distinguished: internal labour markets (ILM systems) and occupational labour markets (OLM systems) (cp. Marsden 1999). The former systems are characterised by on-the-job-training

and the lack of vocational qualification signals, because only general education is standardised. This leads to higher mobility with insecure prospects within the entry period and a relatively low extent of occupational segmentation. In occupational labour markets, vocational education is highly standardised and qualification signals for employers are very clear. Therefore, stable employment positions can be reached more quickly and occupational segmentation becomes very strong. Germany and Britain are often taken as two poles with respect to this coordination process between education system and labour market. While in Germany this process is strongly standardised and stratified (cp. Allmendinger 1989; Shavit / Müller 1998), the coordination between education and employment in the United Kingdom is comparatively loose (cp. Hannan / Raffe et al. 1997). The explanatory power of ILM-OLM dichotomy will be tested here with the findings regarding transition sequences.

When countries are compared with respect to their institutional configurations that influence welfare as well as labour market processes, Esping-Andersen's typology of welfare regimes very often serves as a grid for analysis (Esping-Andersen 1990, 1999). Because of its universal character the country-groups derived from it are used as a framework of orientation between the countries.

Hypotheses

When we talk of transition sequence clusters that are specific for a particular country, two things have to be kept in mind. First, we talk about ideal types of sequences, i.e. each of the clusters has a more or less remarkable variation. And second, the presence of a cluster in a particular country only reflects a share of it in a certain size. In practice, we expect more than one type of transition sequences in each country, but also the different proportions of patterns reflect the influence of institutional features in countries.

It can be expected that the sequence types of the life course approach mentioned above are not sufficient to describe all the sequence clusters we'll find in the data. However, it is assumed that different institutional settings in combination with corresponding policies shape trajectories for school leavers. For a classical liberal labour market (or ILM system) like the United Kingdom or Ireland, where considerable flows between employment and unemployment are the rule (cp. Detzel / Rubery 2002; Scherer 2001), you will expect one or more types that contain frequent transitions between unemployment and employment being predominant. Furthermore, a quick integration into employment presumably will occur in these countries as well. In Germany and Denmark, where a significant number of young people is integrated by the dual system of apprenticeship, the major sequence type after participation in apprenticeship will lead directly to employment (Detzel / Rubery 2002: 110) or, in other words, to "lower turbulences at labour market entry" (Scherer 2001: 121).

Apart from the empirical question, which types of transition sequences exist to what extent in the European countries, the more normative question of favourable school-to-work transitions should be raised here as well. There are two indicators constructed from the sequence data, which may assist with that problem. The first indicator captures the flexibility or volatility of labour market entry sequences, i.e. it gives the mathematical fraction of the number of episodes in employment, education and apprenticeship and the number of episodes in unemployment and inactivity. The higher the value of this indicator, the more favourable are sequences regarding flexibility. The argument here is that the major problem regarding labour market integration of young people is the lack of work experience and the lack of information about vocational qualifications for potential employers that inhibits them from hiring

inexperienced young people. This risk decreases for both, employers and employees, when young people participate more in further education or apprenticeship or employment. Many transitions between education, employment and apprenticeship can be expected in countries with a well developed system of further education like Denmark. The second indicator, which serves as a foundation to assess the quality of labour market integration, simply is the added share of sequence types that have led to employment after five years. It can be expected that this indicator in the Southern European countries will have considerably low values.

3. DATASET & BASIC CONCEPTS

The only available comparative dataset that contains monthly information on labour market status is the European Household Panel (ECHP). It is a longitudinal dataset launched by Eurostat and conducted by the national statistical offices of the member states of the European Union in the years from 1994 to 2001. It includes a large variety of variables covering a number of socio-economic issues on individual as well as on household level[1]. According to previous research (cp. Franz / Inkmann et al. 1997; Gangl 2003; Russell / O'Connell 2001) the most important micro-level factors on labour market integration of young people are age, gender and educational attainment, duration of unemployment and work experience, which are all included in the survey[2]. Furthermore, it contains monthly calendar information on labour market statuses that will be analysed with the technique of optimal matching as well as with cluster analysis.

Four countries have to be excluded from analysis because of technical reasons. The Swedish data are only cross-sectional and therefore not to use for analysing sequences that last more than one year. Apart from that, there are only missings in the calendar variables, so that there is no possibility at all to analyse Swedish transition patterns. The last point is also the case for the Netherlands. Luxemburg and Finland have to be excluded as well due to a too small number of valid cases. Apart from that, the analysis concentrates on people up to 25 years old because it is the standard age limit in school-to-work literature, both in official reports and in academic papers.

To define the beginning of school-to-work transitions seems to be a very straightforward decision. One only has to answer the question if education stops after full-time school or if apprenticeships are also part of the education system. However, apprenticeship[3] is a form of qualification that is specifically connected to a particular vocation, so that it will be counted to the sphere of employment, even if participants in apprenticeships spend a large amount of their time at school. Another supporting argument to distinct apprenticeships from initial education is given by the crucial role work experience plays in gaining a job. Work experience is provided by a job as well as by vocational training like apprenticeship, but not by general education. Furthermore, to identify the relevance of apprenticeships for school-to-work transitions it is necessary to examine the weight they have within the transition period.

It seems more difficult to define when school-to-work transitions are finished. However, putting a limitation to the maximum length of the sequences is necessary, because the longer this period is defined, the less precise is its character as a ‘school-to-work transition’. Simple indications for this definition are not sufficient: to let this period end with the beginning of the first job means to ignore later spells of unemployment, inactivity and/or education. This can be important in the presence of discontinuous transition patterns that are characterised by frequent transitions between unemployment and employment. One can try to define the end of school-to-work transitions from an aggregate point of view and take the point of time, when

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1 For further details and discussion see Peracchi 2002

2 Work experience and duration of (previous) unemployment can be neglected here, because the sequences of labour market statuses begin with the first month after leaving general education.

3 In the ECHP calendar data apprenticeship spells are defined as “paid apprenticeship”, which excludes apprenticeships as measures of active labour market policy.

the employment rate of young people reach 50% (cp. Ryan 1999). In that case, the duration of school-to-work transitions would differ from country to country. But the quality of school-to-work transitions across countries can only be assessed holding the time period constant. Thus, the length of the school-to-work transition here will be fixed and delimited to five years. This might be somewhat arbitrary, but on the one hand it follows other studies in this field (cp. Scherer 2001). And on the other hand it seems necessary to extend the transition period beyond three years, because apprenticeships, which last up to three years, are not taken as education here, and hence are inside of our sequences.

The calendar data for labour market status are retro-perspective and therefore contain information from the year before the surveys were conducted, i.e. they include the months from January 1993 to December 2000, that are at all 96 months. Starting with five-year-sequences in every year of the ECHP, this means that there are four starting points of sequences containing 60 monthly labour market statuses[4]. All the sequences were aligned to the left, i.e. their first month not in education regardless of the year[5]. Thus, the data sample contains all persons less than 25 years in the ECHP, who finished general school and are observable for 5 more years.

The recoded categories of the monthly calendar variables 'labour market status' are 'employed', 'unemployed', 'apprenticeship', 'inactive/household' and 'education'. Employed are those, who are either self-employed or dependently employed, inactivity includes housework, family care and military service. Retired young people are excluded, but there are only very few cases in each wave. The status 'education' contains university as well as further education. As discussed above, apprenticeships are not counted as general education, which is necessary to make them visible and incorporate effects of apprenticeship systems.

The problem of left censoring can be solved by using other variables as proxies to get this information to keep as much individuals as possible in the analysis. For this purpose the ECHP provides a variable indicating people who didn't have worked before and a variable that contains the age at which education of the individual stopped. If this age is smaller than the age of the individual in first wave of the cohort sample, the person is excluded from analysis. In a similar vein the variable that reports the age when the individual started to work can be used to exclude people who have worked before.

Another problem is very common with analyses of calendar data and regards the lack of information about parallel statuses. For instance, from the data it is not possible to identify people who are combining work and education. This might be a strong reduction of information, but on the other hand covering all possible combinations of two or more statuses at the same time would increase the complexity of data and calculation to an extent that is not appropriate.

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[4] A test with four yearly samples yields the result that there is no significant variation of sequences across time.

[5] An alternative could be to create samples from every single year of the survey with people that finished school in the referring year, but then the case numbers were decreasing dramatically.

4. METHODOLOGY

The analysis consists of three parts: at first, general characteristics of the transition sequences will be described. Second, differences between individual sequences are calculated using optimal matching analysis (OM)[6]. Because this algorithm is only able to calculate distances between the sequences, it needs a further method to group the sequences with similar distances in a second step. This will be done in a third step by cluster analysis and finally, the clusters will be described and their distribution across countries is examined.

A sequence is defined technically as an ordered listing of items (MacIndoe / Abbott 2004: 387). In our case one monthly labour market status is an item and a chain of labour market statuses creates a sequence. Within sequences you'll have many spells that is a number of identical successive items, e.g. three successive months of unemployment are a short spell. Hence, transition sequence clusters are groups of certain empirical successions of labour market statuses in similar sequences that are summarized by OM algorithm and cluster analysis.

When one analyses transition sequences, the problem of complexity arises. Even if you only look at 10 points of time and have 5 different labour market statuses, the number of possible combinations is 5^{10} = 9,765,625. In reality, of course, only a small part of all theoretically thinkable sequences can be found, but nevertheless, the problem of complexity is still present[7]. Additionally, these sequences are nominal scaled and therefore not sortable or easy to aggregate. OM is an explorative method of sequence analysis developed by molecular biologists to find similar patterns within the DNA. In the social sciences it was introduced first by Andrew Abbott and John Forrest (1986) when they used OM to analyse different figures of ritual dance styles[8]. Meanwhile, in labour market research there is an increasing number of applications of OM to life courses and career patterns in general (e.g. Halpin / Chan 1998; Pollock / Antcliff et al. 2002) and also with a focus on youth (McVicar / Anyadike-Danes 2002; Scherer 2001).

OM is very useful when data has three properties: first, a large number of sequence statuses (items). Second a complex structure of statuses and, third, a fixed order of items that has to be taken into account for analysis. In that case, confirmatory techniques like event history analysis become inadequate (Halpin 2003: 7), because they can deal very well with single or few events and their effects and preconditions within a sequence of labour market statuses, but because they cannot take into account the whole sequence they ignore valuable information. OM now provides a measure for these confirmatory methods to incorporate periodical information into the models.

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[6] For this part of the analysis the software package TDA is used, which is freeware and available on the website: http://www.stat.ruhr-uni-bochum.de/tda.html. For further information see Rohwer and Pötter 2005. The author of this paper is working together with Ulrich Kohler (WZB) on commands for optimal matching analysis for the software package STATA. It will be available most likely in summer 2006.

[7] In this paper, the maximum number of theoretically possible sequences arises from 5 different statuses at 60 points of time (months), which amounts to $5^{60} = 8.7 * 10^{41}$.

[8] Abbott/Tsay give an extensive overview about applications of OM in social sciences: Abbott and Tsay 2000

The OM algorithm works as follows[9]: first, all sequences are compared pairwise and distances are calculated. If the sequences are of different length, the distances are standardised and the result is a distance matrix that consists of N*(N-1)/2 values. The measure of distance is assessed by comparing each item of one sequence with the corresponding item of the other sequence. In the procedure, either one item can be substituted by another item or an item can be inserted to the first sequence or deleted from the first sequence. Each operation causes costs that have to be calculated. According to the operation the costs are named 'substitution', 'insertion' and 'deletion' costs. Insertion and deletion operations always cause the same costs and therefore are referred to as 'indel' costs. When transforming one sequence into another, one can use many different combinations of substitution and indel operations. The resulting distance measure is the minimized combination of substitution and indel costs. The crucial question here is: How much does a substitution operation cost in relation to an indel operation? The decision about the quantification of these operations is left to the researcher's responsibility and has to be justified by theory. This is the reason why they are discussed here.

In contrast to indel costs, substitution costs (as well as their relation to indel costs) are subject of enduring discussion (Abbott 2000; Levine 2000; Wu 2000). Recently, most researchers differentiate the substitution costs regarding to the state of the sequence element, i.e. they either take "dynamic" substitution costs according to the empirical transition frequencies between these states or "weighted" substitution costs according to theoretical reasons. With respect to labour market statuses it cannot be persuasively decided which weight a transition between two certain statuses has in relation to other statuses. Therefore, all substitution operations receive the same costs. It seems to be appropriate to fix substitution costs, because one can assume that transition frequencies differ largely across countries. This would have brought up the question which frequencies should be taken for calculating substitution costs: overall frequencies or country-specific frequencies. Both possibilities seem to be insufficient, because the matters of interest are country characteristics, which means for the first case to blur the national differences and in the second case to reduce the comparability crucially.

The relation between substitution and indel costs is important, because it strongly influences the results of the OM algorithm. Most researchers set up indel costs to equal half of substitution costs (cp. Scherer 2001), because this assures that indel operations are only used by the algorithm to offset different sequence lengths. On the other hand, it is recommended to set indel costs close to 0.1 times the highest substitution costs (MacIndoe / Abbott 2004: 392). To rise the weight of the relative position of the statuses, indel costs are set equal to 1, whereas substitution costs will always be 2[10]. If the duration of single spells (e.g. five subsequent month of unemployment) is not as important as the pure sequence of statuses, and because of comparability reasons, the calculated distance measures are standardised. This can simply be done either by dividing the pairwise distance by the length of the longer sequence, or by reducing all sequences to equal length (Dijkstra / Taris 1995). Because of comparability reasons, all the sequences under analysis are of the same length, and therefore standardisation is not necessary here.

The OM algorithm generates pairwise distance measures, i.e. we have got a matrix consisting of numbers for every combination of single sequences. This matrix can be built in a cluster analysis as a dissimilarity measure. In the second step of cluster analysis the hierarchical

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[9] For a detailed introduction see: MacIndoe and Abbott 2004

[10] For sensitivity test, different variants of substitution and indel costs were tested, but the results only showed slight differences.

fusion algorithm of Ward is used to explore groups of sequences. One of the crucial questions of cluster analysis is to define the ideal number of clusters. For this purpose, some measures are developed to indicate the most distinct level of clustering. Here, the test statistics of Calinski-Harabasz' and Duda-Hart[11] as well as contextual arguments are used to define the proper number of clusters.

[11] For further discussion about stopping rules in cluster analysis see Everitt, Landau and Leese 2001

table 1: aggregate characteristics of labour market entry sequences

		DK	BE	FR	IE	IT	GR	ES	PT	DE	UK	male	female	ISCED 0-2	ISCED 3	ISCED 4-7	Total
average duration in...	education	19.7	26.2	12.6	17.8	11.4	7.1	14.0	12.7	5.5	5.5	11.3	11.6	3.5	9.3	20.1	11.5
	apprenticeship	8.4	3.1	0.1	3.5	1.5	0.3	1.3	0.1	19.7	1.4	4.1	3.1	1.5	5.2	1.9	3.6
	employment	23.3	18.3	27.6	31.0	13.8	19.2	19.8	26.6	24.3	37.8	24.4	22.8	21.6	22.7	26.5	23.6
	unemployment	4.4	9.9	9.9	5.4	25.8	20.0	17.6	10.2	5.1	8.2	12.9	15.1	19.1	15.9	7.2	14.0
	inactivity	4.2	2.5	9.8	2.2	7.5	13.5	7.3	10.3	5.4	7.2	7.3	7.5	14.2	6.9	3.7	7.3
average number of different statuses		3.3	2.5	2.6	2.4	2.4	2.6	2.7	2.4	2.8	2.2	2.6	2.4	2.4	2.6	2.6	2.5
average number of episodes (total)		5.8	3.7	4.8	4.9	3.7	3.7	5.0	3.8	4.2	4.0	4.6	4.0	4.4	4.0	4.6	4.3
average number of episodes in...	education	1.2	0.8	0.7	1.5	0.6	0.4	0.9	0.6	0.3	0.4	0.7	0.6	0.3	0.5	1.1	0.7
	apprenticeship	0.6	0.3	0.0	0.2	0.2	0.1	0.2	0.0	0.9	0.2	0.3	0.2	0.2	0.3	0.2	0.2
	employment	2.2	1.1	1.9	2.2	0.9	1.1	1.8	1.3	1.8	1.9	1.7	1.4	1.5	1.4	1.9	1.6
	unemployment	0.9	0.8	1.3	0.7	1.4	1.3	1.5	0.9	0.8	1.2	1.2	1.1	1.5	1.2	0.9	1.2
	inactivity	0.9	0.8	0.9	0.3	0.6	0.9	0.7	0.9	0.4	0.4	0.7	0.6	0.9	0.6	0.5	0.6
volatility indicator		2.1	1.4	1.2	4.0	0.8	0.7	1.3	1.1	2.6	1.5	1.4	1.3	0.8	1.2	2.4	1.4
N		52	48	160	164	361	156	206	101	177	208	804	829	500	903	225	1633

source: ECHP, own calculations

5. LABOUR MARKET ENTRY SEQUENCES

At first, all sequences will be described on an aggregated level with general measures by country, gender and educational level. After that, the detected clusters of sequences are portrayed and interpreted with respect to country-specific peculiarities.

Aggregated Characteristics of Labour Market Entry Sequences

The first approach to describe labour market statuses is to look at aggregated indicators like average duration of statuses, the average number of spells and different statuses and the average number of spells in particular labour market statuses (table 1). The average duration of statuses adds up all months of the same status irrespectively if they are consecutive or not. Hence, this measure can be taken as an overall frequency of this status. The average number of different statuses reflects a kind of qualitative flexibility in the transition period. A high value denotes that people in this group change the kind of status often. A value of 3 in a particular country means that, at average, young people experience three different statuses in the five years after leaving school. The average number of episodes[12] does not consider the type of statuses, but only the pure number of spells. It can be taken as a measure for volatility of transition sequences, whereas a low number of episodes is seen as a characteristic for coordinated labour markets. To get a more precise picture, this volatility measure can split up by status type and an indicator can be calculated, which allows to assess the volatility.

There is substantial variation across countries and educational levels, but not across gender. Looking at the average duration of education within the first five years after leaving school, one can see that young people in Belgium do so for 26.2 months at average. Also Danish and Irish school leavers spend more than a quarter of this period in an educational status that is, for example, university or further education. In Germany and United Kingdom only 5.5 months of the five-year period are spent in education. This is compensated for the German case by a long average duration of apprenticeship, which reflects the existence of a institutionalized apprenticeship system: nearly 20 months young people are situated in this status. Apprenticeship plays also a role in Denmark, which is described as a hybrid system (OECD 1998) and where at average 8.4 months of the 60 months are apprenticeship months. Regarding the average duration of employment within five years after leaving school the highest values can be found in the liberal countries Ireland and United Kingdom. In these countries people come quickly into employment and vocational training predominantly takes place on-the-job. However, the fact that Irish and British school leavers are situated in employment does not imply a statement about the quality of their jobs. Unemployment is common experience for labour market entrants in the Southern European countries, i.e. Italy, Greece and Spain, as their average duration in unemployment shows. In Italy school leavers are situated in unemployment for more than 25 months, in Greece and Spain this status adds up to 20 respectively 17.6 months. The shortest unemployment duration is existent in Denmark, Germany and Ireland. Country-specific differences are also visible regarding inactivity, where Greek labour market entrants are situated 13.5 out of 60 months, whereas their Irish counterparts only spend 2.2 months in inactivity. Looking at gender differences in these aggregate measures of duration, there seems to be only a small correlation. Male school

[12] The number of status changes (not shown here) is always equal to the number of episodes minus 1.

leavers have a slightly smaller duration in unemployment, whereas they spend more time in apprenticeship and employment than women.

While gender and country can be clearly defined as the cause in relation to labour market entry sequences as an effect, this does not hold for the level of education, because the latter changes over time together depending on the character of the transition period. This is especially true for school leavers who attend university and/or apprenticeship. Hence, educational level in this context means educational level at the end of the sequence[13] and therefore has to be interpreted as an effect of the sequence character. Keeping that in mind, the differences in average status duration become obvious. Labour market entrants with tertiary level of education (ISCED 4-7) were situated in education at average for 20 out of 60 months, whereas those with secondary education or lower (ISCED 0-2) only took part in education for 4.4 months. Regarding the duration of unemployment and inactivity the tendency is the other way round: the higher the duration the lower the level of education after five years.

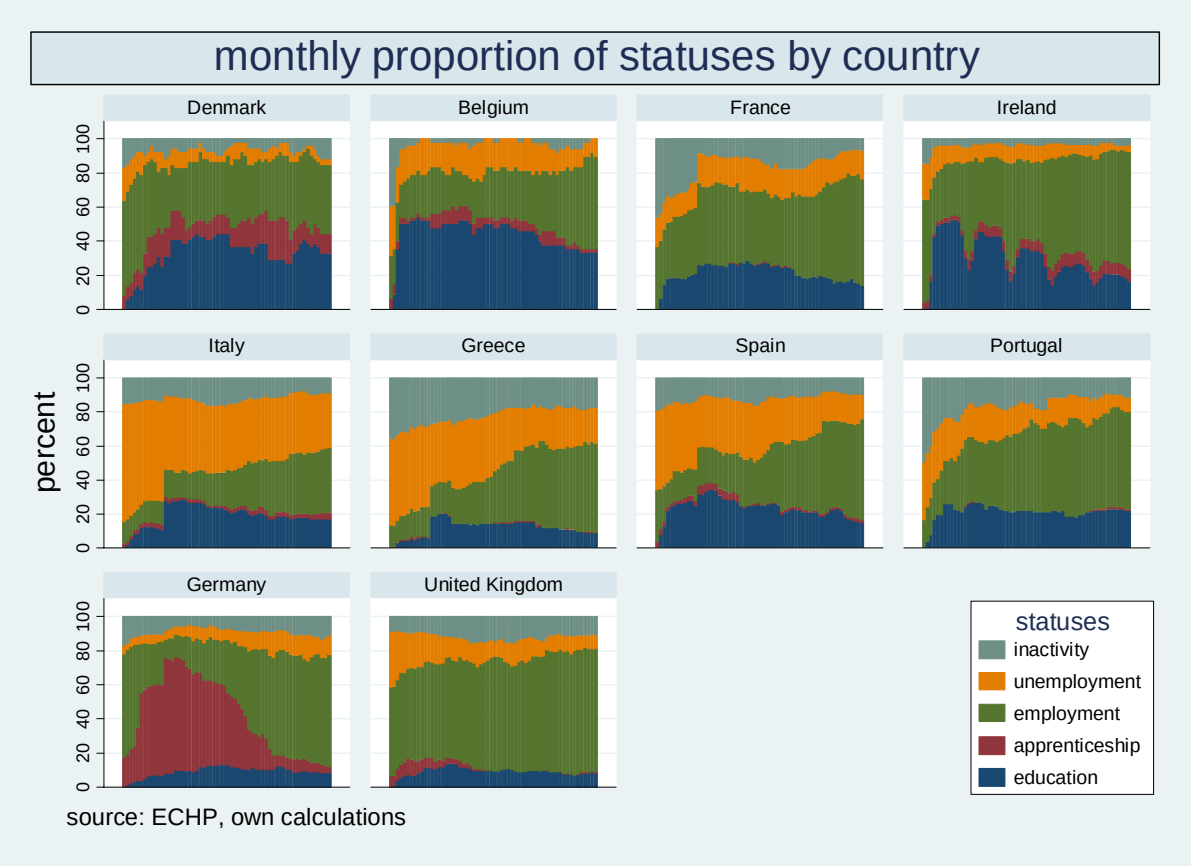
The qualitative flexibility of transition sequences does not vary largely across countries. The average number of different statuses is nearby 2.5 types within five years. Across gender and educational level there is no tendency observable, whereas country differences are apparent, even if they are small. They range from 2.2 in United Kingdom to 3.3 in Denmark. That means that the qualitative flexibility of labour market statuses in Denmark is higher than in Britain.

Regarding the volatility of school-to-work transitions the differences between countries are small, too. In Denmark, school leavers experience almost six episode changes within the first five years after leaving school, in Belgium, Italy and Greece at average only 3.7 episode changes are observable. Men seem to have a slightly higher volatility in their school-to-work transitions than women, whereas the educational level doesn't have a systematic effect on that. The lower number of episodes of the middle ISCED level could be caused by those school leavers in countries with an institutionalised vocational training system, which tends to structure the coordination process between educational system and the labour market, although this is not reflected on the country level. The reason for this discrepancy is that the country averages of course include all transition sequences occurring in the country. To involve the number of episodes in certain status types allows drawing a more differentiated picture of volatility. The high number of education and employment episodes in Denmark and Ireland together with relatively low values in unemployment denotes that employment often is interrupted by education spells. On the other hand, high values in employment turn out to be unfavourable if they are together with low education values and high unemployment values, like this is the case in United Kingdom and France. To capture this, a volatility indicator has been constructed, which shows the relation between number of episodes in education, apprenticeship and employment on the one hand, and unemployment and inactivity on the other. This indicator shows a more favourable situation in Ireland as well as in Germany and Denmark, whereas in France and in the United Kingdom the situation of labour market entrants is less favourable. Gender differences are not observable with this indicator, whereas a positive volatility goes along with a higher level of education.

[13] This is partly due to data restrictions, because the variable containing educational level is only valid from the 4th wave (1998) onwards.

A next step for an aggregate description is to look at the monthly proportion of statuses with respect to country, gender and educational level. This also ignores the sequence character, but gives a simplified and aggregated picture about the share of school leavers in respective labour market status and its development across the transition period.

figure 1: monthly proportion of statuses by country



If one takes a look at the proportions of monthly labour market statuses, country differences are obvious (figure 1). Most clearly, Germany stands out with its large extent of apprenticeship statuses in the first three years after leaving school. At the same time, Germany is the only country, where the share of young people who are in education, apprenticeship or employment decreases slightly. Apprenticeship also plays a significant role in other countries, such as Denmark, Belgium, Ireland and, too a shorter extent, in the United Kingdom. Here apprenticeships are concentrated to the first two years after leaving school, whereas it is spread over the whole period in the three other countries. Another striking fact is the heavy weight of unemployment in the Southern European countries, particularly in Italy, Greece and Spain. Between 70% and 90% of young people are unemployed or inactive directly after leaving school and within the five years their share decreases to a level between 25% in Spain and 40% in Italy and Greece. Considerably high shares of unemployment and inactivity can be found in Belgium, France, Portugal and the United Kingdom. In all countries the share of employment increases, with the one exception of Denmark, where it remains stable across the whole observation period. At the same time, Denmark has a high and also stable level of education. The figures for gender and education do not provide clear correlations and there are not shown here.

These aggregated measures give important information about the shares of single labour market statuses on the macro-level, but they do not take into account transition sequences as a whole[14]. At the descriptive level, sequences can be sorted by their pure order of status types. Neglecting the lengths of episodes the most frequent sequence orders are shown in table 2.

table 2: sequence orders and sequence types

	sequence order	frequency	percent	cumulated	sequence type
1.	UE - EM	95	5.8	5.8	detour
2.	EM	84	5.1	10.9	rupture
3.	UE	54	3.3	14.2	rupture
4.	IN - ED	48	2.9	17.1	return
5.	UE - EM - UE - EM	40	2.4	19.6	detour
6.	EM - AP	39	2.4	21.9	fusion
7.	UE - ED	35	2.1	24.1	return
8.	IN	32	2.0	26.0	rupture
9.	EM - ED	29	1.8	27.8	interruption
10.	AP - EM	26	1.6	29.4	bridge
11.	UE - IN	26	1.6	31.0	change
12.	IN - EM	25	1.5	32.5	detour
13.	EM - UE - EM	24	1.5	33.9	detour
14.	EM - ED - EM	23	1.4	35.3	detour
15.	EM - IN - EM	22	1.3	36.7	detour

source: ECHP, own calculations

The first impression is that the 15 most frequent sequence types only cover a third of all the sequences in the analysis. Bearing in mind the maximum possible number of combinations this might be sedating, but it is still hardly feasible even to handle these 15 types (and discard all the others). However, following the sequence typology of Sackmann / Wingens (2003) these empirical sequence orders can be classified into seven groups[15], which transfers empirical school-to-work transitions to an abstract level. The most frequent sequence order starts with unemployment directly after leaving school and after that leads to employment. Like the 5th and the 12th to the 15th order these statuses are leading to employment after experience of other labour market statuses and reflect the search and/or coordination process on the youth labour market. The corresponding sequence type therefore is the “detour”, which adds up to 229 cases and is the most frequent sequence type. It can be assumed that less coordinated transition regimes contain a relatively high share of this type. Those sequence orders who only contain one single labour market status, are called “rupture” and constitute the second largest sequence type People with these sequences are either excluded from or included into the labour market by one single decision. This cannot be assessed as positive or negative, because it only reflects the strict determination of a transition. The sequence type

[14] Graphical displays of all individual sequences by country, gender and educational level – so called “sequence index plots” – can be downloaded for further analyses from the author’s website: www.wz-berlin.de/~brzinsky-fay.

[15] The typology of Sackmann / Wingens only contains the types “rupture”, “interruption”, “change”, “bridge”, “return” and “fusion”. The 7th sequence type (“detour”) is introduced by the author to capture transitions that finally leads to employment via different other statuses.

"return" contains those sequences, which ending with education and having a episode of unemployment or inactivity in between. They can be seen as a prosecution or bridging strategy to avoid longer unemployment period. This type has to be distinguished from "interruption", where the return to education follows an episode of employment. In this case, the motivation most probably is to extent one's qualifications. Only just under 2% of all sequences belong to this type. There are two types of sequences that are related to apprenticeship in particular. The first one, "bridge", describes exactly, what the dual system is made for, namely the mixture between school and work as a bridge from education system to the labour market. The pure type can only be found in 26 sequences, from which presumably most can be found in Germany. The second one, named "fusion", contains a sequence order that mirrors the "bridge" type and leads to apprenticeship after the experience of employment. This type is really untypical for a institutionalised vocational training system and might be found in those countries, where apprenticeships have a programme character, like United Kingdom (Hillmert 2002: 680). The last sequence type of Sackmann / Wingens (2003) is called "change" and simply describes a transition that ends up in an undefined status like unemployment and inactivity and therefore doesn't have any visible strategy or final goal.

This classification is able to introduce some theoretical value, but it is not feasible to group all the occurring sequences, because even sequences that appear only once have to be classified "by hand". Moreover, it disregards the time dimension, which contains important information about sequences and therefore should be considered. To do so, it is necessary to reduce the overall complexity of empirical sequences by putting similar sequences into groups, which are distinct from each other as much as possible. This is done in the following section using cluster analysis.

Clusters of Labour Market Entry Sequences

The cluster analysis conducted here proceeded only with the second of two steps: the first step – the calculation of a dissimilarity measure – is replaced by the optimal matching algorithm, and for the second step – the fusion of groups – the classical wards linkage algorithm was used. The Calinski-Harabasz coefficient suggests a 3-cluster solution, whereas the Duda-Hart test statistic allows for two interpretations, a 5- or a 7-cluster solution. However, for contextual and practical reasons the 7-cluster solution was chosen[16]. General characteristics of the clusters are shown in table 3.

The 200 sequences of the first cluster are characterised by the status education, which at average amounts 49.5 months within the five years after leaving school. A second cluster that is created by the algorithm consists mainly of education and employment months and has at average 5.8 episodes, which is the highest value in this category. At the same time, sequences in this cluster at average consist of 3.1 different statuses. Unemployment and inactivity constitute the most important statuses of cluster 3 and 4, whereas the third cluster contains slightly more education, apprenticeship and employment months. The pieced together cluster 5 is composed of 36.7 months of employment and considerable average shares of unemployment (9.6 months) and inactivity (7.0 months). This cluster is with 443 observations the largest one. The sixth cluster is the most concentrated one, because the mean duration of

[16] After checking for all solutions from 3 to 10 clusters, the decision was driven by the existence of analytically meaningful groups. Another argument for the 7-cluster solution is to gain groups with a sufficient number of cases. The dendrogram of the cluster analysis also can be downloaded from the author's website.

employment adds up to 56.7 months. As a result, in this cluster the average numbers of both different statuses and of episodes are the smallest. The last cluster is the smallest one containing 84 observations and is associated with at average 35.1 months apprenticeship and 15.3 months employment. This table gives us information about statuses' proportion of the clusters ignoring time dimension and sequence character. To include time at first and keep as much lucidity as possible, the monthly proportion of statuses in the respective clusters should be examined (figure 2)[17].

table 3: general characteristics of clusters

		cluster						
		1	**2**	**3**	**4**	**5**	**6**	**7**
average duration in...	**education**	49.5	28.4	3.9	2.6	2.2	0.4	3.6
	apprenticeship	0.5	1.0	1.2	0.2	4.5	0.3	35.1
	employment	4.1	19.7	8.3	4.0	36.7	56.7	15.3
	unemployment	2.3	6.0	40.6	5.4	9.6	2.2	4.2
	inactivity	3.6	5.0	5.9	47.8	7.0	0.4	1.8
average number of different statuses		2.5	3.1	2.5	2.0	2.8	1.8	2.9
average number of episodes		3.9	5.8	4.4	3.0	4.7	2.5	4.1
N		200	199	384	100	443	223	84

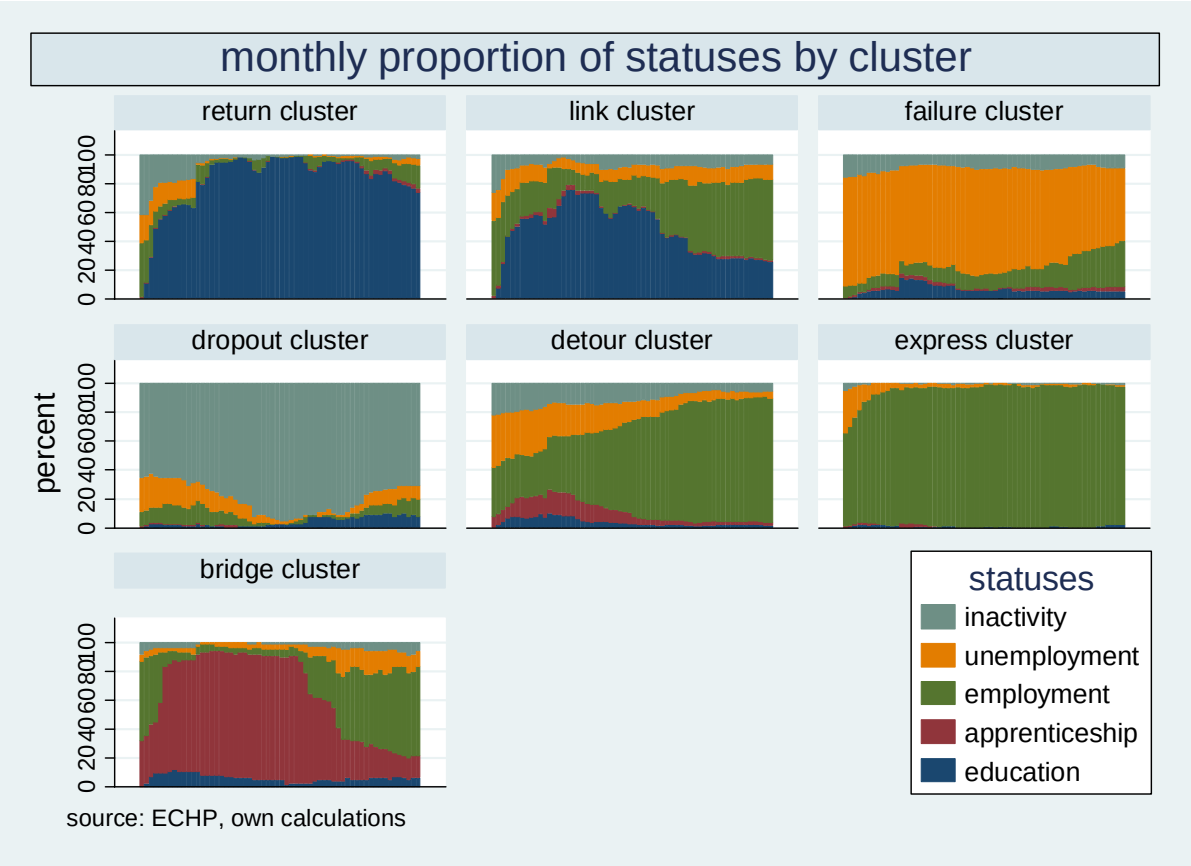
source: ECHP, own calculations

In the first cluster with its focus on education, around 40% of school leavers are employed, 40% are inactive and 20% are unemployed at the beginning of the observation period. With the first year this number decreases sharply and the share of education remains on a very high level throughout the whole five years. According to the sequence typology of Sackmann / Wingens (2003) this cluster in the first line is built on 'return'-type sequences and therefore can be named the 'return cluster'. The second cluster also includes a lot of education, but additionally a considerable share of employment. Because education is concentrated at the beginning and employment at the end of the observation period, it can be assumed that education has got a linking function in these sequences. Thus, this cluster should be called 'link cluster'. Unemployment is the constituting labour market status of the third cluster and it is spread more or less equally across the whole five years. That's why this cluster rightly can be named 'failure cluster'. Around 15% of all school leavers in this cluster are unemployed for the whole period under observation. The only difference between the 'failure cluster' and the fourth cluster is that inactivity is the most important status and that 30% of all young people in this cluster are inactive for five years. Because the majority of employment statuses are located at the beginning and inactive people are by definition outside the labour market, this cluster can be labelled 'dropout cluster'. Both, the 'failure' and the 'dropout cluster' correspond to the 'rupture' and 'change'-type of Sackmann / Wingens' typology. Besides the 'link cluster' the fifth cluster is the most manifold one. It contains a high share of employment, but also considerable portions unemployment, apprenticeship and inactivity. Most of the sequences lead to employment and thus to integration into the labour market. Because the average number of different statuses as well as episodes is relatively high, it can

[17] It should be pointed out that this figure doesn't show individuals' sequences, but only the share of monthly statuses.

be assumed that many of the sequences comply with the detour sequence type. Therefore, this cluster will be entitled ‘detour cluster’. The most successful school-to-work transitions are surely located in the sixth cluster, where only a very small share of other statuses than employment appears. And because these can be found at the very beginning, this cluster becomes the ‘express cluster’. Finally, the last cluster that consists largely of apprenticeship and employment reflects perfectly, what Sackmann and Wingens describe as the ‘bridge’-type, where the aspired status employment is reached from the starting point education via a hybrid status. Consequently, this status will be called the ‘bridge cluster’.

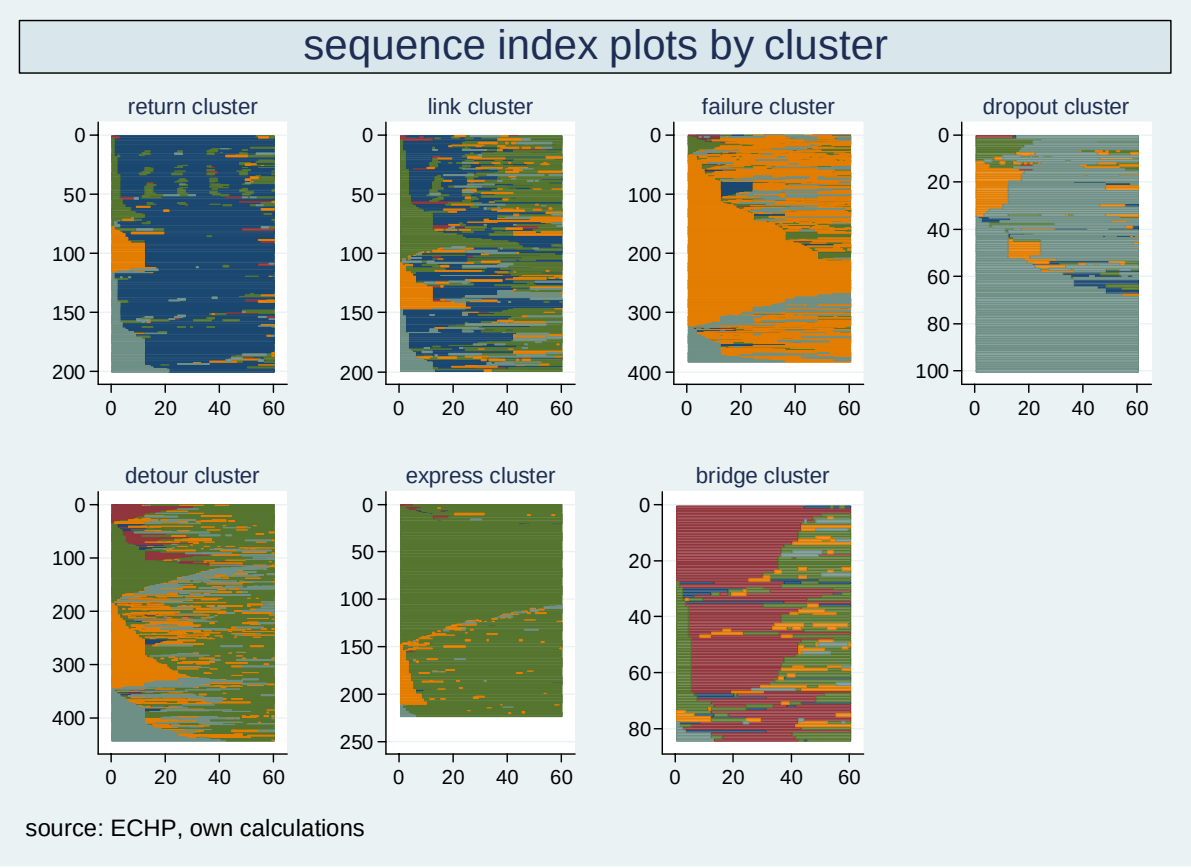
figure 2: monthly proportion of statuses by cluster



To examine the sequential character of the transition process it is necessary also to look at the graphical display of individual sequences by cluster (figure 3). This verifies the conclusions drawn from the monthly proportions and gives us an impression of the complexity of transition sequences. Those from the ‘return cluster’ starts with a more or less one year enduring employment, unemployment or inactivity episode and after that returning to education for the rest of the observation period. There are some sporadic interruptions occurring that in some cases can be interpreted as summer term employment of students, but a major status change rarely happens. The linking function of education statuses in the ‘link cluster’ becomes visible, too, because the education periods are clearly shorter, so that a majority of school leavers after five years end up in employment. The sequence index plot of the ‘failure cluster’ shows the predominance of unemployment that is explicitly spread across the whole period. Only a very small part of the people in this cluster is employed at the end of the transition period. The same is true for the ‘dropout cluster’. The ‘detour cluster’ indeed shows a lot of fuzziness in transition sequences. Many school leavers need to experience various labour market statuses until they gain a job. This might be because of search

processes. Sequences from the ‘express cluster’ rarely start with unemployment and are seldom interrupted by any other status, so that they nearly always end up in employment. The ‘bridge cluster’ finally shows the bridging function of apprenticeships, whereas it is not always assured that young people are employed after taking part in an apprenticeship.

figure 3: sequence index plots by cluster



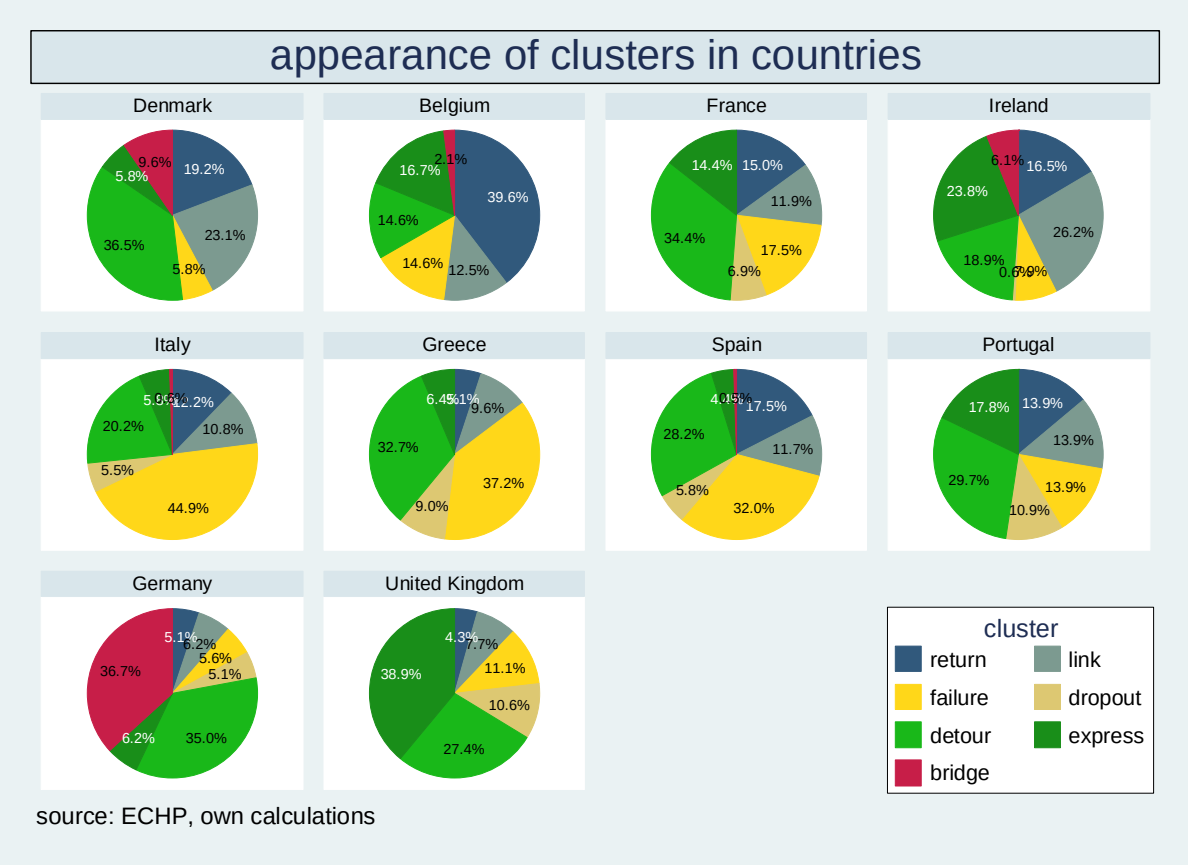
To summarise, it can be assessed that there are distinct types of transition sequences that show explicit differences. The final question whether these clusters are country-specific or not will be examined in the following section.

Distribution of Sequence Types across Countries

The frequencies of the clusters we have found vary substantially across countries as shown in figure 4. Transition sequences from the ‘return’ and the ‘link’ cluster appear particularly in Belgium, Ireland and Denmark, where around 50% of all school leavers mainly experience education in the transition period. Though in Belgium this proportion is the largest, it contains in the first line the ‘return’ cluster, which is caused by the fact that most of the education periods are not finished after 5 years. However, in Ireland and Denmark, sequences with a linking character amount to approximately 25% of all sequences in the respective country. Those can be seen as a favourable way of labour market integration. The ‘failure’ and the ‘dropout’ cluster show up most concisely in the Southern countries Spain, Italy and Greece and – to a smaller extent – in Portugal, France and the United Kingdom. In Italy and Greece, about the half of all transition sequences belong to these two clusters, in Spain only 37.8%. The French, Portuguese and British transition sequences of the ‘failure’ and the ‘dropout’

cluster add up to nearly 25%, whereas only in France the ‘failure’ cluster is clearly larger than the ‘dropout’ cluster. Both sequences cluster can be regarded as unfavourable forms of school-to-work transitions, even if it is not known what will happen after the observation period. The ‘detour’ cluster plays a remarkable role in every country, so it can be viewed as the most universal form of labour market entry across Western Europe. Its variation is – compared to the other clusters – moderate and ranges from 14.6% in Belgium 36.5% in Denmark. In contrast, the ‘express’ cluster in predominant in the liberal countries, i.e. in United Kingdom and Ireland, but also in Portugal, Belgium and France a relatively high share of school leavers show transition sequences that meet employment very quickly. With 38.9% of all sequences belonging to this cluster, it can be seen as typical for United Kingdom. The ‘express’ cluster clearly belongs to the favourable ways of labour market entry. The ‘bridge’ cluster that mostly is composed of sequences containing apprenticeship statuses is very typical for Germany, where it is institutionalized in the dual system. From the perspective of labour market integration the bridge sequences can be seen a favourable form of school-to-work transitions.

figure 4: appearance of cluster in countries

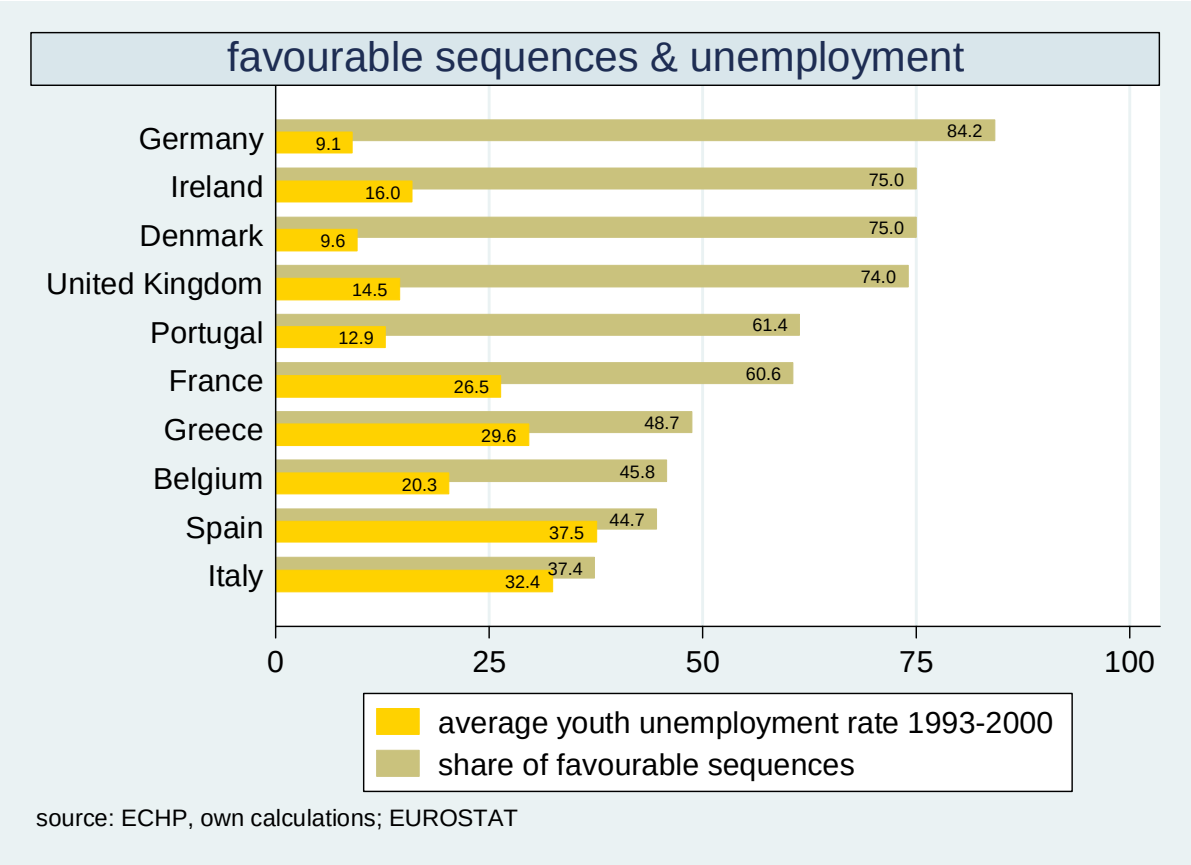


source: ECHP, own calculations

To assess finally the overall potential of transition regimes the share of favourable sequence clusters simply can be added. From the seven clusters, only the ‘link’, ‘express’, ‘bridge’ and ‘detour’ can be regarded as positive transitions (figure 5). With this definition, school-to-work transitions are managed best in Germany, because 84.2% labour market entry sequences are of a favourable kind. Even in Ireland, Denmark and United Kingdom around ¾ of all transition sequences have this property. In the Southern European countries (with the exception of Portugal) and Belgium less than 50% of young people experience favourable transitions into the labour market. Portugal and France constitute a median group with around

60% of favourable sequences. Compared with the average unemployment rates from 1993 to 2000 it is very clear that there is a negative relation between unemployment and favourable sequences. However, the unemployment rate reflects the overall situation in a country, but transition sequences can be used to design policies for vulnerable groups, i.e. groups from which you know that they are follow a particular way into the labour market.

figure 5: favourable sequences & unemployment by country



source: ECHP, own calculations; EUROSTAT

6. CONCLUSIONS & PERSPECTIVES

To analyse school-to-work transitions in a comparative perspective the sequential character of labour market statuses must be taken into account to obtain valuable information about country- or group-specific transitions that can be used to develop adequate policies. This requires the use of explorative methods, because the huge number of theoretically possible sequences doesn't allow handling them as unique cases. The optimal matching algorithm is able to calculate a dissimilarity measure that takes into account the sequential character of the five-year period of labour market statuses after leaving school. The Wards linkage algorithm in turn groups the sequences into coherent clusters using sequence differences.

The cluster analysis conducted on dissimilarity measures of the OM algorithm suggested seven clusters of transition sequences, which are described according to their characteristics as 'return', 'link', 'failure', 'dropout', 'detour', 'express' and 'bridge' cluster. The appearance of these clusters across countries varies widely, because they reflect different institutional configurations and their compatible policies, which then again shape different kind of transition sequences. The most country-specific clusters are the 'failure' cluster for Italy, Greece and Spain, the 'express' cluster for the United Kingdom, the 'return' cluster for Belgium, the 'link' cluster for Denmark and Ireland and the 'bridge' cluster for Germany. The 'dropout' and the 'detour' cluster are not specific for one or more countries at all. The ILM-OLM dichotomy as well as the typology of welfare regimes is only able to explain partly the appearance of clusters in the respective countries and both therefore loose their explanatory power regarding transition sequences. Indeed, Germany as the only explicit OLM system under analysis differs clearly from other countries, because of its dual system and the resulting high share of apprenticeships, but the appearance of other sequence types in ILM systems cannot be explained properly. Esping-Andersen's typology of welfare regimes is somewhat problematic to apply with these data, because the Scandinavian type is only represented by Denmark. However, the two liberal regimes types with their high proportion of 'express' sequences and the Southern European countries (except Portugal) with their high share of 'failure' sequences show slight similarities, but the conservative regimes are highly diverse.

The distribution of the clusters across countries doesn't offer sufficient information about the overall quality of transition regimes. Trying an approximation to this question, two indicators served as auxiliary means. First, the volatility indicator tries to capture episode changes and differentiates between favourable and unfavourable ones. With that indicator, Ireland, Germany and Denmark can be considered as having a positive volatility in relation to other countries. At the same time, it can be shown that the more positive this indicator is the higher is the educational level at the end of the observation period. Second, the share of favourable sequences in every country is seen as an indicator of the overall coordination quality of school-to-work transitions. Here, we primarily find in Germany, but also in Ireland, Denmark and the United Kingdom good performances.

Despite all the evidence that can be obtained from examining transition sequences, there are some serious restrictions, because of data quality. First of all, combined statuses are not available do far, neither from the ECHP nor from any other comparative dataset. With the exception of apprenticeship – that can be interpreted as a hybrid status composed of employment and education – no such labour market status can be identified within the

monthly calendar data. Furthermore, there is a demand for longer time series and more cases to analyse transition sequences more deeply.

The country differences show that the way school leavers take into working life varies a lot between countries, even though they are examined on an aggregate level. National policies that aim to facilitate labour market integration of young people, of course, have to consider their national peculiarities. From a European perspective, it seems to be impossible to implement policies that are suitable for each country's situation. This is true not only for institutional differences, but also for their empirical outcomes. Against this background, European initiatives for tackling youth unemployment have to confine themselves to soft law measures like the open method of coordination. However, it can be useful to create policies on the European level that are targeted to groups with specific kind of transition sequence and might be useful across countries.

For the purpose of deeper examination of the quality of school-to-work transitions, it might be useful to look closer at the social characteristics of people in respective clusters. Thus, future applications of the sequence typology are, for example, to include the cluster affiliation in confirmatory models to study on the one hand causes of particular sequence types and on the other hand effects of certain transition sequences on income, participation in further training or job mobility. The individual sequence types can be used for analysis on the micro level, whereas the number of observations may cause some troubles, or sequence information can be used on the macro level, in terms of country shares of certain sequence types, though the causal structure must be given up.

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