Can we measure the school-to-work transition of young persons with labour force surveys? A feasibility study

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Introduction

Within the framework of the ILO Youth Employment Programme, the School-to-work transition survey (SWTS) was conducted in a total of 34 countries. With multiple rounds, 53 surveys in total were implemented between 2012 and 2016 through the support of the Work4Youth Project, a partnership between the ILO and The MasterCard Foundation. The main purpose of the SWTS is the collection of in-depth information on the labour market situation of young men and women and the quantification of the relative ease or difficulty of their labour market entry. The survey also intends to provide data on the supply side of the youth labour market and to identify the critical issues regarding youth employment for policy and programme additions or revisions. The survey addresses households using a standardized questionnaire adapted to national circumstances, dealing with aspirations and perceptions of youth, their conditions of work, means of job search and history of economic activities.

Data gathering in SWTSs is based on retrospective questions addressed to young persons aged 15 to 29 years old. Many of the key elements of the survey can also be found in conventional labour force surveys. The question then arises as the extent to which the results of the SWTS can also be obtained from conventional labour force surveys. A further question is the extent to which direct measurement of the school-to-work transition can be obtained from labour force surveys with rotation sample designs, thus avoiding memory errors involved in retrospective questioning. If successful, gross flow data derived from labour force surveys with rotation sample design can be deemed potential alternatives to SWTSs in countries where such surveys are conducted.

The purpose of the present paper is to examine the feasibility of obtaining data on school-to-work transitions of young persons from conventional labour force surveys. After an examination of the basic concepts and definitions of the ILO's SWTS, the paper examine in turn the feasibility of measurement with retrospective questions in conventional labour force surveys and with matched samples in labour force surveys with rotation sample design. The country selected for making the feasibility assessment is the Republic of Serbia as a country that conducted both a quarterly labour force survey (LFS) with a rotation sample scheme in 2015 as well as an independent SWTS.

Youth Employment Programme

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The ILO School-to-work transitions surveys (SWTS) are implemented as an outcome of the **Work4Youth (W4Y)** project, a partnership between the ILO and The MasterCard Foundation. The project has a budget of US$14.6 million and will run for five years to mid-2016. Its aim is to "promote decent work opportunities for young men and women through knowledge and action". The immediate objective of the partnership is to produce more and better labour market information specific to youth in developing countries, focusing in particular on transition paths to the labour market.

See the website www.ilo.org/w4y for more information.

1. Concepts and definitions[1]

The key concepts of SWTSs are the notions of youth and young persons, the concepts of transition and stages of transition and the length of transition. Each concept is discussed in turn below.

Youth and young persons

The international definition of the youth population is "persons aged 15–24 years old." The ILO resolution concerning youth employment, adopted at the International Labour Conference (86th ILC 1998), recognizes in its preamble that "in many countries young people, particularly *between the ages of 15 and 24*, are finding it increasingly difficult to enter the labour market and that this constitutes not only a threat to social peace but also an obstacle to the development of the individual and to that of society as a whole," [emphasis added]. Accordingly, the ILO reports on *Global Employment Trends for Youth*, the latest of which was published in 2015 (ILO, 2015), define "youth" as persons aged 15–24 and analyse global and regional statistics accordingly.

However, to cover countries where entry into the labour market occurs at a later stage, the SWTS extends the definition to include young adults aged 25–29 years old. The different concepts and definitions may thus be expressed as follows:

Youth population	15–24 years old
Young adults	25–29 years old
Young persons	15–29 years old

From this point forward in this paper, the term "young persons" can be assumed to cover persons aged 15–29 years old. It should be noted that these definitions excludes children below the age of 15 who may be working or seeking work whether in permissible light work or in conditions considered as child labour.

Transition and stages of transition

In the latest version of the SWTSs – revised and implemented in the framework of the Work4Youth Project – a *labour market transition* is defined as "the passage of a young person from the end of schooling to the first stable or satisfactory job" (ILO, 2015, chapter 5). A *stable job* is a job with a written contract of duration of at least 12 months or an oral agreement likely to hold over the next 12 months. A *satisfactory job* may be *satisfactory self-employment* in which the young self-employed person does not want to change job or a *satisfactory temporary job* where the young employee has a written contract of duration less

[1] Farhad Mehran is an ILO Consultant and former Director of the Department of Statistics. He wishes to express his gratitude to Sara Elder, Chief Technical Advisor of the Work4Youth Project, for managing the project, and to Vesna Pantelic, Statistical Office of the Republic of Serbia, for making available the quarterly datasets of the Serbia LFS 2015 and graciously responding to the numerous requests for clarification. The author would like also to thank Mauricio Dierckxsens, ILO Decent Work and Technical Support Team and Country Office for Central and Eastern Europe, for facilitating the data transfer, and Yonca Gurbuzer and Marco Principi of the Work4Youth team for their kind assistance in converting the data files and making verifications with the comparable data from the Serbia SWTS 2015. The present revised document takes into account the comments received during the workshop on "Measuring school-to-work transition survey with labour force survey data," held at the ILO Headquarters in Geneva on 26 September 2016.

than 12 months and does not want to change job, or has an oral agreement, not certain to keep the job over next 12 months, but does not want to change job.

Three categories of young persons are distinguished in relation to their current stage of transition:

1. **Transited:** not in school, currently employed in a stable job or in satisfactory self-employment or satisfactory temporary job;
2. **In transition:** in school, currently employed or unemployed; not in school but in the potential labour force; employed in a temporary or unsatisfactory job; or inactive and not in education or training but aiming to look for work later;
3. **Transition not yet started:** still in school and currently inactive; or not in education or training, currently inactive with no intention of looking for work.

Young persons may also be classified as "transited", "in transition" and "transition not yet started" with respect to their past work experience. Thus, a young person who is currently unemployed but had at some point of time in the past a stable job and therefore completed the transition to the labour market would be classified as "transited" with respect to the past work experience and "in transition" with respect to his or her current labour force status. In order to mark the differences, the data presented in this report are calculated both with respect to current labour force status and past work experience.

Length of transition

For those who transited, the SWTS allows for further measure of their transition path in terms of the length of transition and the ease or difficulty in getting their job. For example, a person may have obtained a stable job directly after leaving school. Others may have had some spells of unemployment or short work experiences before obtaining their current stable job. Still others may have gone on travel or engaged in household duties before entering the labour market.

The length of transition is defined as the length of time between the date the person left school and the date the person found his or her first stable or satisfactory job (ILO, 2015, chapter 5). For persons who are in transition, the complete length of transition cannot be measured since the transition is still on-going. But instead in this case, the elapsed length of transition can be determined as the length of time between the date that the person left school and the current date. For persons who have not yet started their labour market transition, neither the complete length of transition, nor the elapsed length of transition can be measured.

2. Measurement with Serbia LFS stock data

The school-to-work transition concepts are measured in this section using the stock data of the Serbian LFS 2015. The results are then compared with those of the Serbia SWTS 2015. Both sets of data are based on retrospective questions. The main difference is that the SWTS data are based on self-response, i.e. young respondents provide information on themselves, while in the LFS respondents may be any knowledgeable adult members of the sample household. Another difference is that the Serbia LFS 2015 was conducted with a mixed mode of data collection using face-to-face interviews at the first and third quarterly visits, and, where it was possible, telephone interviews at the second and fourth visits. Below the Serbia LFS 2015 is briefly described before presenting the main results on the distribution of the youth population by labour force status and then by stage of transition from school to work and length of transition.

The LFS of the Statistical Office of the Republic of Serbia has evolved from a bi-annual survey in 2008 conducted each April and October, with an additional round in June in 2013, to a quarterly survey in 2014, and starting from January 2015 to a continuous survey where the quarterly sample is spread evenly over all weeks of the quarter.

The 2015 LFS had a target sample size of 54,578 households for the year, stratified by proportional allocation to the 25 administrative divisions of the country (Oblasts) and two types of settlements (urban and other).[2] To improve the precision of the estimates of changes, the sample design incorporates a 2-2-2 rotation scheme according to which each household selected in the sample is interviewed in two consecutive quarters, removed from the sample in the next two quarters, and then returned to the sample in the two subsequent quarters before leaving the sample altogether. This aspect of the sample design will be described in more detail in the next section where the rotation design is used to derive flow data for the measurement of school-to-work transition.

The sample size of the Serbia LFS 2015 in terms of number of young persons is comparable to the sample size of SWTS 2015 as shown in Table 1 below. The effective quarterly sample size of Serbia LFS 2015 contained on average 4,523 young persons, compared with 3,500 in the Serbia SWTS 2015. The effective sample size in the first quarter (LFS Q1) was significantly lower than the other quarters due to the transition from a bi-annual survey in 2014 to a quarterly survey in 2015.

Table 1. Effective sample size of Serbia LFS 2015 in terms of young persons

Quarter	Number of young persons in the sample
LFS Q1	4,168
LFS Q2	4,620
LFS Q3	4,651
LFS Q4	4,652
Average LFS 2015	**4,523**
SWTS 2015	**3,500**

The survey questionnaire contains in total 144 questions including control points for the interviewers. It follows closely the Eurostat guidelines of the European Union LFS for 2014 Q1 onwards. It is organized in twelve parts covering demographic characteristics and items for determination of belonging to the target population; employment and labour status; characteristics of the main job; characteristics of any second or additional job, or looking for another job; previous professional experience; search for employment; main source of income and main status; situation one year ago; status in the National Employment Office; education and/or training; financial status of the household as well as other items on cooperation with the household, information regarding telephone, e-mail address and remarks of the interviewer. The LFS questionnaire does not contain all information collected in the SWTS 2015, but it does cover sufficient items for measuring the basic elements of the school-to-work transition.

[2] Sample selection is done in two stages. The first stage units are enumeration areas from the 2011 population census selected by systematic sampling with probability proportional to size, where size is measured in terms of population aged 15 years and over. The second stage units are a fixed sample-take of 10 households per enumeration area, selected with equal probability from the list of households of the sample enumeration areas. The quarterly sample results are weighted to derive estimates of the population at large. The calculation of the extrapolation weights involves three main steps: (a) the design weight obtained as the inverse of the probability of selection of the sample household; (b) adjustment to take into account non-responding households; and (c) calibration to match demographic projection data from administrative sources for correcting any coverage error.

2.1 Labour force status

Based on the section on employment and labour status of the questionnaire, the Statistical Office of the Republic of Serbia constructed a derived variable labeled PSTATUS specifying the labour force status of the working age persons 15 years old and over. PSTATUS has three values as follows:

PSTATUS Labour force status (derived variable constructed by the Statistical Office of the Republic of Serbia based on combination of several LFS questions)

1. Employed
2. Unemployed
3. Outside the labour force

Using this variable and the sampling weights calculated by the Statistical Office, both available in the dataset, the main labour force indicators of the youth population 15–29 for 2015 are calculated as shown in Table 2 below. The data refer to the average of the four quarters of 2015. The table compares the results with the corresponding data from the SWTS 2015.[3]

According to these estimates, some 1,235,000 young persons were residing in private households in Serbia in 2015 of whom 566,000 were in the labour force and 669,000 were outside the labour force, corresponding a labour force participation rate of 45.8 per cent. The youth labour force comprised 368,000 employed and 198,000 unemployed young persons, indicating an employment-to-population ratio of 29.8 per cent and unemployment rate of 35.0 per cent.

Table 2. Labour force status of young persons

Variable/indicator	LFS 2015 Annual average	SWTS 2015	Difference
Young persons ('000)	1,235	1,255	-20
Labour force ('000)	566	577	-11
- Employed ('000)	368	399	-31
- Unemployed ('000)	198	178	20,
Outside labour force ('000)	669	678	-9
Labour force participation rate (%)	45.8	46.0	-0.2 pp
Employment-to-population ratio (%)	29.8	31.8	-2.0 pp
Unemployment rate (%)	35.0	30.8	4.2 pp

Note: pp = percentage points.

Source: Author's calculations based on the Serbia LFS and SWTS 2015.

Compared with the results obtained from SWTS 2015,[4] the LFS results show close agreement on the estimates of the total number of young persons and also on labour force participation, but significant underestimation of employment and overestimation of unemployment. The differences reflect in part the different modes of data collection in the two surveys, self-response in SWTS and a possibility of proxy response in LFS. Some 78 per cent of the responses for the young persons in the LFS were obtained from other members of the household, while only 22 per cent were self-responses.

[3] The SWTS micro datasets are available on the website : www.ilo.org/w4y.

[4] The survey results are summarized in Marjanovic (2015).

Analysis of the data for self-respondents and proxy-respondents separately shows that the employment-to-population ratio for self-respondents is 9.9 percentage points higher than the corresponding ratio for proxy-respondents in the LFS. By contrast, the unemployment rate for self-respondents is 3.0 percentage points lower than the rate for proxy-respondents. This is because marginal employment activities such as part-time employment, casual labour, and temporary employment have a lower chance of being known and are therefore not reported by other members of the household in surveys accepting proxy-response, and young persons tend to be employed in such activities in higher proportion than other adults. The effect of this inherent difference in modes of data collection should be taken into account when the estimates of school-to-work transition from the two types of surveys are compared in the next section.

2.2 Stages of transition

The core elements of the labour force survey concern the current work experience, the measurement of stages of transition of young persons is with respect to their current labour force status. Accordingly, the measurement of stages of transition is thus based on the derived variable PSTATUS and a number of additional variables referring to the current school and work experience of the individual obtained from the LFS questionnaire. The relevant LFS questions extracted from the English version of the questionnaire[5] are reproduced here:

EDUCSTAT Did you attend school belonging to the system of regular education in the previous 4 weeks?

1. Yes, as a pupil/student or pupil/student on compulsory work experience
2. Yes, attending school within regular education but was on holidays
3. No, not in regular educational system or not pupil/student on compulsory wok experience

STATPRO What was your professional status at your main job during reference week?

1. Owner/co-owner of an enterprise (Ltd, JSC)
2. Entrepreneur or partner in a partnership (shop, catering, handicrafts establishment, lawyer's office, practice, and other liberal professions)
3. Person earn agreed compensation as dominant revenue source – persons working on contract, for a fee (service contracts, brokerage and representation contracts, copyright contracts, etc.)
4. Independent artist, sportsman or person performing an activity in the field of culture, art, religion, etc., activities based on authorization from competent association or regulatory institution
5. Other not specified forms of independent performance of an economic activity
6. Individual farmer
7. Employee
8. Contributing family worker

TEMP Do you have … ?

1. Job of unlimited duration
2. Job of limited duration
3. Seasonal job
4. Temporary job

TEMPDUR What is the total duration of your job of limited duration, seasonal or temporary job?

1. Less than one month

[5] Statistical Office of the Republic of Serbia, *LFS questionnaire, Labour Force Survey*, Survey code: 019050.

2. 1–3 months
3. 4–6 months
4. 7–12 months
5. 13–18 months
6. 19–24 months
7. 25–36 months
8. More than 3 years

LOOKOJ Did you look for another job during the previous 4 weeks?

1. Yes
2. No

WANTWORK Even though you are not seeking employment, are you willing to work?

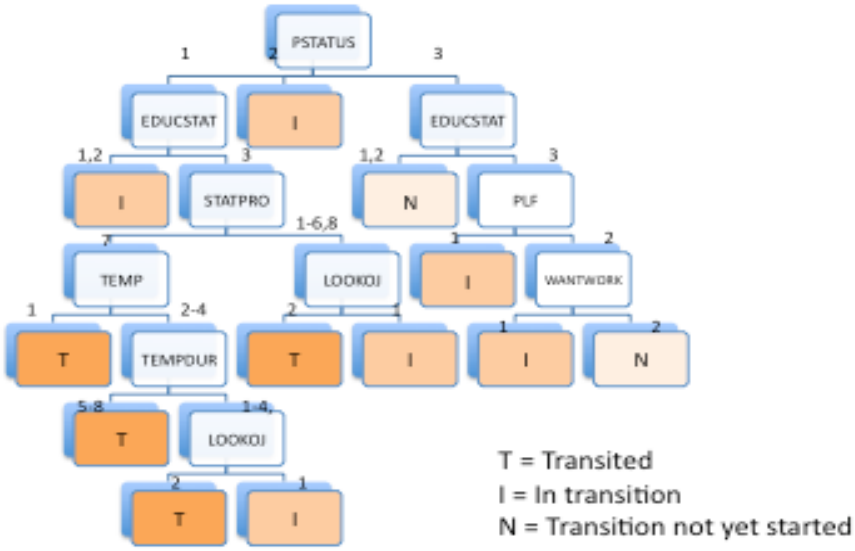
1. Yes
2. No

PLF Potential labour force (ILO, 2013) (derived variable based on combination of several questions)

1. Outside the labour force, either seeking but not available for employment, or not seeking but available and wanting employment
2. Otherwise

The exact procedure used for classifying the young persons into the three stages of school-to-work transition is shown schematically in Figure 1. Young persons currently employed (PSTATUS=1) are first checked for whether or not they are currently in school (EDUCSTAT=1, 2 or 3). If currently in school, they are considered as in transition (I). Otherwise, their status in employment is checked. Those who are reported to be employees (STATPRO=7) and have a job of unlimited duration (TEMP=1) are classified as transited (T). So are those who have jobs of unlimited duration (TEMP=2-4), but the total duration of their job is more than one year (TEMPDUR=5-8). Those whose job duration is one year or less (TEMPDUR=1-4) are also classified as transited (T) if they report not looking for another job (LOOKOJ=2). Otherwise, they are classified as in transition (I).

Figure 1. Stages of school-to-work transition of young persons based on Serbia LFS 2015



The classification scheme proceeds as indicated in the different branches of the scheme of Figure 1 until the young persons are all classified as either transited (T), in transition (I) and transition not yet started (N). The numerical results are shown in Table 3 below along with the corresponding estimates from the Serbia SWTS for comparison.

Table 3. Stages of school-to-work transition of young persons

Stage of transition	LFS 2015 Annual average	SWTS 2015	Difference
Young persons ('000)	**1,235**	**1,255**	**-20**
- Transited	277	251	24
- In transition	353	499	-146
- Transition not yet started	605	505	100
Total (%)	**100.0**	**100.0**	**-**
- Transited	22.5	20.0	2.5 pp
- In transition	28.4	39.8	-11.4 pp
- Transition not yet started	49.1	40.0	8.9 pp

Note: pp = percentage points.

Source: Author's calculations based on the Serbia LFS and SWTS 2015.

According to the LFS estimates, among the 1,235,000 young persons in 2015, 277,000 had transited into a stable or satisfactory employment, 353,000 were in transition and for 605,000 the transition had not the yet started. In relative terms this means 22.5 per cent of the young persons had transited, 28.4 per cent were in transition and 49.1 per cent had not yet started their transition.

Compared with the SWTS estimates, the LFS results slightly overestimate the number of young persons who transited (by 24,000 or 2.5 percentage points in shares), but significant underestimate the number of those in transition (by 146,000 or -11.4 percentage points). Correspondingly, the LFS estimate significantly overestimates the number of young persons whose transition has not yet started (by 100,000 or 8.9 percentage points).

Three main factors explain these differences. First, the possibility of proxy response in the labour force survey as opposed to the exclusive use of self-response in the SWTS means that marginal types of employment (occasional unpaid family work, for example) tend to be relatively more underreported in the LFS than in the SWTS. As a consequence, the relative share of stable and regular employment tends to be higher in the LFS compared with SWTS data. An evidence of this may be observed by comparing the transited jobs in total employment according to the LFS (75.3 per cent) with the corresponding percentage according to the SWTS (62.9 per cent).

The other main factor explaining the difference between the estimates of stages of transition obtained from the two surveys is the approximate nature of the variable LOOKOJ for identifying people who have satisfactory or non-satisfactory temporary or self-employment in the LFS. The use of the question LOOKOJ implies that only persons with temporary or self-employment jobs who reported looking for employment during the past 4 weeks are classified as in transition. People with temporary or self-employment jobs who were not looking for employment but wanted to change employment are excluded from the count, thus contributing to the underestimation of the young persons in transition. Recall that in the definitions applied to the SWTS, the indication of a desire to change job is taken to signal dissatisfaction among young persons in temporary employment or self-employment (thus placing them in the category 'in transition').

The third main factor explaining the difference between the two sets of data is the subjective nature of the criterion of "intention of looking for work later" in the definition of "in transition" applicable to young persons who are inactive and not in education or training.

In the SWTS, this criterion is assessed with a broad question on "intention for looking for work later" while in the LFS it is measured with a more restricted question on "willing to work despite not having searched for employment during the past 4 weeks." An evidence of the broad nature of the SWTS measurement is the high share of young persons outside the labour force who are in transition (25.5 per cent) relative to the corresponding more moderate share according to the LFS (9.6 per cent).

2.3 Forms of transition

Transition from school to work may take different forms within each stage of transition. For example, persons who have transited into the labour market may be currently employed in a stable job or in satisfactory self-employment or satisfactory temporary. Persons who are in transition may be currently unemployed looking for a stable job or currently employed but in an unsatisfactory temporary or self-employed job. Persons who have not yet started the transition may be currently in school or have completed schooling but not yet started to look for work.

Data on forms of transition can be derived by cross-classification of stages of transition with labour force status (PSTATUS) and educational attendance status (EDUCSTAT). They can also be derived from data processing along the scheme described in Figure 1, where the different end points T, I and N correspond to the various forms of transition. The results based on cross-classification are shown in Table 4.[6]

According to the LFS results presented in Table 4, only 3.6 per cent of the school-leavers[7] who have completed their transition into the labour market have transited in a stable employment. The bulk has transited into a satisfactory temporary or self-employment, not wanting to change job (96.4 per cent). Among young persons currently in transition, the majority are unemployed school-leavers (50.3 per cent), followed by active students (combining school with work or looking for work; 18.8 per cent), and inactive school-leavers in the potential labour force or aiming to look for work later (18.2 per cent). The lowest category comprises school leavers in non-stable or non-satisfactory employment, wanting to change job (12.7 per cent). Finally, among the young persons who have not started transition into the labour market, the bulk comprises inactive students (88.8 per cent) and the remainder inactive school with no intention of looking for work (11.2 per cent).

The comparison of the LFS and SWTS results in the second column of Table 4 shows drastic differences in the estimates of transited school leavers. According to the SWTS, more than three-fourth of the transited school leavers have transited into a stable employment (79.6 per cent) against 3.6 per cent according to LFS. This large discrepancy is unexpected. Part of the reason may be the difference in the mode of data collection and the approximate nature of the survey questions to measure transition. But the main explanation may be in specification of the different categories of status in employment in the two surveys.

[6] It should be mentioned that further cross-classification of forms of transition by sex and age group such as (15–19, 20–24, 25–29 years old) may lead to estimates with inadequate precision as the number of observations per cell fast diminishes with each level of cross-classification. The same applies to the estimates for SWTS 2015. The estimates from LFS and SWTS should therefore be presented with their associated standard errors and confidence intervals.

[7] School leavers include young persons who have completed their education or training and those who left school before completion. In the case of Serbia, the latter category is minimal (3.2 per cent based the SWTS 2015).

Table 4. Forms of school-to-work transition of young persons

Form of transition	LFS 2015 Annual average (%)	SWTS 2015 (%)	Difference (pp)
Transited	**100.0**	**100.0**	**-**
- School leavers in stable employment	3.6	79.6	-76.0
- School leavers in satisfactory temporary or self-employment, not wanting to change job	96.4	20.4	76.0
In transition	**100.0**	**100.0**	**-**
- Active students	18.8	24.5	-5.7
- Unemployed school leavers	50.3	43.2	7.1
- School leavers in non-stable or non-satisfactory employment, wanting to change job	12.7	17.3	-4.6
- Inactive school leavers in potential labour force or aiming to look for work later	18.2	14.8	-3.4
Transition not yet started	**100.0**	**100.0**	**-**
- Inactive students	88.8	98.0	-9.2
- Inactive school leavers with no intention of looking for work	11.2	2.0	9.2

Note: pp = percentage points.

Source: Author's calculations based on the Serbia LFS and SWTS 2015.

The SWTS classification of status in employment follows the international classification of status in employment (employees, employers, own-account workers, contributing family workers and members of producers' cooperatives) while the LFS follows different standards with more refined categories, in particular, identifying separately "persons earning agreed compensation as dominant revenue source", which refer to persons working on contract, for a fee (service contracts, brokerage and representation contracts, copyright contracts, etc.). Most of these persons would have been classified as employees in SWTS and placed in stable or temporary employment depending on the length of the contract agreement. As only employees are classifiable into stable employment with contracts of unlimited duration or duration more than one year, the number of school-leavers transited into stable employment is likely to have been greatly underestimated for this reason in LFS relative to SWTS.

2.4 Length of transition

The length of transition is measured here with regard to young persons who have transited into their current stable or satisfactory employment. It is calculated for school leavers and young persons without schooling separately. For school leavers, the length of transition is calculated as the difference between the year the person started working at his or her current job (YSTARTWK) and the year the person attained the highest level of education (HATYEAR):

Length of transition = YSTARTWK – HATYEAR if school leaver

For young persons without schooling, the length of transition is calculated as the difference between the year the person started working at his or her current job (YSTARTWK) and the year the person reached 15 years of age,[8]

Length of transition = YSTARTWK – (YBIRTH + 15) if without schooling

[8] For the purpose of this exercise, persons who worked before the legal age of 15 years are not considered.

The survey questions corresponding to the variables are reproduced from the English version of the LFS questionnaire here:

YSTARTWK When did you start working at your current job?
_____ Year

HATYEAR Year when you attained the highest level of education?
_____ Year

YBIRTH Year of birth?
_____ Year

In practice, there were only an estimated 6,237 persons without schooling. These were persons for whom no HATYEAR was reported, most likely because the respondent did not know the year the person attained the highest level of education. For this reason it was decided to restrict the calculation of the length of transition to school leavers and apply the average value to persons without schooling.

The results are shown in Table 5 below. According to the LFS estimates, the average length of transition to current transited jobs was 42.3 months for young persons, slightly lower for young men (41.8 months) than for women (43.0 months). The LFS estimate is, on average, 3.2 months longer than the estimate obtained from SWTS as shown in the second column of Table 5. The SWTS also shows a longer length of transition for young men (39.3 months) than for women (39.1 months) while based on the LFS estimates, the length of transition is longer for young women.

Table 5. Average length of transition to current transited job of young persons (in months)

Sex	LFS 2015	SWTS 2015	Difference
Total	42.4	39.2	3.2
Male	41.8	39.3	2.5
Female	43.0	39.1	3.9

Source: Author's calculations based on the Serbia LFS and SWTS 2015.

3. Measurement with LFS flow data

An increasing number of national labour force surveys and other large-scale household surveys incorporate a rotation or panel design in their sample selection schemes. In this section, we examine the use of the rotation nature or the panel structure of the design of these surveys for measuring the basic elements of the school-to-work transitions of young people. An advantage of using flow data generated from the rotation design of labour force surveys is the possibility of measuring the school-to-work transition without the need of retrospective questions with long reference periods, thus minimizing the risk of measurement errors due to memory lapse and other recall errors. Another advantage is the possibility of deriving estimates of transition to first transited job as well as to current transited job. The proposed methodology is described in the context of the Serbia LFS 2015 and the results are compared with those obtained from the SWTS 2015.

3.1 Rotation design of Serbia LFS 2015

The main purpose of sample rotation is to improve the precision of labour force trends. But it also allows obtaining data on labour force flows by matching sample individuals common in different survey rounds. The sample design of the Serbia LFS programme incorporates a rotation scheme of the form 2-2-2, according to which each household selected in the sample is interviewed in two consecutive quarters, goes out of the sample for the two subsequent quarters, and then returns in the sample for the next two quarters before leaving the sample altogether.

According to this design, 50 per cent of the sample households are common between two consecutive quarters. Also, 50 per cent of the sample households are common in two quarters one year apart. Table 6 shows the number of common units in two consecutive quarters in terms of young persons. In total there were 1,925 records of young persons in the matched sample of LFS Q1 and Q2, 1,980 records in the matched sample of LFS Q2 and Q3 and 1,951 records in the matched sample of LFS Q3 and Q4.

Table 6. Matched sample in two consecutive quarterly survey rounds of the Serbia LFS 2015

Quarters	Number of young persons in matched sample[1]	Effective sample overlap (%)[2]
LFS Q1 and Q2	1,925 (1,989)	46.2
LFS Q2 and Q3	1,980 (2,045)	42.9
LFS Q3 and Q4	1,951 (2,025)	41.9

Notes: [1]Number of young persons who were reported to be 15 to 29 years old in two consecutive survey rounds. The figure in parentheses refers to the number of young persons who were 15 to 29 years in at least one of the survey rounds. [2]The effective sample overlap is calculated in relation to the minimum sample size in two consecutive survey rounds reported in Table 1.

Table 6 also shows in parentheses the number of young persons in the matched samples who were 15 to 29 years old in at least one of the survey rounds. The larger figure reflects the persons who were 14 years old in one survey round and turned 15 in the next. In principle, it also includes young persons who migrated into Serbia in between the two survey rounds. The effective sample overlap between two consecutive quarters is reported in the last column of Table 6. The actual overlaps are lower than the theoretical 50 per cent value because of non-response and sample attrition caused by movement of households from their previous address.

3.2 Transition matrices

Based on the matched samples, the number of persons who changed or remained in their labour force status between two consecutive quarters can be calculated as shown on the left panel of Table 7. Similarly, the number of persons who changed from one stage of the school-to-work transition to another or remained in the same stage of transition in to consecutive quarters can be calculated from the matched sample as shown in the right panel of the table. The data presented in Table 7 are un-weighted and concern the matched sample between the first two quarters of 2015 (Q1 and Q2). Similar tables based on matched samples between Q2 and Q3 and between Q3 and Q4 can also be constructed.

Table 7. Transition matrices for young persons, Serbia LFS 2015 Matched sample Q1 and Q2 (unweighted)

Labour force status

		PSTATUS (Q2)				Total
		E	U	OLF	Out	
PSTATUS (Q1)	E	442	54	27	15	538
	U	89	179	55	9	332
	OLF	48	63	968	12	1091
	Out	1	2	25	0	28
Total		580	298	1075	36	1989

E = Employed

U = Unemployed

OLF = Outside labour force

Out = Out of scope: migrated in Serbia during period Q1 to Q2; 14 year old in Q1 turned 15 in Q2, migrated out of Serbia or died during period Q1 to Q2.

School-to-work transition

		Stage of transition (Q2)				Total
		T	I	N	Out	
Stage of transition (Q1)	T	332	69	9	12	422
	I	106	373	62	17	558
	N	12	73	889	7	981
	Out	1	2	25	0	28
Total		451	517	985	36	1989

T = Transited

I = In transition

N = Transition not yet started

Out = Out of scope: migrated in Serbia during period Q1 to Q2; 14 year old in Q1 turned 15 in Q2, migrated out of Serbia or died during period Q1 to Q2.

Looking at the diagonal elements of the left transition matrix in Table 7, we find that 1,589 young person 15 to 29 years old in the sample had the same labour force status in the first two quarters of 2015 (442 employed, 179 unemployed and 968 outside the labour force in both quarters). The off-diagonal elements show the number of young persons in the sample who changed labour force status between the two quarters (54 from employed to unemployed, 27 from employed to outside the labour force, 15 from employed to outside the scope of the survey, i.e. died or left the country, and so on).

The transition matrix in the right panel of Table 7 presents the counts of the number of young persons in terms of their transition from one stage of school-to-work transition to another. The diagonal elements show the number of persons who remained in the same stage of transition (332 in their current transited job, 373 in transition, and 889 in transition not yet started). The off-diagonal elements show the counts of persons who changed from one stage of transition to another (69 from their current transited job back to in transition, 9 to transition not yet started, 12 to outside the scope of the survey, and so on). The fact that the school-to-work transition matrix contains non-zero off-diagonal elements in the upper part of the matrix reflects the particular definition of transition adopted here, i.e., transition to "current transited job" as opposed to "first transited job". The procedure to estimate transitions to first transited jobs will be described later in this report.

3.3 Transition probabilities

The transition matrices described above may be re-expressed in percentages to provide estimates of transition probabilities from one labour force status to another or from one stage of school-to-work transition to another as shown in the left and right panels of Table 8.

According to the data on the left panel of the table, the probability of an employed person in the first quarter to remain employed in the second quarter is 82.2 per cent while the probability of losing employment and becoming unemployed is 10 per cent, the probability of leaving the labour force is 5 per cent and the probability of going out of the scope of the survey is 2.8 per cent. Similarly, according to the second row of the left table, the probability of an unemployed person in the first quarter finding an employment in the second quarter is 26.8 per cent, the probability of remaining unemployed is 53.9 per cent, the probability of leaving the labour force is 16.8 per cent and the probability going outside the scope of the survey is 2.7 per cent. And so on for the other rows of the table.

Table 8. Transition probabilities for young persons, Serbia LFS 2015 Matched sample Q1 and Q2 (unweighted)

Labour force status

		PSTATUS (Q2)				
		E	U	OLF	Out	
PSTATUS (Q1)	E	0.822	0.100	0.050	0.028	1.000
	U	0.268	0.539	0.166	0.027	1.000
	OLF	0.044	0.058	0.887	0.011	1.000
	Out	0.036	0.071	0.893	0.000	1.000

E = Employed

U = Unemployed

OLF = Outside labour force

Out = Out of scope: migrated in Serbia during period Q1 to Q2; 14 year old in Q1 turned 15 in Q2, migrated out of Serbia or died during period Q1 to Q2.

School-to-work transition

		Stage of transition (Q2)				
		T	I	N	Out	
Stage of transition (Q1)	T	0.787	0.164	0.021	0.028	1.000
	I	0.190	0.668	0.111	0.030	1.000
	N	0.012	0.074	0.906	0.007	1.000
	Out	0.036	0.071	0.893	0.000	1.000

T = Transited

I = In transition

N = Transition not yet started

Out = Out of scope: migrated in Serbia during period Q1 to Q2; 14 year old in Q1 turned 15 in Q2, migrated out of Serbia or died during period Q1 to Q2.

The data in the right panel of Table 8 gives similar transition probabilities from one stage of school-to-work transition to another. Thus, the probability of a young person with a transited job in the first quarter to retain his or her transited job in the second quarter is 78.7 per cent while the probability of returning back to the stage of in transition is 16.4 per cent, 2.1 per cent to return to the stage in transition not yet started and 2.8 per cent to move outside the scope of the survey. Similarly, according to the second row of the left table, the probability of a person in transition in the first quarter to transit to a transited job in the second quarter is 19.0 per cent, the probability of remaining in transition is 66.8 per cent, the probability of returning back to the stage of transition not yet started is 11.0 per cent, and the probability of going outside the scope of the survey is 3.0 per cent, and so on.

As expected the probability of remaining employed, 82.2 per cent in left panel of Table 8, is higher than the probability of retaining a stable or satisfactory employment (transited job), 78.7 per cent in the right panel of Table 8. In contrast, the probability of remaining unemployed in two consecutive quarters (53.9 per cent in Table 8 left panel) is lower than the probability of remaining in the stage of school-to-work transition (66.8 per cent in Table 8 right panel).

The transition matrices and transition probabilities presented in Tables 7 and 8 are based on the sample counts and should be multiplied by appropriate sampling weights in order to reflect the national youth population within the scope of the survey. The calculation of sampling weights for estimating flows requires careful considerations. They do not result directly from the sampling weights calculated for the LFS stock estimates. The calculation of the sampling weights should account for the fact that the matched sample is about half the sample size of each LFS round. Also, it should ensure consistency between the flow and stock estimates. For the first step, a multiplication factor is used for each stratum reflecting the reduced size of the matched sample relative to the quarterly sample. For the second step, the flow estimates are adjusted by iterative proportional fitting to the marginal totals derived from the LFS stock data.[9]

The final step combines the results of the two prior steps. It calibrates the adjusted weights obtained in step 1 to the aggregate estimates obtained by iterative proportional fitting in step 2 (Deville and Sarndäl, 1992). The final weighted estimates are shown in Tables 9 and 10. The weighted estimates correspond to the un-weighted sample counts presented in Tables 7 and 8. It is instructive to note that the weighted results in Table 10 show higher

[9] https0.252://en.wikipedia.org/wiki/Iterative_proportional_fitting.

rates of transition relative to the un-weighted counts in Table 8, for transitions in terms of labour force status as well as transitions in terms of school-to-work.

Table 9. Transition matrices for young persons, Serbia LFS 2015 Matched sample Q1 and Q2 (weighted)

Labour force status

		PSTATUS (Q2)				Total
		E	U	OLF	Out	
PSTATUS (Q1)	E	124967	13577	6711	31667	176922
	U	27521	50687	15467	15614	109289
	OLF	12680	16751	265210	52105	346746
	Out	21201	6463	30741	0	58405
Total		186369	87478	318129	99386	691362

E = Employed

U = Unemployed

OLF = Outside labour force

Out = Out of scope: migrated in Serbia during period Q1 to Q2; 14 year old in Q1 turned 15 in Q2, migrated out of Serbia or died during period Q1 to Q2.

School-to-work transition

		Stage of transition (Q2)				Total
		T	I	N	Out	
Stage of transition (Q1)	T	90183	19375	2335	28678	140571
	I	32010	103542	16380	31078	183010
	N	3046	21686	245013	39630	309375
	Out	14579	15225	28602	0	58406
Total		139818	159828	292330	99386	691362

T = Transited

I = In transition

N = Transition not yet started

Out = Out of scope: migrated in Serbia during period Q1 to Q2; 14 year old in Q1 turned 15 in Q2, migrated out of Serbia or died during period Q1 to Q2.

Table 10. Transition probabilities for young persons, Serbia LFS 2015 Matched sample Q1 and Q2 (weighted)

Labour force status

		PSTATUS (Q2)				
		E	U	OLF	Out	
PSTATUS (Q1)	E	0.706	0.077	0.038	0.179	1.000
	U	0.252	0.464	0.142	0.143	1.000
	OLF	0.037	0.048	0.765	0.150	1.000
	Out	0.363	0.111	0.526	0.000	1.000

E = Employed

U = Unemployed

OLF = Outside labour force

Out = Out of scope: migrated in Serbia during period Q1 to Q2; 14 year old in Q1 turned 15 in Q2, migrated out of Serbia or died during period Q1 to Q2.

School-to-work transition

		Stage of transition (Q2)				
		T	I	N	Out	
Stage of transition (Q1)	T	0.642	0.138	0.017	0.204	1.000
	I	0.175	0.566	0.090	0.170	1.000
	N	0.010	0.070	0.792	0.128	1.000
	Out	0.250	0.261	0.490	0.000	1.000

T = Transited

I = In transition

N = Transition not yet started

Out = Out of scope: migrated in Serbia during period Q1 to Q2; 14 year old in Q1 turned 15 in Q2, migrated out of Serbia or died during period Q1 to Q2.

The percentage of young persons whose labour force status has changed between the first two quarters is 36.4 per cent based on the weighted data (Table 9 left) as opposed to 20.1 per cent based on the sample counts (Table 7 left). Similarly, the percentage of young persons whose stage of school-to-work transition has changed between the first two quarters is 36.6 per cent based on the weighted data (Table 9 right) as opposed to 19.9 per cent based on the sample counts (Table 7 right).

3.4 Transition to first transited job

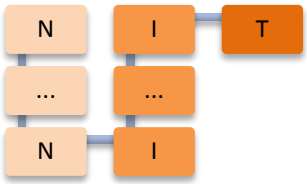
The most relevant notion of transition for youth is the transition from school to the first stable or satisfactory job. The policy implications of the first transition are of particular relevance and are distinct from any subsequent transitions that are generally governed by the normal labour market cycles. The length and path taken during the first transition essentially determines the ease or difficulty of young people entering into the labour market.

While the stock data derived from conventional labour force surveys can provide information on the transition from school to the current transited job, the measurement of

school-to-work transition to the first transited job requires more elaborate data and assumptions. Consider a school-leaver who at a specified time has not yet started the transition to the labour market (state N). Suppose further that at the next time period, the person is found to have a stable or satisfactory employment as defined earlier (state T). The school-to-work transition of this person may be schematically represented as:

An alternative path to the first transited job could be:

in which case, the person experiences an intermediate period of unemployment or non-stable and non-satisfactory employment (state I). In general, the transition to the first transited job may involve a period of inactivity before starting transition and a period of remaining in transition before finding the first transited job as shown in the following diagram more general path of transition:



The essential point about transition to first transited job –unlike the transition to current transited job – is that once transition has taken place, there is no return to the earlier state I (in transition), or the original state N (transition not yet started). One may however admit situations where a person in transition returns to school or inactivity for a period of time before restarting the transition process.

The transition process may be approximated in terms of the transition probabilities expressed earlier assuming that the school-to-work transition process forms a Markov chain. This means that the transition probabilities from one time period to the next depend entirely on the current state of the person, and not on any earlier transition experience. In general, let $f_{ij}(n)$ be the probability that the first entry to state j from state i has taken n time periods. In mathematical terms, the probability can be expressed as:

$$f_{ij}(n) = P(X_n = j \mid X_o = i)$$

where X_o represents the starting state of the Markov chain and X_n the state after n time periods.

Since the transition probabilities are independent of time, $f_{kj}(n-1)$ is also the probability, given $X_1=k$, that the first subsequent occurrence of state j occurs at time n. Thus we can calculate $f_{ij}(n)$ from the iterative relations:

$$f_{ij}(n) = \sum_{k \neq j} P_{ik} f_{kj}(n-1), \qquad n > 1$$

where $P_{ik}=P(X_n=k|X_{n-1}=i)$ and the starting point $f_{ij}(1)=P_{ij}$. Having obtained the values $f_{ii}(n)$, the expected length of transition from state i to the first occurrence of state j may be calculated as follows:

$$\mu_{ij} = \sum_{n=1} n \times f_{ij}(n)$$

In matrix notation, the elements μ_{ij} may be obtained in terms of the 3x3 matrix $M=[\mu_{ij}]$, where μ_{31} is the mean length of transition from state 3 (transition not yet started) to state 1 (first transited job); μ_{21} the mean length of transition from state 2 (state of being in transition) to state 1 (first transited job); μ_{11} the mean length of time for returning to a transited job, and so on for the other elements, μ_{12}, μ_{22}, μ_{32}, and μ_{13}, μ_{23}, μ_{33}. The matrix $M=[\mu_{ij}]$ is given by the formulae:

$$M = (I - Z + J \times Z_{dg}) \times D$$

where $M=[\mu_{ij}]$, I the identity matrix with 1 in the diagonal cells and 0 in the off-diagonal, J the matrix filled with 1's in all cells, and:

$$Z = (I - P + W)^{-1}$$

where $P=(P_{ij})$ and W its limiting matrix, $W=\lim_{n\to\infty} P^n$. Finally, Z_{dg} is the matrix obtained by setting the off-diagonal cells of Z equal to 0, and D is the diagonal matrix whose i^{th} diagonal cell is $1/w_i$ (Meyers, 1978).

We apply the matrix formulae to the school-to-work transition probabilities of the Serbia LFS 2015 Q1 and Q2:

$$P = \begin{pmatrix} 0.806 & 0.173 & 0.021 \\ 0.211 & 0.681 & 0.108 \\ 0.011 & 0.081 & 0.908 \end{pmatrix}$$

P is derived from Table 9 (right), where the out-of-scope category is ignored and the rows are proportionally adjusted so that the probabilities in each row added to one. Here the elements of P are interpreted as the probabilities of moving from one type of job to another. Thus, the top left corner element 0.806 represents the probability of remaining in a transited job during one quarter, the next element 0.173 is the probability of losing a transited job during one quarter, i.e., becoming unemployed or moving to an unsatisfactory temporary or self-employment job, and so on.

Using P in the matrix formulae we find the mean first passage matrix given below:

$$M = \begin{pmatrix} 3.1 & 6.4 & 19.4 \\ 9.7 & 3.6 & 16.0 \\ 19.4 & 11.7 & 2.5 \end{pmatrix}$$

The figure $\mu_{31} = 19.4$ in the third row of the first column of M gives the average length of time in quarters of the transition from the state of transition not yet started to the first transited job or to the first stable or satisfactory job. The average length of time in quarters to remain in the state of transition not yet started under steady-state conditions can be calculated from the third diagonal element of P as 1/(1-0.908)=10.9. This is essentially the average length of time in education and inactivity. Thus, the difference,

$$19.4 - 10.9 = 8.5 \text{ quarters}$$
$$= 25.5 \text{ months}$$

gives the average length of time in quarters – converted to months – from the end of education to the first transited job. It should be noted that the estimate (8.5 quarters) is slightly lower than the estimate of the average length of time in transition to the first transited

job obtained from the M matrix ($\mu 21 = 9.7$ quarters). This is because the latter includes periods of return to transition not yet started corresponding to situations where the young person return to the education system or inactivity after a period of unemployment of unsatisfactory temporary employment or self-employment employment.

The final result as well as those calculated for young men and women separately is compared in Table 11 with the estimates obtained from the Serbia SWTS 2015. The ILO methodology applied to the survey measures the length of transition in two ways: including and excluding direct transitions. Including direct transition means that the calculation of the average length of transition includes persons who have transited into their first transited jobs directly at the end of their education, without any period of transition. Excluding direct transition means that the calculation of the average length of transition excludes these persons.

Table 11. Average length of transition from end of education to first transited job of young persons (in months)

Sex	LFS 2015 Matched sample	SWTS 2015		Difference from average SWTS 2015
		Including direct	Excluding direct	
Total	25.5	19.3	28.4	1.7
Male	22.4	18.7	27.5	-0.7
Female	28.5	20.0	29.7	3.7

Source: Author's calculations based on the Serbia LFS Matched sample Q1 and Q2 and SWTS 2015.

In the LFS, a transition can only be identified after at least one quarter, so the direct or indirect transitions cannot be separately measured. Thus the LFS estimates are compared with the average of the direct and indirect estimates of the SWTS. The resulting estimates show very close agreement between the two sources. The difference of the estimates is less than one month for young men, 3.7 months for young women and 1.7 months for the two sexes combined. In all cases, the average length of transition is slightly longer for young women relative to men.

Other types of transition duration can be measured with the LFS flow data and compared with the corresponding SWTS estimates, for example, the average length of transition from end of education to the first employment, any employment, or the average length of transition from the first labour force experience to the first transited job or to the first employment, any employment. The various lengths of transition can also be measured for different age groups and other demographic characteristics of the young persons.

4. Summary and suggestions for future application of methodologies

The ILO SWTS collects a rich set of information on the current labour market characteristics of young persons, including current labour force status, school enrolment and stage of school-to-work transition. It also collects retrospective data on past school attendance and past work experience such as date of end of education and date of first entry into the labour force. It is shown here that with certain modifications, conventional labour force surveys can also provide some of the key data on current labour market characteristics of the young persons. The relevant historical data can also be derived under certain assumptions from labour force surveys with rotation sample design.

4.1 Principal findings of the feasibility study

An attempt has been made in this report to construct close approximations of the main variables of the ILO SWTS using data from the Serbia LFS 2015 and to compare the results with the corresponding estimates from the SWTS conducted in Serbia in the same year. The analysis of the comparison may be summarized as follows:

1. **Sample size**. The effective sample sizes of the two surveys in terms of number of young persons in the sample are similar in order of magnitude, on average 4,523 per quarterly survey round for the LFS and about 3,500 over the year for the SWTS. Overall on an annual basis, however, the effective sample size of the LFS is more than double the sample size of the SWTS, thus producing, in principle, more precise estimates than the SWTS in terms of sampling errors and confidence intervals.

2. **Self-response**. Like in virtually all national labour force surveys, data collection in the Serbia LFS allows proxy response when self-response is not possible or practical. Data collection in the Serbia SWTS is however based entirely on self-response, thus producing, in principle, more accurate data in terms of response errors and measurement bias. The overall result is that employment is underestimated and unemployment overestimated in the LFS relative to the SWTS with significant impact on the derived measurement of stages of transition.

3. **Employees**. The definition of school-to-work transition distinguishes between stable employment of employees, not in school, with contract of duration of more than 12 months and satisfactory employment of self-employed persons and employees with temporary employment of 12 months or less who do not want to change employment. The notion of *employee* is therefore central to the definition. In the Serbia LFS, employees are identified separately from persons working on contract for a fee (service contracts, brokerage and representation contracts, copyright contracts, etc.) who earn an agreed compensation as dominant revenue source. Many of these persons however may be identified as employees in the SWTS, thus distorting the measurement of school-to-work transition in the two surveys.

4. **Wanting to change employment**. Another source of discrepancies is the criterion of "wanting to change employment" in the definition of school-to-work transition for self-employed persons and temporary employees. The Serbia LFS questionnaire follows the European Union standards and does not include a question asking employed persons whether or not they want to change their employment. An approximation was used for the present purpose by substituting the SWTS question "wanting to change employment" with the LFS question on "looking for another employment". The substitute question is however more restrictive and therefore leads to a lower estimate of the number persons classified as "in transition" in the LFS relative the estimate in the SWTS.

5. **Intention of looking for work**. The stage "in transition" of the school-to-work transition process includes persons not in education or training and currently inactive with no intention of looking for work. The SWTS notion of "intention of looking for work" is broad and subjective. It does not have an equivalent in the Serbia LFS. The closest approximation used in the present context is the LFS question "Even you are not seeking employment, are you willing to work?" The question is addressed to persons who responded not having searched for employment during the past 4 weeks, and implies that the desire for work is with respect to the current situation. The SWTS question on "intention of looking for work" has, however, no time boundary, and consequently leads many persons to respond positively even though they may not have the intention of looking for work in the near future. This factor has contributed to the large number of young persons classified as "in transition" in the Serbia SWTS relative to the number in the Serbia LFS.

6. **End of education**. In both SWTS and LFS, end of education is measured with retrospective questions. The LFS measurement is based on questions on the year and month the person attained the highest level of education. The SWTS measurement is similarly based on questions on month and year the young person finished formal education or training. Although the sets of questions are virtually identical, the responses may differ from each other, because the SWTS questions are based on self-response while the LFS questions allow proxy-response. It should be mentioned that the difference in modes of data collection affects the measurement of the length of transition from end of education to the current transited job, but not the length of transition from end of education to the first transited job because this concept is measured differently in the LFS.

7. **First transited job**. The SWTS identifies the first transited job with a sequence of retrospective questions on past work experience. No equivalent sequence of questions is available in the LFS. Instead, as described in the previous section, the first transited job may be measured in the LFS using flow data generated from matched samples constructed from the rotation scheme of the survey. The SWTS measurement of first transited job is subject to memory errors, particularly, for young adults 25 to 29 years old for whom the date of their first job may be further in the past than for those with lower age. Because the LFS measurement of first transited job is not based on retrospective questions it is not subject to memory errors. However, because it is derived from transition matrices with Markov assumptions on the nature of the transition probabilities, the LFS estimates are subject to errors due to possible violations of the assumptions of the underlying Markov model. Neither the magnitude of the memory errors of the SWTS nor the model errors of the LFS measurement are known or can be easily calculated. This makes it difficult to assess the relative strength or weakness of the SWTS measurement against the LFS.

Despite these differences in mode of data collection and survey design, the estimates of the main indicators of school-to-work transition from the two sources are, in the most part, relatively close to each other, never exceeding 20 per cent for estimates of counts, 15 percentage points for estimates of percentages, and 4 months for estimates of length of transition. The notable exceptions are the difference in the estimates of number young persons in transition (29 per cent) and the share of non-students who transited into stable employment among those who transited into their current transited jobs (76.0 percentage points). It would be instructive to verify the generality of these results with labour force surveys in other countries.

4.2 Suggestions for improved future measurements

In closing a few suggestions are made with respect to the labour force surveys and to the ILO SWTS:

On labour force surveys

1. To assess the extent of underestimation of employment and overestimation of unemployment among young people in labour force surveys, it is suggested to calculate the main labour force indicators of young people by type of respondent (proxy-respondents versus self-respondents).

2. For measuring school-to-work transition in labour force surveys, it is important to review and ensure the availability of the following ten variables:

   - Labour force status (employed, unemployed, outside the labour force)
   - Status in employment (for employed persons)

- Nature of job (permanent, temporary, season job of employees)
- Wanting to change job (for employed persons in a self-employment or temporary or seasonal job)
- Year starting current job (for employed persons)
- Potential labour force status (for persons outside the labour force)
- Wanting to work (for persons outside the labour force who were not currently available for work and were not seeking work during the job-search period)
- Current school attendance
- Educational attainment
- Year attaining the highest level of education

The variable "potential labour force" refers to unavailable jobseekers and available potential jobseekers defined by the *Resolution concerning statistics of work, employment and labour underutilization*, 19th International Conference of Labour Statisticians (Geneva, 2013) para. 51. The variable "wanting to change job" may be formulated in terms of the notion of wanting or seeking to change one's current situation embedded in the definitions of particular types of inadequate employment situations of the *Resolution concerning the measurement of underemployment and inadequate employment situation*s, 16th International Conference of Labour Statisticians (October 1998), para. 17.

On school-to-work transition surveys

1. Quality reporting. The results of SWTSs are generally presented in national reports describing the methodology and analyzing the data. Rarely do the reports include an assessment of the quality of the data. Like in all household-based sample surveys, the results of SWTSs are subject to sampling and measurement errors. Sampling errors arise due to the fact that the survey does not cover all elements of the target population, but only a randomly selected portion. Measurement errors occur because of non-response or refusals to participate in the survey or errors made during response or other stages of survey operations such as editing, coding and processing. It is suggested that a blueprint be developed for quality reporting of SWTS data, for example, along the line of those used for LFS data (Eurostat, 2009). Quality reporting provides information crucial for interpreting the survey results. It allows decision on the precision of the estimates and on the degree of confidence that may be attached to them, in particular, on the degree of detail with which the survey data may be meaningfully tabulated and analyzed.

2. New international standards (19th ICLS 2013). The SWTS concepts and definitions were developed when the international standards on labour force statistics were those adopted by the 13th International Conference of Labour Statisticians in 1982 (ILO, 1982). These standards have now been replaced with new international standards adopted by the 19th International Conference of Labour Statisticians in 2013 (ILO, 2013). It is therefore suggested that the SWTS concepts and definitions be revised and updated taking into account the new standards. The present standards are particularly relevant for the SWTS. With the new concept of potential labour force, the use of the confusing terminology "unemployed (relaxed)" can thus be avoided. Also the new concept of "willing non-job seekers" can replace the broad and subjective criterion of "intention of looking for work" in the SWTS definition of stages of transition.

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