Data Quality Issues in the Italian Longitudinal Household Panel (ILFI)

Lifecourse Event History Calendar and Dependent Interviewing

Mario Callegaro

Knowledge Networks, USA

mcallegaro@knowledgenetworks.com

Ivano Bison

Department of Sociology and Social Research

University of Trento, Italy

Abstract

The Italian longitudinal household panel (ILFI) collects data at a biennial rate since 1997 on a sample of about 5,000 households. During the first wave, a face-to-face lifecourse event history calendar (L-EHC) instrument was administered collecting data for each member 18 years or older on five domains: residence history, education, vocational training, job - career, family formation and fertility event. The calendar was used to reconstruct the life history of each subject for the five domains since the time they were born. Since 1999, answers collected from the previous wave were used as a starting point (proactive dependent interviewing) to collect data from the above domains. In order to test the quality of the data collected with the L-EHC, we compared the self-reported recall of job status with data coming from official statistics collected by the Italian national institute of statistics (ISTAT). Data on employment and unemployment status

showed high levels of agreement; the few discrepancies found are due mostly to changes in definitions of official statistics during the course of the years. The second goal of the paper is to study whether seam effects are observed between the first and second wave of ILFI. Seam effects in the ILFI dataset for labor force status changes are not encountered. We explain this finding with a combination of factors such as the use of dependent interviewing and the changeable recall period design of the panel.

Keywords:

Lifecourse Event History Calendar, dependent interviewing, seam bias, recall period, labor force surveys, labor force status changes.

Preliminary draft

Comments appreciated

Paper presented at the International Association for Time Use Research (IATUR) XXVIIII Conference. Washington, DC, October 17-19, 2007. Conference website: http://www.atususers.umd.edu/IATUR2007/

Introduction[1]

The quality of data collected with longitudinal surveys is crucial in order to ensure the validity of the findings coming from panel studies. The Lifecourse Event History Calendar (L-EHC) and the use of dependent interviewing are two strategies that are increasingly used to improve the quality of the recall of autobiographical events in panel surveys.

This paper attempts to measure the quality of the data collected by the Italian Longitudinal Household Panel by comparing the self-reports obtained in the first wave with the assistance of L-EHC against data coming from official statistics regarding employment status. The second aim of the paper is to study possible seam effects for labor force status changes at the joint of the first and second wave of the panel.

Italian Longitudinal Household Panel (ILFI) data collection design

The ILFI (Indagine Longitudinale sulle Famiglie Italiane) is a retrospective (first wave) / prospective panel survey started in 1997 with a biannual periodicity. The ILFI has been designed to achieve two main aims. The first is essentially descriptive in nature and consists in gathering information on the current situation (at the time of the interview) of a broad representative sample of Italian families: composition, sources and levels of income, and social and demographic features of their members. The second aim of the survey centers on the study of social change and consists on the gathering of dynamic information about each adult member (i.e. aged over 18) of each household surveyed. More specifically, the intention is to reconstruct the 'life history' of each member of each household - from the moment of birth - in relation to the following aspects:

---

movements (geographical or residential mobility), education and vocational training (school and training career), job (job career), social origins, and family (marriages or cohabitations and births or adoptions of children).

The unit of analysis selected for the survey is the household, and the reference population is the set of households resident on Italian territory and registered at municipal registry offices at the end of 1996. The households to be interviewed were selected by means of a two-stage stratified sampling procedure: the 8,104 Italian municipalities were assumed as primary sampling units and assigned to 42 strata defined by two variables: region, and type of municipality (metropolitan, adjoining, other). By virtue of their self-representative character, the twelve metropolitan municipalities were included in the sample with probability equal to one. Extracted from each of the remaining 30 strata was a random sample of municipalities with probabilities proportional to the number of residents. A total of 265 municipalities were selected following this procedure (Dipartimento di Sociologia e Ricerca Sociale - Università degli studi di Trento, 2007).

The interviews are conducted in person with CAPI to all households members 18 years of age and older; no proxy interview is allowed. Areas investigated by the ILFI panel are geographical mobility, education and vocational training, work, household history, household financial status, supports and benefits, and religion and politics. In some waves other topics are investigated such as life projects, i.e. intentions and predictions concerning certain crucial events in a person's life (leaving home, beginning work, getting married or setting up with a partner, having children). Data collection for the first wave took place between February and July of 1997; for the second wave between June and December 1999.

The first wave of the lifecourse event history calendar (L-EHC) instrument (1997)

The first wave began with a reconstruction of autobiographical events related to seven domains, namely: residence, education, military service (or civil service – men only) vocational training, job, family history and fertility episodes. The sequence of the interview (geographical mobility first, then educational career, family history third and finally work career) has been deliberately designed to help overcome memory problems. It relies especially on the fact that the information in one area will help the interviewee to 'anchor' time episodes that have occurred in other areas of his/her life. To assist them in doing this, each interviewee was given a 'Lifecourse Event History Calendar' based on Freedman's et al. work (1988) as shown in Figure 1.

Year	1900	≈	1991	1992	1993	1994	1995	1996	1997
Residence		≈							
Education		≈							
Military service		≈							
Vocational training		≈							
Work		≈							
Household		≈							
Fertility		≈							

Figure 1. Paper Lifecourse Event History Calendar Given to the Respondent at the First Wave.

The calendar was used as an aid to recollect the events, but actually the answers were recorded on the CAPI system using close-ended questions. The level of detail of the data collection is at the month level, where each event is recorded with a start month (and year) and an end

month (and year). The second advantage of the initial L-EHC was to provide the researchers with a complete history of each subject, no matter their age, thus avoiding left truncated data.

The next waves of data collection (1999 on)

From the 1999 on, proactive dependent interviewing (Jäckle, in press) was used for the domains collected in the first wave. In proactive dependent interviewing the respondents are reminded of responses given in the preceding wave. The previous information is used to aid the respondent's memory and offer a bounded recall before providing a standard independent question. For the geographic mobility domain, for example, the respondent was reminded about the date of the previous interview and asked if, from that date, he/she had changed location at least once. "Yes" answers were followed up with the recording of each location, starting from the last registered location. In the job domain the respondent was reminded of his/her previous job and asked if any change had taken place after that.

The ILFI data collection design does not have a fixed reference period (e.g. solar year/s) as many other household panels such as the Panel Study of Income Dynamics (PSID), the German Socio-Economic Panel (GSOEP) or the British Household Panel Survey (BHPS). In these panels the reference period is always the same for everybody: starting from January and ending in December, no matter when the interview takes place. For the ILFI, the reference period goes from the month of the initial interview to the month of the next interview. With this design, made possible with the use of CAPI, the respondent can anchor the recollection of the event to the last interview instead to the end of the solar year. In other words, in wave one (interviews done in 1997) data were collected for the reference period of 1996 up to when the respondent was born

(or could remember), including data for each month of 1997 up to the month of the interview. In wave two, data were collected with a reference period going from the interview month of 1997 to the interview month of 1999. More details are given in the section about potential seam effects.

When new members become eligible in the sampled households because they became of age or they moved in, the lifecourse event history calendar is used as in the first interview of wave one. The same procedure was used for the spin-off households. This strategy avoided again having left truncated data. Additional information on the sampling design and the questionnaires used in the panel can be found on the ILFI's website (Dipartimento di Sociologia e Ricerca Sociale - Università degli studi di Trento, 2007).

Comparison of the L-EHC recollection with the labor force data

In order to check the quality of the first wave of data collected with the L-EHC, the ILFI data regarding labor force status are compared with official statistics from the Italian National Institute of Statistics (ISTAT) and from other official sources such as OECD and ILO compiled in a dataset by Huber and colleagues (2004). The ISTAT has been collecting labor force data in a systematic way (quarterly labor force survey with a rotating panel design) since 1950.

Belli, Smith, Andreski & Agrawal, (2006), for example, were able to compare the data from a 2002 L-EHC interview going back up to 30 years with the prospective data from the same PSID panel respondents collected during those years. This methodology has the advantage that the measurement instrument is practically the same, while when one compares panel data to official statistics the measurement instruments are more likely to differ. This problem will be discussed later for the Italian case.

Figure 2 shows a comparison between ILFI and official statistics regarding the labor force population estimates in Italy. For civilian labor force is defined as the sum of employed and unemployed people. The two trends match well across time with some exceptions that will be highlighted in the next chart.
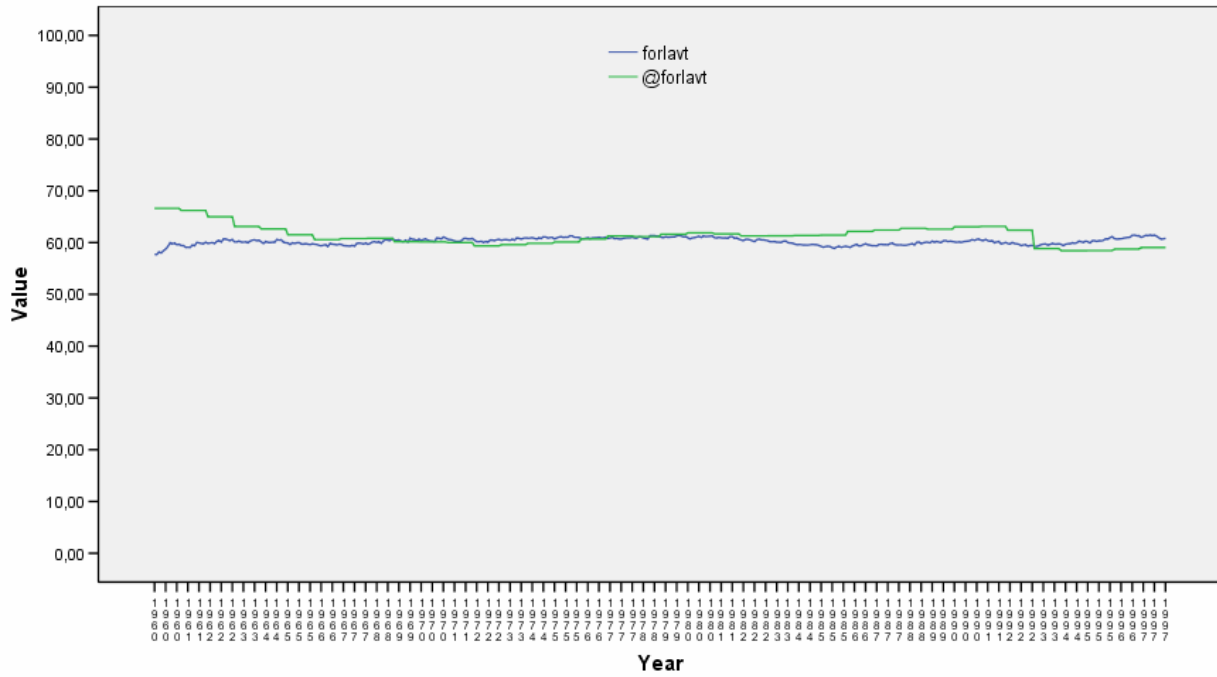

Figure 2. Percentage of Civilian Labor Force on the Total Population 15-65 years old, 1960-1997.

The blue line shows the value obtained from the ILFI first wave of the L-EHC interview, the green line (@forlavt) from official statistics.

The Y axis scale is computed as follows: [(employed + unemployed)/current population 15-65 years old]*100.
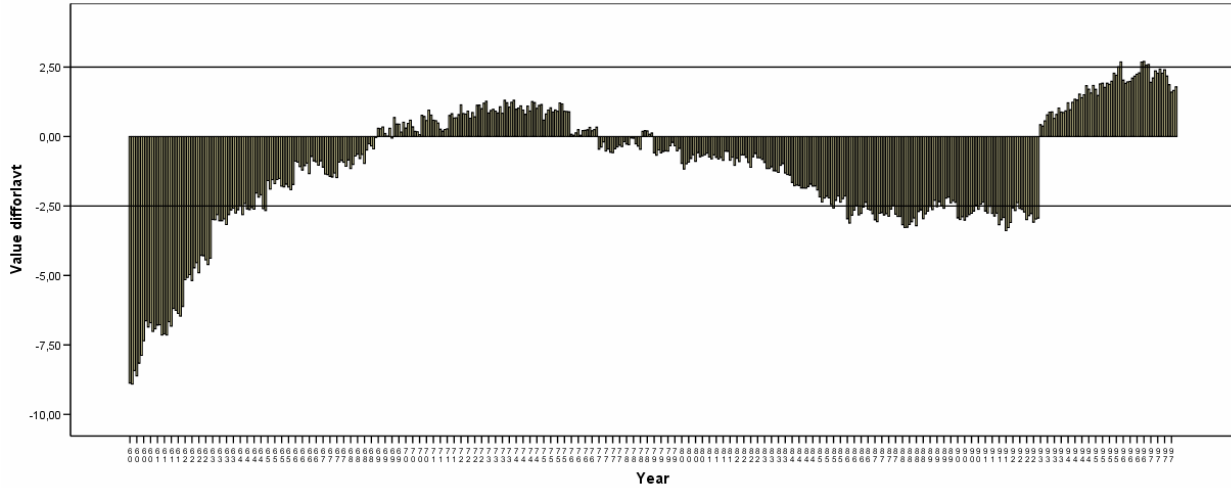
Figure 3. Difference in Percentage Points between the ILFI Data and Official Statistics Regarding Civilian Labor Force Population.

Figure 3 is drawn plotting the differences between the ILFI and the official statistics dataset (ILFI − ISTAT). A pronounced difference is observed is between the 1992 and the 1993 data. This is due to a change in the definition of "active labor force" that ISTAT introduced in their labor force survey. The second noticeable discrepancy between the two datasets appears in the furthest years between 1960 and 1968-69. One reason for this discrepancy is the declining number of people, in the panel, of such an age range (40-65 years old) that they could work and remember their working condition up to the first job. The decreasing size of usable sample as the recollection goes further back into the past can be solved by appropriate weighting or by an oversample of older people in the design of the panel.

The following figures 4, 5, 6, 7 break down the data by male and females showing some similar trend as before, but also shedding some light on possible differences between the two sources. For example, we can see how ISTAT data consistently obtains higher estimates of the total number of active individuals in the labor force than the ILFI for the men case and this is due

just to a different way of measuring the active men working population. In Figure 6 we can see how the change in definition that occurred in 1993 is affecting women mostly and it is responsible for the "bump" showed in Figure 1.
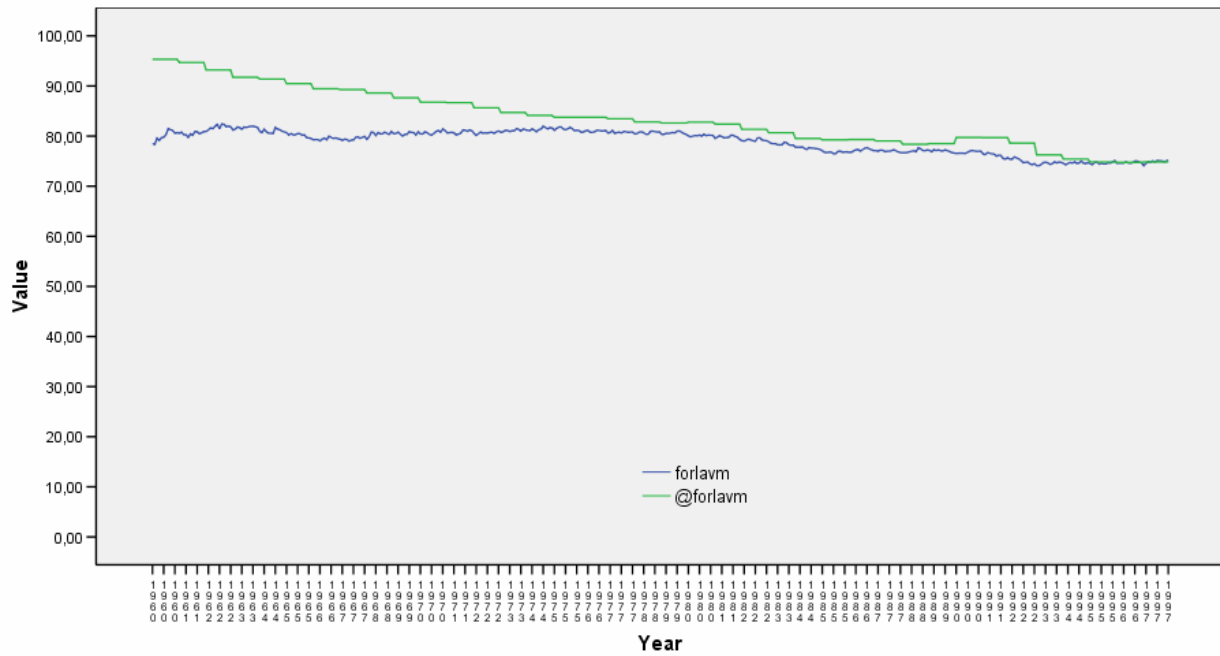

Figure 4. Percentage of Civilian Labor Force on the Total Population 15-65 years old, 1960-1997. Men Only.
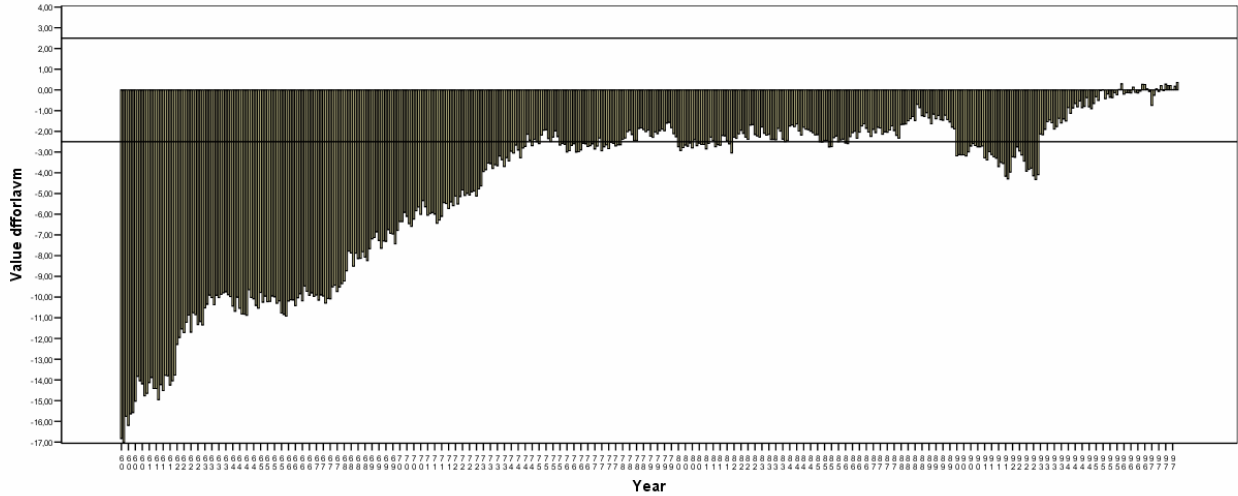
Figure 5. Difference in Percentage Points between ILFI and Official Statistics, Men Only Regarding Civilian Labor Force Population.
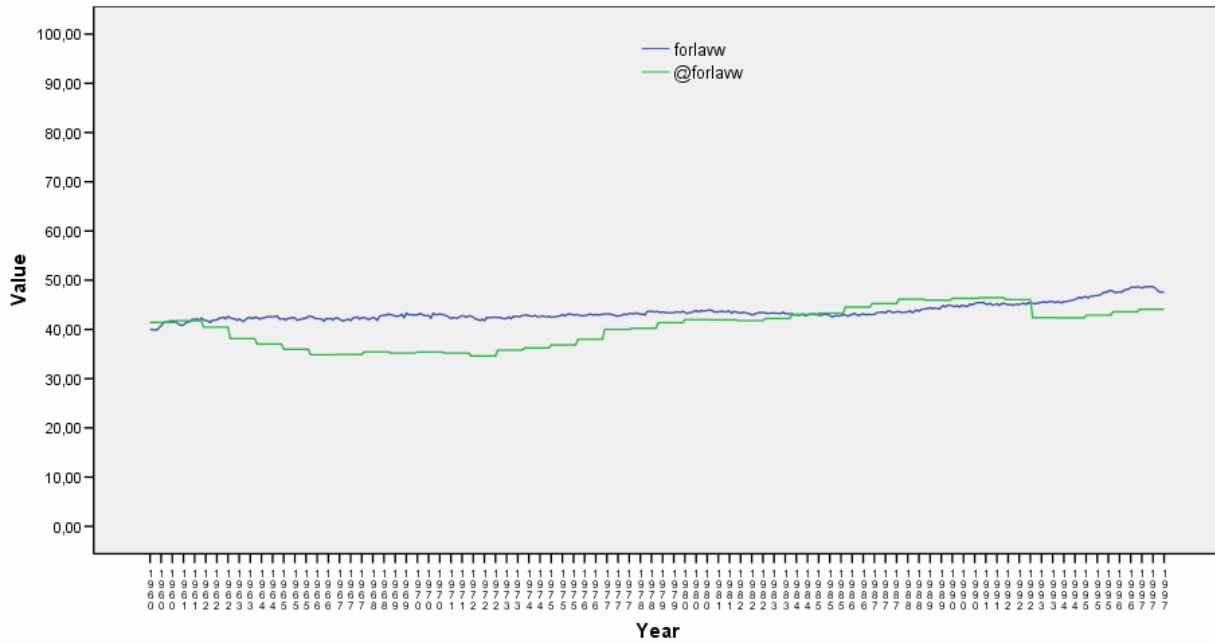

Figure 6. Percentage of Civilian Labor Force on the Total Population 15-65 years old, 1960-1997, Women Only.
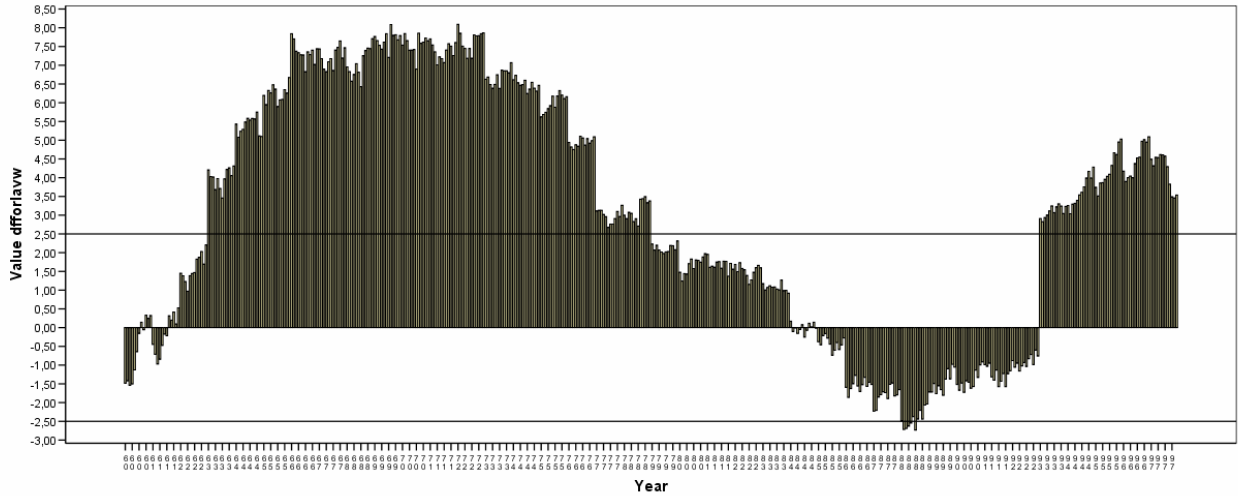
Figure 8. Difference in Percentage Points between ILFI and Official Statistics, Women Only Regarding Civilian Labor Force Population.

Figure 9 is now plotting data regarding the percentage of unemployed on the civilian labor force[2]. In this case the trends are very close and the official statistics match almost perfectly for the years 1993-1997 the ILFI estimates.

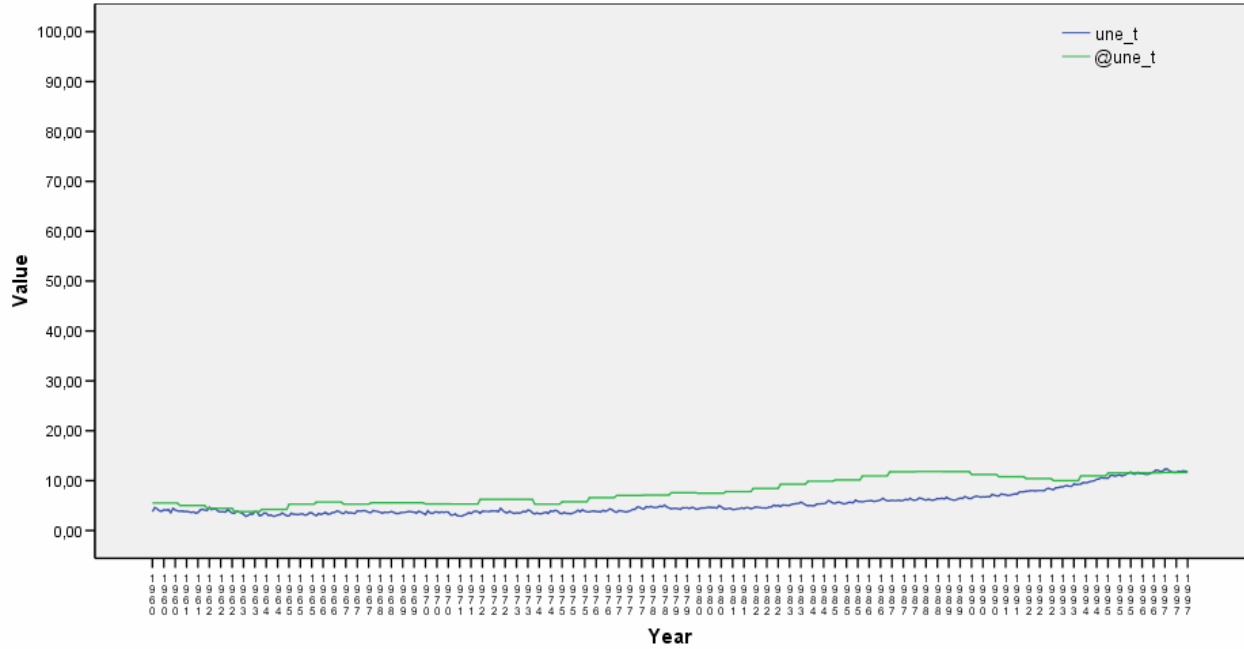[2] Unemployed = [(unemployed)/ (employed + unemployed)]*100

Figure 9. Percentage of Unemployed on Civilian Labor Force 1960-1997.

In figure 10 a more detailed analysis is performed for the years 1993 – 1998. In this case we have the best possible official statistics (the ISTAT labor force survey) and we have the data collected in the first and the second wave of ILFI. As a reminder, data for the period from 1993 to 1996 were collected with the assistance of the L-EHC, while for the 1997-1999 the data were collected with the regular CAPI interview with a conventional questionnaire (CQ). The employment/unemployment rates from the second wave (reference period 1997-1999) follow very closely the ones from the labor force statistics. The data from 1993 to 1997 follow the same trend until the already mentioned gap in 1993 due to a change in definitions of ISTAT in measuring labor force.
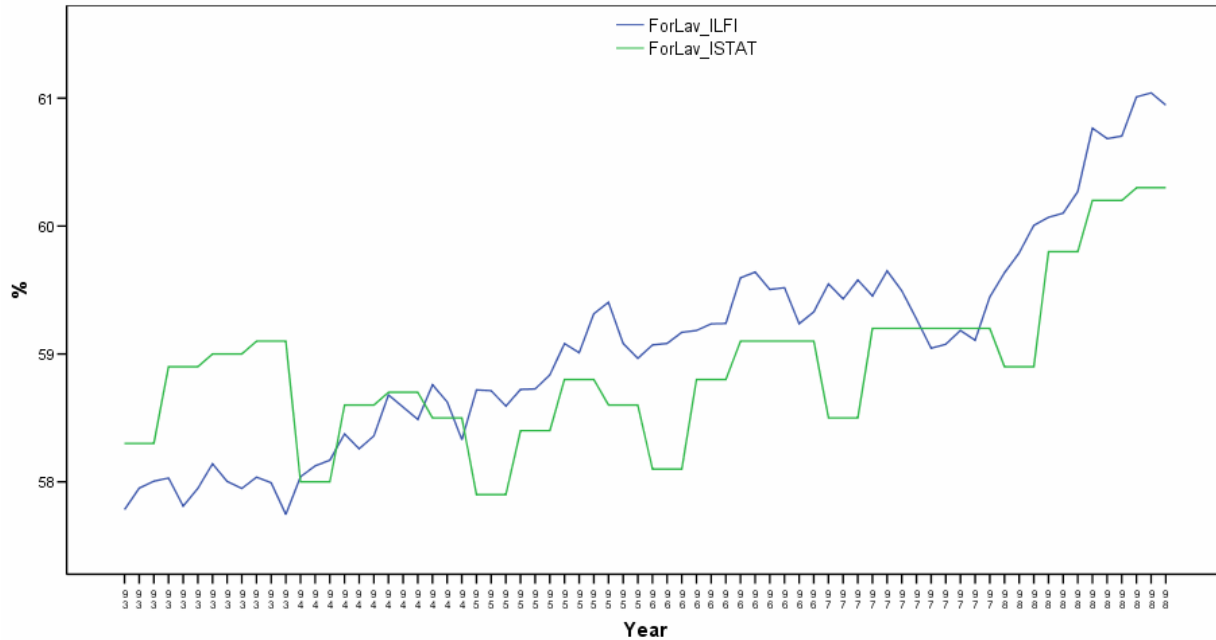
Figure 10. Percentage of Civilian Labor Force on the Total Population 15-65 years old. ILFI data compared with ISTAT quarterly labor force survey, 1993-1998.

With the limitations explained before, it seems reasonable to positively judge the decision to change the design and use a L-EHC assisted instrument at the beginning of the first wave of the ILFI panel. The L-EHC instrument seems to have captured cons well the trend of employment and unemployment events during the recollected years. Although in the ILFI panel there was no experiment done between the quality of data collection with CQ and EHC, as in Belli et. al (2006) for example, this paper finds in venue in the same area of literature, to measure the quality of data collected with EHC (Belli, Shay, & Stafford, 2001; Engel, Keifer, & Zahm, 2001; Freedman, Thornton, Camburn, Alwin, & Young-DeMarco, 1988; Kessler & Wethington, 1991; Lin, Ensel, & Lai, 1997).

It is also important to remind that the L-EHC was used as an aid of the interview that was conducted using a conventional questionnaire with CAPI technology. In this sense, strictly

speaking, the L-EHC was used more as a timeline (van der Vaart, 2004) of events and the full potential and the flexible interviewing style of EHC was not employed. Nevertheless, showing the calendar to the respondents appears to have helped them to place the events in time.

Potential seam effects

A problem that is affecting virtually every longitudinal data collection is the so called "seam effect". A seam effect occurs in longitudinal studies when within wave changes are less frequent than between wave changes (with data coming from two different interviews/waves). For example, a seam effect is present when month-to-month changes in responses are much larger for the seam months than for adjacent months away from the seam (Rips, Conrad, & Fricker, 2003). Figure 11 is an example of seam effect from Household, Income and Labour Dynamics in Australia (HILDA).
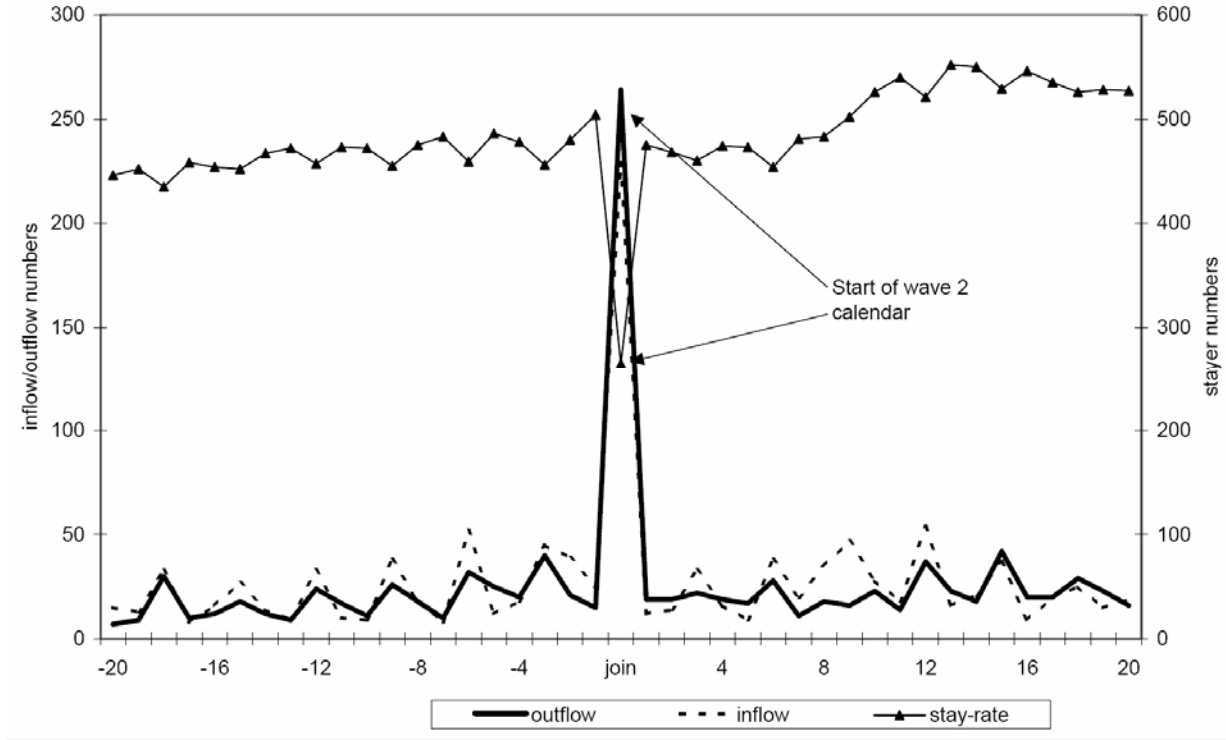
Figure 11. Number Entering, Staying and Exiting Unemployment.

Seam effects have been observed in different panels, with different reference periods, and in many countries. A few examples include the Survey of Income and Program Participation (SIPP) (Bassi, 1998; Kalton & Miller, 1991; Marquis, Moore, & Huggins, 1990), the Income Survey Development Program (ISDP) – precursor of the SIPP (Moore & Kasprzyk, 1984), and in the Panel Study of Income Dynamics (PSID): (Hill, 1987). The Canadian Labour Market Activity Survey (LMAS): (Murray, Michaud, Egan, & Lemaître, 1991), the Canadian Survey of Labour and Income Dynamics (SLID: (Cotton & Giles, 1998), the British Household Panel Survey (BHPS: (Jäckle & Lynn, December 2004), the German Socio-Economic panel (GSOEP): (Kraus & Steiner, 1998) and the HILDA (Carroll, 2006) have shown seam effects as well.

In the Italian case, seam effects were studied using transitions for labor market: individuals were coded into one of three mutually exclusive states for each month: employed (E), unem-

ployed (U), and not in the labor force (N). The combination of states results in 9 pairs of codes, as delineated in Table 1.

Table 1. Possible Combinations of Mutually Exclusive States in Labor Force Status

| | | Month t+1 | | |
		E	U	N
	E	EE	EU	EN
Month t	U	UE	UU	UN
	N	NE	NU	NN

After each subject is classified in one state for each month, transition rates are computed for each of the nine combinations. In the LFS literature, the transitions on the diagonal of Table 1 (EE, UU, NN) are referred to as *stayers* (stay rate) or *non movers*. These people keep the same status from one month to the next. The remaining six transitions are referred to as *movers* (EU, EN, UE, UN, NE, NU).

Figure 12 shows the status changes for movers in the ILFI panel. The seam point between wave two and wave three is indicated by the two grey arrows. This chart does not seem to indicate the presence of seam effect in the ILFI data. In fact the six status changes do not really show a classic heaping (where all the transitions have an increase in the same point) at the joint of the two waves as it happens in other panels.
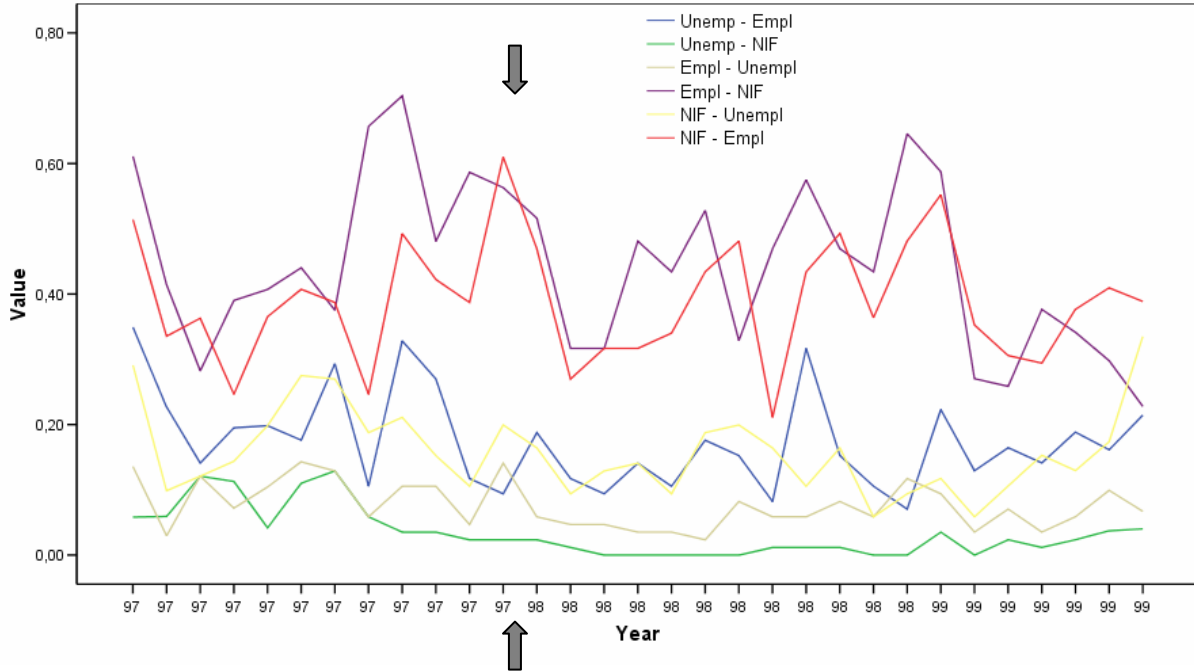
Figure 12. Percentage of Movers Status Changes on Total Number of Changes (Movers + Stayers) in the First and the Second Wave.

Although this is very good news for the data in question, an explanation is needed. To the authors' knowledge this is the first case where seam effect does not seem to be a problem in a longitudinal survey. For a review of seam effects in different panels see Callegaro (2007a; , 2007b). The explanation for the virtually absent seam effect has to do with the combination of two panel design factors: the use of dependent interviewing and the way the reference period of the interview is defined in the ILFI panel. These two design factors have an effect on the way seam effect is computed (changes from one month to the other) as explained later on.

Dependent interviewing has been shown to reduce seam effects in panel surveys. For example the Survey of Income and Program Participation carried out a program of study about dependent interviewing, the *SIPP methods panel project* in the late 1990s (Moore, Pascale, Doyle, Chan, & Griffiths, 2004). After many pretests, dependent interviewing was implemented

in 2004. When comparing the seam bias of the 2004 waves with 2001, 45 of 42 comparisons showed a statistically significant difference. The percentage of change at the seam was reduced in 2004 for variables of "need-based" public assistance type (e.g. receipt of federal Supplemental Survey Income, AFDC, food stamps) and for non need-based income sources and characteristics variables (e.g. private heath insurance coverage, private pensions, Medicare). Dependent interviewing not only reduced the change at the seam but also increased the change off-seam (Moore, Bates, Pascale, & Okon, Forthcoming). This is a very important result confirming the previous SIPP findings from validation data that off seam estimates are generally an underestimate of the phenomena (Marquis & Moore, 1989; Marquis, Moore, & Bogen, 1991).

More recently, an experiment collecting work history data involving independent interviewing, and proactive and reactive dependent interviewing was carried out on a subsample of the UK part of the European Community Household Panel (EHCP) (Jäckle & Lynn, December 2004). Due to the small number of cases, independent and reactive dependent interview data were combined. The proactive dependent interviewing clearly reduced seam effects. For example, transition rates among the occupational status were reduced from 32% to 9% in the proactive dependent interviewing group. The authors also sustain that proactive dependent interviewing did not lead to underreporting of change since in the off-seam months the average monthly transition rate was the same for all treatment groups. This finding led the authors to conclude that the interviewing method did not make a difference in the number of transitions within a wave. The main difference between methods lies in what happens at the seam. In further research the above dependent and independent interviewing methods were compared in a validation study of benefit receipt (Lynn, Jäckle, Jenkins, & Sala, 2006). The authors found that dependent interviewing reduces the extent of underreporting of benefit receipt

without increasing over reporting. However, some net underreporting still remained with dependent interviewing.

If dependent interviewing is very likely to have reduced seam effect in the ILFI panel, the methodology itself does not seem sufficient to have virtually annulated the seam bias as shown in Figure 12. We believe that the outcome found in the chart is due to the combination of dependent interviewing with the way the recall period is designed in the ILFI.

As shown in Figure 13, the recall period of ILFI depends on the month of the interview and it is not fixed as in other panels. The interview starts querying events from the month of the previous interview. If, for example the initial interview was done in March of 1997, and the second interview is conducted in May of 1999, the recall period investigated will be between March to 1997 to May of 1999. In the next wave, no matter when the interview is done, the initial point of recall will begin from May of 1999.
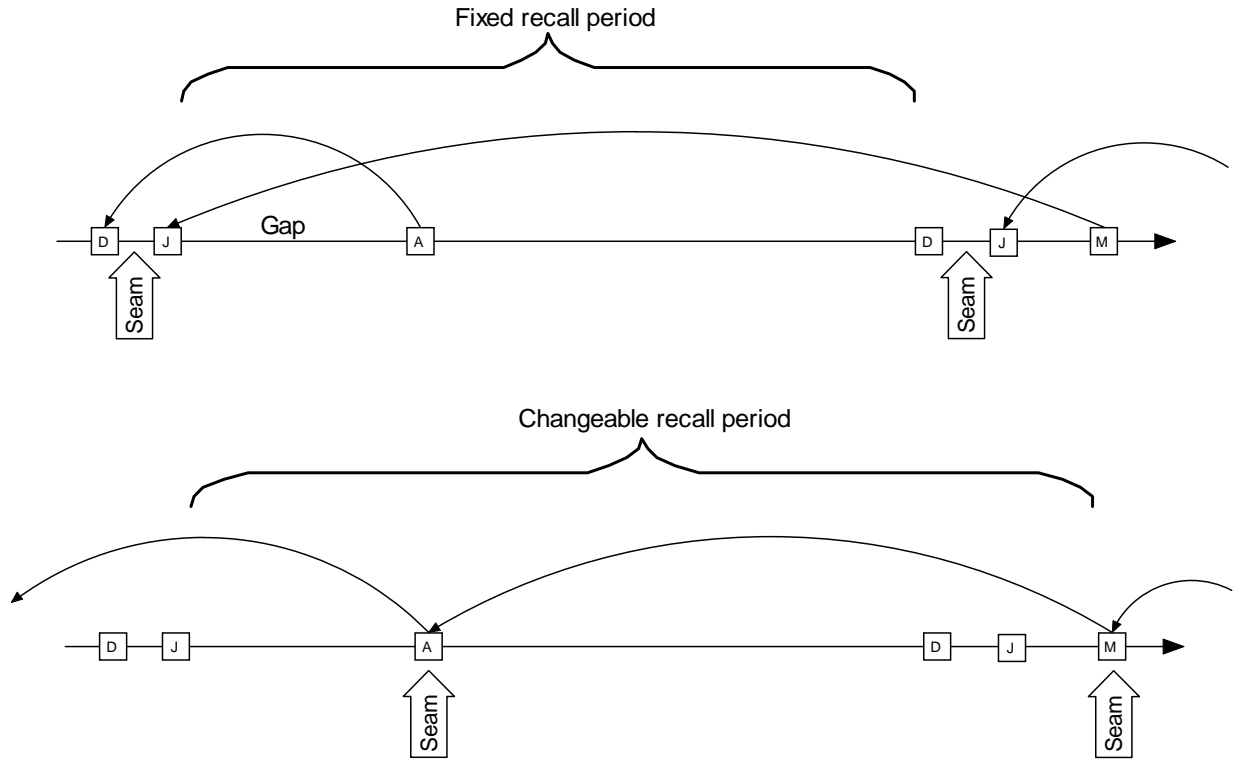
Figure 13. Fixed and Changeable Recall Period of Hypothetical Panels with Interview in April.

The changeable recall period makes the joint between waves different for every respondent with the final outcome that the joint is not cumulating in the same month for everybody. Another feature of the changeable recall period is that it provides continuity in the memory of the respondents giving them a landmark to anchor the recall that is not arbitrary (e.g. December) but tailored and possibly memorable for them (the month of the previous interview). More specifically, this panel design feature is eliminating the gap between the interview and the end of the recall period found in panels with fixed recall period. In fact, in a panel with fixed recall period, e.g. one year Jan-Dec, if the interview is done in August the respondent has to remember events from January to December of the previous year with a gap of eight months (December to August

of the interview). The recall of December events is more likely to be difficult due to the memory decay hypothesis.

Seam effect is created by contrasting two recalls, one possibly more precise because is close to the interview month and the second less precise because it refers to events happened a number of months equivalent to the month of the interview plus the fixed recall period. The changeable recall period eliminates the gap between the month of the interview and the end of the reference period thus eliminating, in conjunction with dependent interviewing, the seam bias.

The last explanation for the absence of seam effect refers to the way seam bias is computed in the literature. Seam bias appears when computing changes from one month to the next one. When the changes are computed at the joint of two waves, changes are calculated between two data points that were collected in two different points in time.
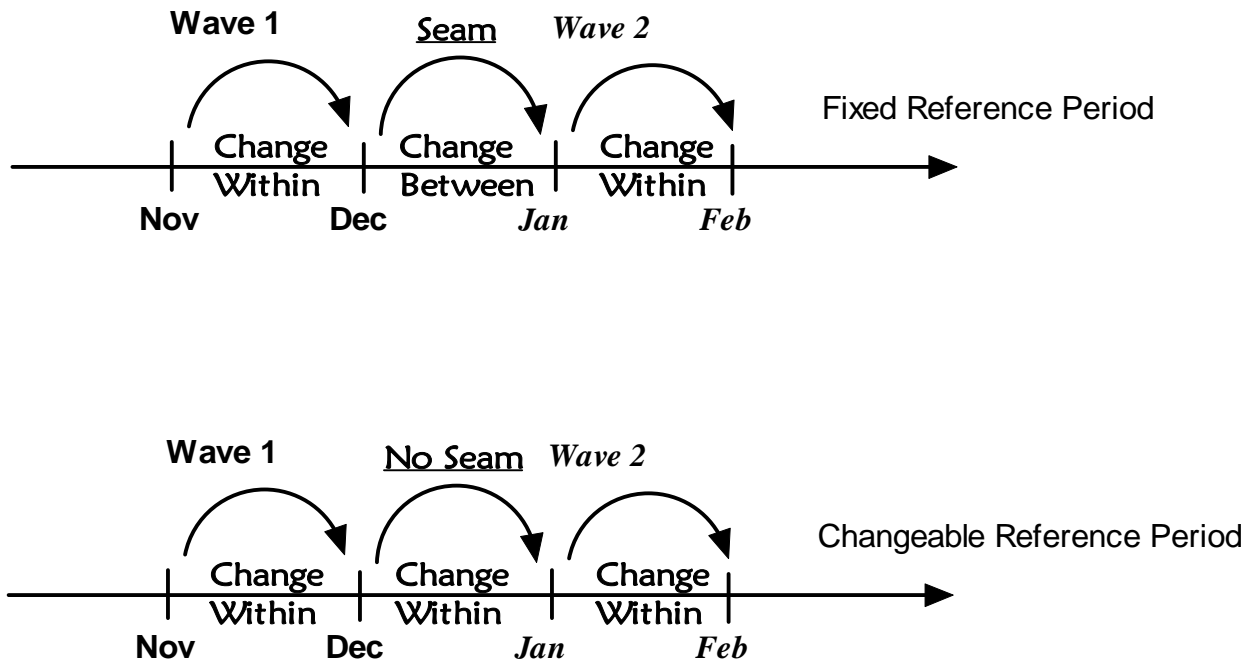
Figure 14. Computation of Month to Month Transitions at the Seam for Fixed and Changeable recall Period Panels with Joint in December.

The changeable recall period produces different seams for different people depending on the month of the interview. More importantly, when changes are computed, they are always computed within the wave and not between the waves (seam) as shown in Figure 14.

Conclusion

In this paper the quality of data collected on the first and second wave of the ILFI panel is evaluated. Specifically, design features such as the aid of L-EHC, proactive dependent interviewing, and changeable recall period are tested. In the first case the recall of labor history coming from the L-EHC interview is compared with official statistics data showing that the trends are pretty much in line with each other and that discrepancies are most likely due to changes in definition of official statistics during the years. Proactive dependent interviewing combined with a changeable recall period using the month of the last interview as starting point for the next interview as bounded recall seems to have eliminated seam effects for labor force status changes that are common in household panels.

In sum this paper provides further evidence that the use of L-EHC is a good strategy to use in the first wave of a panel data collection to improve the quality of the recall (Belli, Smith, Andreski, & Agrawal, 2006) and that dependent interviewing combined with the changeable recall period is useful to reduce seam bias between the waves (Jäckle, in press).

Changes in labor force dynamics are really context dependent and comparison across countries should be made with extreme care. The Italian job marked has been shown to be more stable than other European countries (Bertola, 1990; Messina & Vallant, 2007; Scherer, 2004) and the U.S. (Barbieri & Bison, 2004; Barbieri & Scherer, Forthcoming; Blossfeld, Mills, & Bernardi, 2006; Esping-Andersen & Regni, 2000). For this reason we can also hypothesize that a more stable job market makes easier the recall task for the respondent.

References

Barbieri, P., & Bison, I. (2004). Self-employment in Italy: Scaling the class barriers. In R. Arum & W. Muller (Eds.), *The reemergence of self-employment: A comparative study of self-employment dynamics and social inequality* (pp. 310-347). Princeton, NJ: Princeton University Press.

Barbieri, P., & Scherer, S. (Forthcoming). Flexibilizing the Italian labour market. Unanticipated consequences of partial and targeted labor market deregulation [Electronic Version]. *Flex Career* from http://www.flexcareer.de/index.html.

Bassi, F. (1998). Gross flows estimation from the Survey of Income and Program Participation. *Journal of Economic and Social Measurement, 25*, 97-110.

Belli, R. F., James, S. A., Van Hoewyk, J., & Alcser, K. H. (2006). The implementation of a computerized event history calendar for research in life course epidemiology. *Submitted for publication*.

Belli, R. F., Shay, W. L., & Stafford, F. P. (2001). Event history calendars and question list surveys: A direct comparison of interviewing methods. *Public Opinion Quarterly, 65*, 45-74.

Belli, R. F., Smith, L., Andreski, P., & Agrawal, S. (2006). Methodological comparison between CATI Event History Calendar and conventional questionnaire instrument: Quality of life course and retrospective reports. *Submitted for publication*.

Bertola, G. (1990). Job security, employment and wages. *European Economic Review, 34*, 851-879.

Blossfeld, H.-P., Mills, M., & Bernardi, F. (Eds.). (2006). *Globalization, uncertainty and men's careers*. Northampton, MA: Edward Elgar Publishing.

Callegaro, M. (2007a). Explanations for the seam effect and its reduction with data collection methodologies: Best practices and a research agenda. *Submitted for publication*.

Callegaro, M. (2007b). *Seam effects changes due to modifications in question wording and data collection strategies. A comparison of conventional questionnaire and event history calendar seam effects in the PSID. Ph.D. dissertation.* University of Nebraska, Lincoln, Lincoln, NE.

Carroll, N. E. (2006). Explaining unemployment duration in Australia. *The Economic Record, 82*, 298-314.

Cotton, C., & Giles, P. (1998). The seam effect in the Survey of Labour and Income Dynamics. Income and labour dynamics working paper 75F0002M. Retrieved December 2005, from http://www.statcan.ca/english/research/75F0002MIE/75F0002MIE1998018.pdf

Dipartimento di Sociologia e Ricerca Sociale - Università degli studi di Trento. (2007). Italian longitudinal household survey (ILFI) website Retrieved September 2007, from http://www.soc.unitn.it/ilfi/eng/index.html

Engel, L. S., Keifer, M. C., & Zahm, S. H. (2001). Comparison of traditional questionnaire with an icon/calendar-based questionnaire to assess occupational history. *American Journal of Industrial Medicine, 40*, 502-511.

Esping-Andersen, G., & Regni, M. (Eds.). (2000). *Why deregulate labor market?* Oxford University Press: Oxford.

Freedman, D., Thornton, A., Camburn, D., Alwin, D., & Young-DeMarco, L. (1988). The life history calendar: a technique for collecting retrospective data. *Sociological Methodology, 18*, 37-68.

Hill, D. H. (1987). Response errors around the seam: Analysis of change in a panel with overlapping reference periods. In *Proceedings of the Section on Survey Research Methods* (pp. 210-215). Washington D.C.: American Statistical Association.

Huber, E., Ragin, C., Stephens, J. D., Brady, D., & Beckfield, J. (2004). *Comparative welfare states data set*. Retrieved September 2007, from http://www.lisproject.org/publications/welfaredata/welfareaccess.htm.

Jäckle, A. (in press). Dependent interviewing: A framework and application to current research. In P. Lynn (Ed.), *Methodology of longitudinal surveys*. Hoboken, NJ: Wiley.

Jäckle, A., & Lynn, P. (December 2004). Dependent interviewing and seam effects in work history data. ISER working paper 2004-24. Retrieved December 2005, from http://www.iser.essex.ac.uk/pubs/workpaps/pdf/2004-24.pdf

Kalton, G., & Miller, M. E. (1991). The seam effect with social security income in the Survey of Income and Program Participation. *Journal of Official Statistics, 7*, 235-245.

Kessler, R. C., & Wethington, E. (1991). The reliability of life reports in a community survey. *Psychological Medicine, 21*, 723-738.

Kraus, F., & Steiner, V. (1998). Modelling heaping effects in unemployment duration models - with an application to retrospective event data in the German Socio-Economic Panel. *Jahrbücher für Nationalökonomie und Statistik/Journal of Economics and Statistics, 217*, 550-573.

Lin, N., Ensel, W. M., & Lai, G. W.-f. (1997). Construction and use of the life history calendar: Reliability and validity of the recall data. In I. H. Gotlib & B. Wheaton (Eds.), *Stress and adversity over the life course. Trajectories and turning points* (pp. 249-272). Cambridge: Cambridge University Press.

Lynn, P., Jäckle, A., Jenkins, S. P., & Sala, E. (2006). The impact of interviewing methods on response to questions on income sources. *Journal of Official Statistics, 22*, 357-384.

Marquis, K. H., & Moore, J. C. (1989). Some response errors in SIPP--with thoughts about their effects and remedies. In *Proceedings of the Section of Survey Research Methods* (pp. 381-386). Washington D.C.: American Statistical Association.

Marquis, K. H., Moore, J. C., & Bogen, K. (1991). A cognitive approach to redesigning measurement in the survey of income and program participation. In *Proceedings of the Section on Survey Research Methods* (pp. 413-418). Washington D.C.: American Statistical Association.

Marquis, K. H., Moore, J. C., & Huggins, V. J. (1990). Implications of SIPP record check results for measurement principles and practice. In *Proceedings of the Section of Survey Research Methods* (pp. 564-569). Washington D.C.: American Statistical Association.

Messina, J., & Vallant, G. (2007). Job flow dynamics and firing restrictions: Evidence from Europe. *The Economic Journal, 117*, 279-301.

Moore, J. C., Bates, N., Pascale, J., & Okon, A. (Forthcoming). Tackling seam bias through questionnaire design. In P. Lynn (Ed.), *Methodology of longitudinal surveys*. Hoboken, NJ: Wiley.

Moore, J. C., & Kasprzyk, D. (1984). Month-to-month recipient turnover in the ISDP. In *Proceedings of the Section on Survey Research Methods* (pp. 726-731). Washington D.C.: American Statistical Association.

Moore, J. C., Pascale, J., Doyle, P., Chan, A. Y., & Griffiths, J. K. (2004). Using field experiments to improve instrument design: The SIPP methods panel project. In S. Presser, J. M. Rothgeb, M. Couper, J. T. Lessler, J. Martin & E. Singer (Eds.), *Methods for testing and evaluating survey questionnaires* (pp. 189-207). Hoboken, NJ: Wiley.

Murray, S. T., Michaud, S., Egan, M., & Lemaître, G. (1991). Invisible seams: The experience with the Canadian Labour Market Activity Survey. In *Proceedings of the 1991 Annual Research Conference* (pp. 715-730). Washington D.C.: US Bureau of the Census.

Rips, L. J., Conrad, F. G., & Fricker, S. S. (2003). Straightening the seam effect in panel surveys. *Public Opinion Quarterly, 67*, 522-554.

Scherer, S. (2004). Stepping-stones or traps? The consequences of labour market entry positions on future careers in West Germany, Great Britain and Italy *Work, Employment & Society, 18*, 369-394.

van der Vaart, W. (2004). The time line as a device to enhance recall in a standardized research interview: A split ballot study. *Journal of Official Statistics, 20*, 301-317.