

Quality issues regarding the
measurement of
working time with the
Labour Force Survey (LFS)

2018 edition



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Abstract

From 2013 to 2015, the Eurostat task force on the Measurement of Absences and Working Time has made extensive analyses of the working time estimates based on the Labour Force Survey (LFS). The objective was in particular to identify means to improve the measurement of the hours actually worked and the absences from work in the reference week. As the task force focussed on the development and test of a model questionnaire, the results of these analyses regarding quality issues in the measurement of working time were only partially made available.

This paper consists of two parts: First, it gives an extensive overview of the findings made by the task force for all countries which at the time provided LFS data to Eurostat (which was a large majority of the members of the European Statistical System (ESS)), using tabulations from the 2014 LFS data. Second, in country case studies for six of the member states represented in the task force, we discuss the results against the background of other data sources available nationally, legal provisions as well as national pilot studies and the resulting national dissemination practices. On this basis, we assess the main current strengths and weaknesses of LFS based working time estimates and give an outlook to the expected improvements with the introduction of the model questionnaire endorsed by the Eurostat labour market statistics working group (LAMAS) in December 2015.

This paper was presented at the 11th [LFS methodology workshop, Cardiff, Wales](#), 27-28 April 2016.

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1

Introduction

Apart from the measurement of employment and unemployment, the measurement of working time is the only other topic explicitly mentioned in the recitals of the basic legal act of the Labour Force Survey, [Council regulation \(EC\) No 577/98](#). This fact alone underlines the importance of measuring working among the list of LFS variables. Out of the seven working time concepts specified by the resolution of the International Conference of Labour Statisticians (ICLS) concerning the measurement of working time (ILO 2008a),⁽²⁾ for at least two the LFS can be seen as the main source: The resolution recommends to measure the hours actually worked as well as the hours usually worked with the help of an LFS, while it adds that an LFS might also be used to capture the hours paid for, normal, as well as the contractual hours of work (neither of which are currently included in the EU-LFS). The hours actually worked are often highlighted as the key concept of working time. Still, it should be noted that the hours usually worked have been described as being “as essential as the concept of hours actually worked to summarize the working time situation of many workers, and even more useful for certain types of social analysis” (ILO 2008b: 28).

The concept of hours actually worked is mainly used for economic analysis and in particular the estimation of the annual working time in National Accounts. For most social and socio-economic analyses, the hours usually worked are the preferred concept, which are often more interested in the working time in a typical week. However, to grasp the full picture analysts should probably use both the data on hours actually and hours usually worked (together with information on absence from work hours and overtime hours).

The operational definition concepts of the statistical measurement of working time, based on the ICLS resolution mentioned before is provided by the [LFS explanatory notes](#). According to the LFS explanatory notes, there are quite a number of aspects to be taken into consideration when answering on the number of hours actually worked during the reference week. The components have to be included or excluded as shown in table 1.⁽³⁾ The same criteria apply analogously to the measurement of hours usually worked.

Based on comparative analyses with data from France and Germany (Körner 2012; Wolff 2012), that followed a lively public debate about the comparability of working time data in the French presidential campaign 2012 (see section 3.3), Eurostat labour market statistics working group (LAMAS) in December 2012 set up a task force with the mandate to recommend harmonised and improved solutions for the measurement of the working time variables in the EU LFS. The task force was mandated to develop a model questionnaire no later than the end of 2015.

The work of the task force was devoted to analysing the problem of measuring working time (and in particular hours actually worked) in the LFS, to identify best current practices on how to measure working time and to develop a model questionnaire allowing a harmonised measurement as well as improved international comparability. The model questionnaire was tested (and revised) in two rounds from 2013 to 2015. The revised version after the second round of tests was endorsed by the LAMAS working group in December 2015.

⁽²⁾ The resolution distinguishes seven distinct concepts of working time: hours actually worked, hours paid for, normal hours of work, contractual hours of work, hours usually worked, overtime hours of work, and absence from work hours, when working persons do not work.

⁽³⁾ The reference of the Explanatory Notes (Eurostat 2015a), in the case of the working time variables, is still the former ICLS resolution dating from 1962 (ILO 1962). However, the basic problems remain the same (or are even aggravated) under the new resolution.

Table 1 Components to be considered for the measurement of hours actually worked (adapted from Eurostat 2015a)

Hours actually worked ...	
... include	... exclude
<ul style="list-style-type: none"> - activities directly engaged in the production of good or services - ancillary activities (such as travel between places of work, personnel management) - short pauses - education and training necessary to carry out production or ancillary activities - Travel time on business trips - Overtime hours - Work at home - On-call time 	<ul style="list-style-type: none"> - travel time between home and the place of work - absences from work within the working period for personal reasons (e.g. paid leave, public holidays, illness) - the main meal breaks - education and training not necessary to carry out production or ancillary activities

The analyses undertaken by the task force have shown that in many Member States there is a substantial under-reporting by respondents of their absences, which leads to serious limitations regarding the international comparability of estimates on hours actually worked. Since the underlying problem is under-reporting of absences, this element has received most attention from the task force. The task force concluded that, if the LFS is to be used as a reliable data source for measuring working time in Europe, improvements have to be done in the data collection.

This paper first gives an extensive overview of the findings made by the task force for all countries providing LFS data to Eurostat using tabulations from the 2014 LFS data (chapter 2). The paper presents detailed comparisons for the average working time, as well the distribution of the working hours over the calendar weeks and the prevalence of the different reasons for being absent from work. In chapter 3, country case studies for six of the member states represented in the task force have been compiled. In the case studies, we discuss the results against the background of other data sources available nationally, legal provisions as well as national pilot studies and the resulting national dissemination practices. On this basis, we assess the main current strengths and weaknesses of LFS based working time estimates and give an outlook to the expected improvements with the introduction of the model questionnaire endorsed by the LAMAS working group in December 2015 (chapter 4).

2 Overview of working time estimates in ESS countries in 2014

The core EU-LFS contains ten variables relating to the analysis of working time in some way or another, namely the following:

- WSTATOR – labour status in the reference week, saying if the respondent was at work or not (or did not have a job)
- NOWKREAS – main reason for not having worked in the reference week although having a job
- STAPRO – employee / self-employed / family worker
- FTPT – full-time or part time job
- HWUSUAL - number of hours usually worked in the main job
- HWACTUAL – number of hours worked in the reference week in the main job
- HWOVERP/HWOVERPU – paid and unpaid overtime in the reference week in the main job
- HOURREAS – main reason for why HWACTUAL \neq HWUSUAL
- HWACTUA2 - number of hours worked in the reference week in the second job

The first four of these can be considered to be background or classification variables, whereas the other variables measure the number of hours according to different working time concepts. As already mentioned, the basic conceptual distinction is between hours usually worked and hours actually worked (the latter are also captured for the second job in the EU-LFS). Hours usually worked, as the name implies, refer to the typical or usual situation of the respondent, a standard week if you will. Hours actually worked, in contrast, always refer to the concrete situation in one specific week (the reference week). The variable HOURREAS is an important input for the analyses presented in this paper as it helps to differentiate the main reason for deviations between the hours usually worked and the hours actually worked, and thus is a precondition for an estimation of absences from work due to paid leave, sick leave, etc.

Chapter 2 of this paper focusses on the working time in the main job of full-time employees, in order to have a manageable number of dimensions in the analysis. It should however be noted that the working time of self-employed and part-time workers (in particular if they have irregular working hours) is subject to problems different from the problems faced when measuring the working time of full-time employees. Before that, we start with a brief overview of the impact of deviating labour market structures in countries upon average working time estimates in these countries.

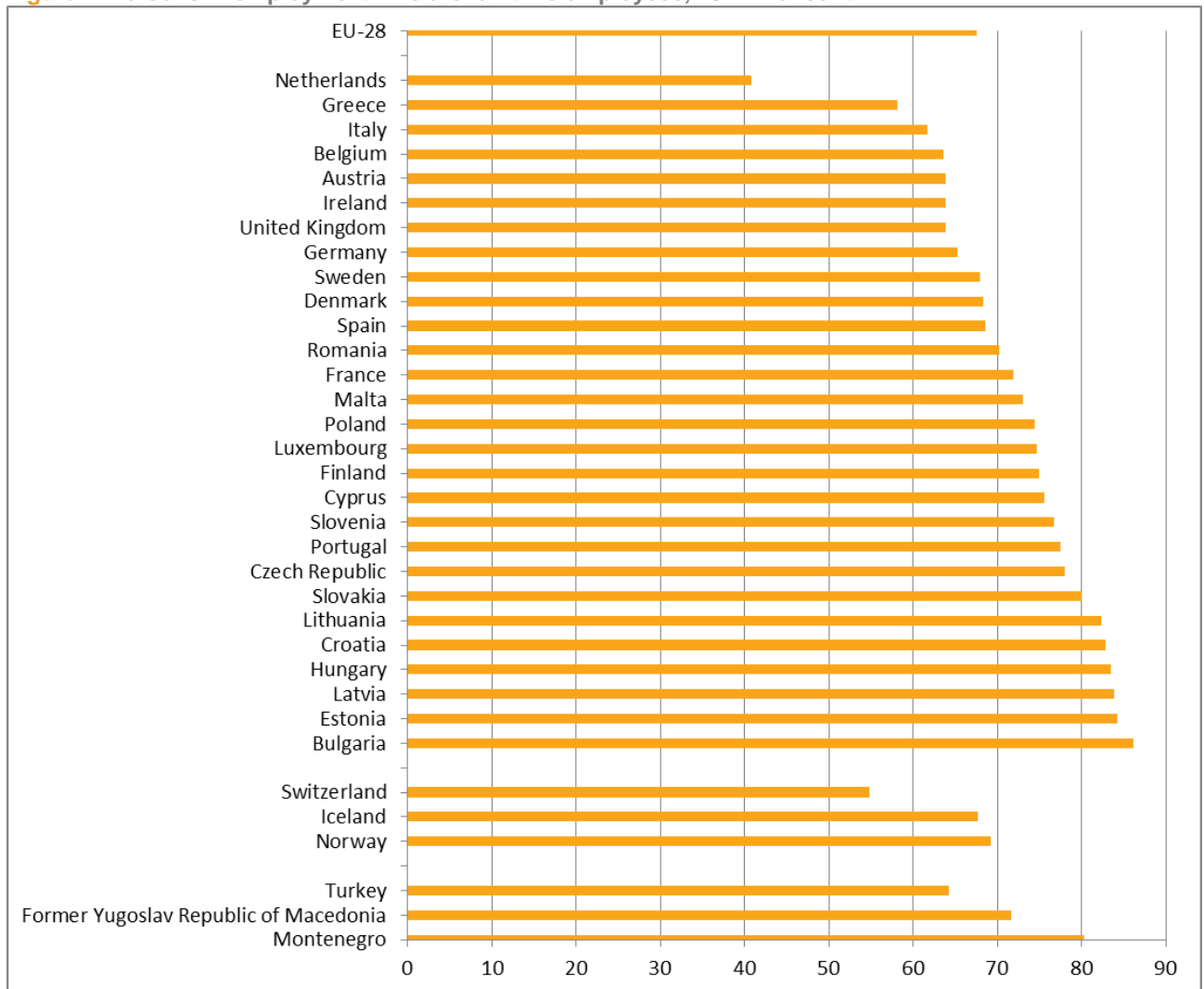
2.1. Labour market structure

As an introduction to the further analysis of full-time employees, and as an explanation of why working time for all persons in a country deviates from that of the full-time employees, we show the proportion they constitute of all persons in employment (that is, having a job, no matter if they were absent in the reference week or not). If comparing working time estimates for all employees, it should be born in mind that the structure of employed persons will be different across countries according to full-time and part-time work and according to professional status (employee, self-employed with or without employees, and family workers). While countries with a high share of self-employed will have higher average hours of work, a high

part-time rate in a given country will lower the average working hours.

Figure 1 shows our group for analysis: full-time employees. They represent a different share of the employed persons in different countries, reflecting both the different levels of self-employed (as well as contributing family workers) and of part-time workers. While in a number of eastern European countries, 80% or more of the employed persons are full-time employees, full-time employees are a minority in the Netherlands (41%). The percentage of full-time employees is less than 60% in Switzerland and Greece. On average, around two thirds of all employed were full-time employees in EU member states. As mentioned before, to simplify the analysis, the rest of this chapter will focus on full-time employees.

Figure 1: Persons in employment who are full-time employees, 2014. Per cent.



Source: Eurobase table reference [lfsa_eftpt](#)

2.2. Average hours worked

2.2.1. Hours usually worked

The number of hours usually worked refers to the situation in a typical week (the modal value over the last one to three months, excluding weeks of absence from work). In practice, the number of hours usually worked normally equates the number of contractual hours of work plus regular overtime hours.

Figure 2: Hours usually worked per week by full-time employees, 2014



Source: Eurobase table reference [lfsa_ewhun2](#)

For the full-time employees, the data quality is reasonable. Most respondents can estimate what a usual

week is, as it does not require that one remembers a specific week. Still, the tests carried out during the development of the model questionnaire for the task force on absences and working time, respondents with irregular working hours sometimes had difficulties to identify a typical week. To help respondents in such cases the model questionnaire offers the possibility to calculate the average working time over last four working weeks. Furthermore, there are a number of studies that suggest that working time is generally slightly overestimated in labour force surveys (due to rounding effects and social desirability bias), compared to administrative data or time use surveys (for an overview, see Körner/Wolff 2016).

2.2.2 Hours actually worked

While the concept of hours usually worked focusses on a typical week and excludes weeks of absence, the one of hours actually worked, focusses on the actual number of working hours in the reference week. Respondents are asked to remember one specific week (more or less recent), and to include any absence as well as any kind of extra hours in their response. Since the hours usually worked include regular extra time, one can suspect that the results for hours usually worked and hours actually worked will be different. The differences are made up of irregular extra time in the reference week as well as time of total or partial absence from work.

As shown in table 2, at EU level, the average number of hours usually worked was 11.8% (or 4.8 hours) higher than the one of hours actually worked in 2014: In an average reference week, including paid leave, weeks of sick leave as well as time of irregular extra work, each person worked 4.8 hours less than in a typical week. Still, there are conspicuous differences across European countries as to the size of the difference: While the number of hours usually worked was just 0.7 hours higher in Romania (+1.8%), the difference amounted to at least 7 hours in France (+18.2%), Finland (+18.0%), and Sweden (+18.8%).

Table 2: Comparison of hours usually worked and hours actually worked by full-time employees, 2014

	Hours usually worked	Hours actually worked	Difference	
			in hours	in %
EU-28	40.4	35.6	4.8	11.8
Belgium	39.2	34.3	4.9	12.6
Bulgaria	40.9	39.0	1.9	4.7
Czech Republic	40.8	36.2	4.6	11.3
Denmark	37.8	33.6	4.2	11.0
Germany	40.5	35.6	4.9	12.2
Estonia	40.6	36.8	3.8	9.3
Ireland	39.0	35.3	3.7	9.6
Greece	40.8	38.4	2.4	5.8
Spain	40.2	35.9	4.3	10.7
France	39.0	31.9	7.1	18.2
Croatia	40.9	37.1	3.8	9.4
Italy	38.7	34.4	4.3	11.1
Cyprus	41.5	37.2	4.3	10.4
Latvia	40.4	37.6	2.8	7.0
Lithuania	39.4	36.3	3.1	7.9
Luxembourg	40.1	36.4	3.7	9.2
Hungary	40.7	37.9	2.8	6.9
Malta	40.4	37.2	3.2	7.8
Netherlands	38.9	35.9	3.0	7.6
Austria	41.5	35.1	6.4	15.5
Poland	41.1	37.5	3.6	8.7
Portugal	41.7	36.5	5.2	12.4
Romania	40.8	40.1	0.7	1.8
Slovenia	41.0	35.1	5.9	14.5
Slovakia	41.0	36.7	4.3	10.6
Finland	39.0	32.0	7.0	18.0
Sweden	39.9	32.4	7.5	18.8
United Kingdom	42.4	37.1	5.3	12.5
Iceland	44.5	38.8	5.7	12.7
Norway	38.5	32.1	6.4	16.7
Switzerland	41.8	37.2	4.6	11.0
Former Yugoslav Republic of Macedonia	41.9	41.0	0.9	2.1
Turkey	50.6	48.4	2.2	4.3

Source: Eurobase table reference [lfsa_ewhun2](#) for hours usually worked. Customized data extraction from the Eurostat database for hours actually worked. Hours actually worked include employees who were absent in the reference week.

Divergences of this size cannot be explained plausibly. There are differences across European countries regarding the entitlement of paid leave as well as regarding the number of public holidays, yet these differences can only partially explain some of the cross-country divergences shown in table 2. According to a recent study published by the European Foundation for the Improvement of Living and Working Conditions (Eurofound 2015), the number of days of paid leave per full-time employee, in 2014 ranged between 20 in Hungary and 30 in France.⁽⁴⁾ The number of public holidays not coinciding with a Sunday

⁽⁴⁾ Note that in particular for countries with fewer days of paid leave, the Eurofound study relies on the statutory minimum of paid leave (and not the possibly higher actual entitlement laid down in collective agreements or individual labour contracts), which leads to an exaggeration of the differences of paid leave entitlement (see Eurofound 2015: 24).

ranged between 8 days in the United Kingdom and 15 days in Slovakia. If one transforms the differences in the number of days of paid leave and public holidays to the resulting number of hours of absence per week, the differences can at most explain less than 1.5 working hours per week, much less than the differences shown in table 2. It is highly unlikely that the effect of other types of absences (e.g. sick leave or labour dispute) and of irregular extra hours can explain the remaining difference. Furthermore, one should note that the number of days of paid leave and sick leave is not very strongly correlated with the difference between the hours actually worked and the hours usually worked. Thus, it is likely that there are data quality issues behind these findings.

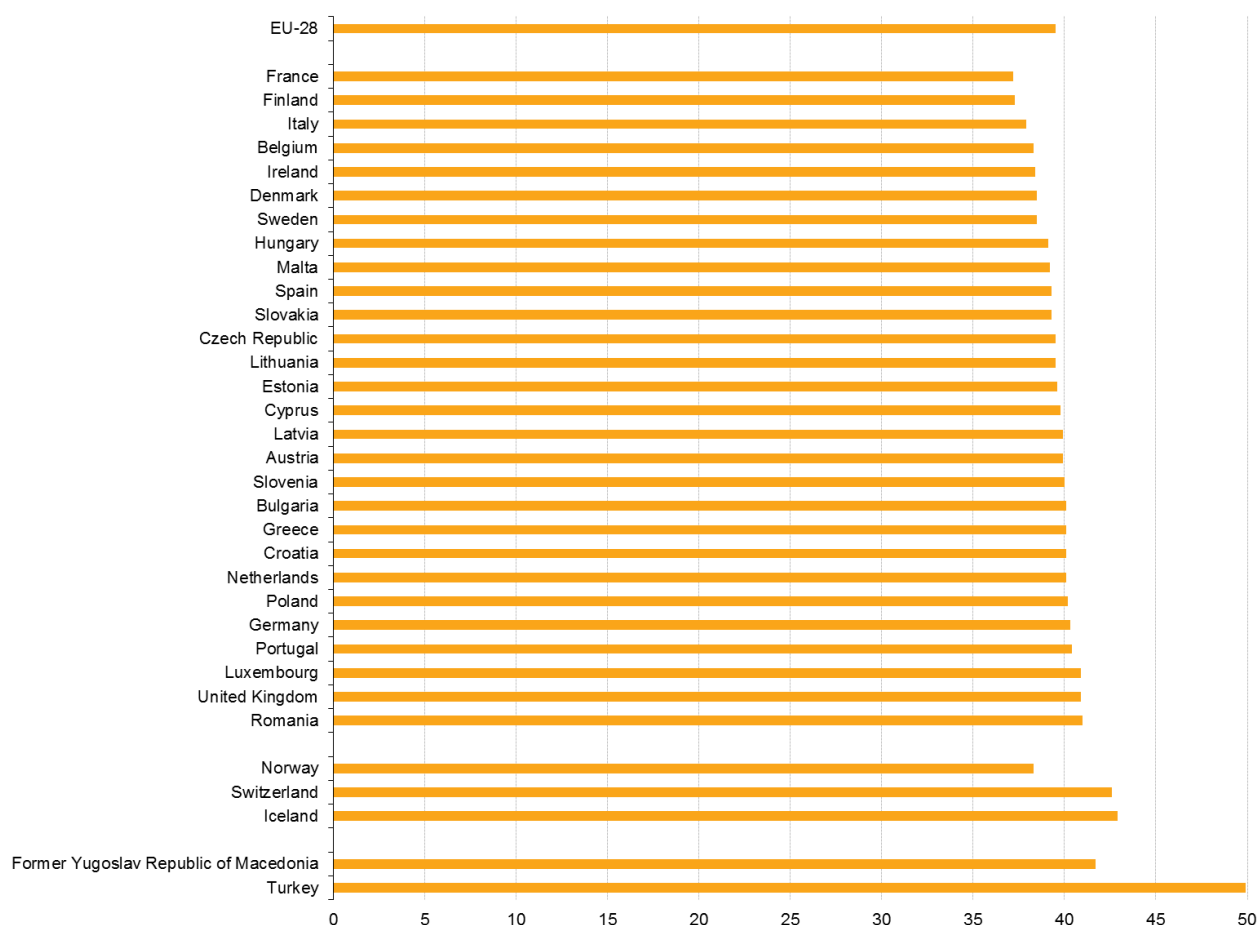
Table 3: Entitlement to paid leave and public holiday of full-time employees, 2014

	A	B	C	D	E	F
	Weekly hours	Gross annual hours (A*52)	Annual leave in days	Public holidays in days	All leave (C+D) in hours	Annual hours (B - E)
EU28	38.1	1 979.2	25.1	10.6	272.0	1 707.2
Belgium	37.8	1 965.6	20*	9.0	219.2	1 746.4
Bulgaria	40.0	2 080.0	20*	14.0	272.0	1 808.0
Czech Republic	38.1	1 981.2	25.0	10.0	266.7	1 714.5
Denmark	37.0	1 924.0	30.0	9.0	288.6	1 635.4
Germany	37.7	1 960.4	30.0	11.0	309.1	1 651.3
Estonia	40.0	2 080.0	20*	11.0	248.0	1 832.0
Ireland	39.0	2 028.0	24.0	9.0	257.4	1 770.6
Greece	40.0	2 080.0	23*	12.0	280.0	1 800.0
Spain	38.5	2 002.0	22*	14.0	277.2	1 724.8
France	35.6	1 851.2	30*	11.0	291.9	1 559.3
Croatia	40.0	2 080.0	20*	12.0	256.0	1 824.0
Italy	38.0	1 976.0	25.0	11.0	273.6	1 702.4
Cyprus	38.0	1 976.0	20*	14.0	258.4	1 717.6
Latvia	40.0	2 080.0	20*	14.0	272.0	1 808.0
Lithuania	40.0	2 080.0	20*	12.0	256.0	1 824.0
Luxembourg	39.8	2 067.0	25*	10.0	278.3	1 788.8
Hungary	40.0	2 080.0	20*	10.0	240.0	1 840.0
Malta	40.0	2 080.0	24*	12.0	288.0	1 792.0
Netherlands	37.1	1 929.2	25.0	9.0	252.3	1 676.9
Austria	38.8	2 017.6	25*	12.0	287.1	1 730.5
Poland	40.0	2 080.0	20*	10.0	240.0	1 840.0
Portugal	39.3	2 043.6	22*	8.0	235.8	1 807.8
Romania	40.0	2 080.0	21.0	9.0	240.0	1 840.0
Slovenia	40.0	2 080.0	20*	11.0	248.0	1 832.0
Slovakia	38.9	2 022.8	25.0	15.0	311.2	1 711.6
Finland	37.5	1 950.0	25.0	10.0	262.5	1 687.5
Sweden	37.2	1 934.4	25.0	11.0	267.8	1 666.6
United Kingdom	37.4	1 944.8	25.1	8.0	247.6	1 697.2
Norway	37.5	1 950.0	25.0	10.0	262.5	1 687.5

Source: Eurofound 2015; Asterisk in column C denotes that the value refers to the statutory minimum paid leave

Based on previous research, it can be suspected that the measurement of absences in the reference week plays an important role in explaining the differences between the hours actually worked and the hours usually worked. Further insight on the reasons for the differences can be gained by an comparison between the average number of hours actually worked by all full-time employees and the number of hours actually worked of full-time employees who worked at least one hour in the reference week (i.e. excluding those who were absent from their job for the entire week). Note that the latter group is the target population of the results on average hours actually worked that can be found on the Eurostat online database. The other results are not published there, but are provided in this paper, as data extractions from the Eurostat database

Figure 3: Average hours actually worked by full-time employees who were present at work for at least one hour in the reference week, 2014



Source: Eurobase table reference [lfsa_ewhan2](#)

Figure 3 shows the average number of hours actually worked of full-time employees who worked in the reference week. We see that most countries are quite close to each other, but with Turkey as an obvious outlier at just below 50 hours. The EU average is just below 40 hours. There is no obvious geographical pattern or other grouping.

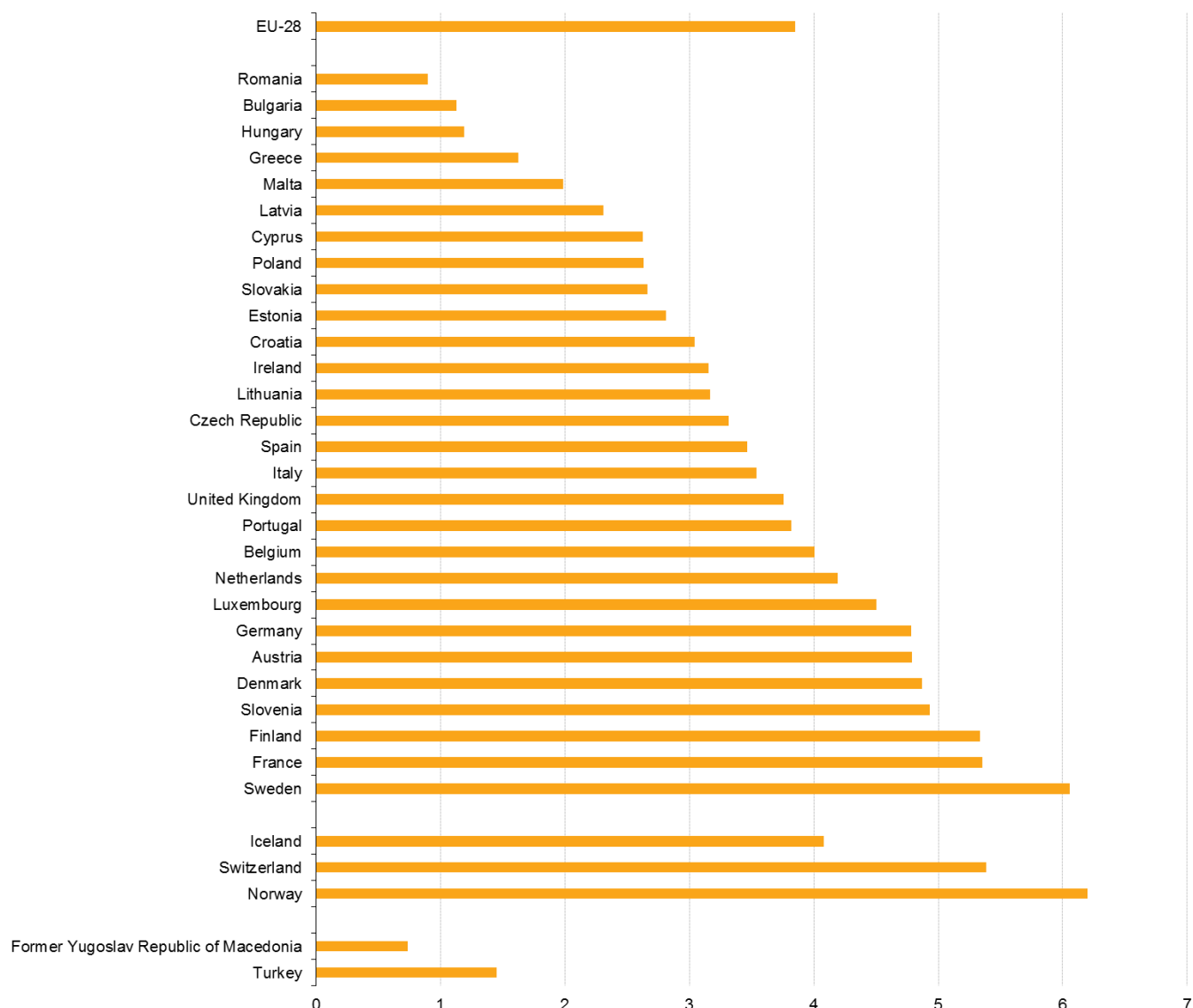
The difference between the hours actually worked of *all* full-time employees (meaning average hours in the reference week calculated on the sum of persons present at and persons absent from work) and of those *who worked at least one hour in the reference week* basically rests upon the diverging share of full-time employees who were absent from their job for the whole reference week (see section 2.3). The different measurement of employed persons who were absent from work in the entire reference week leads to a difference between the hours actually worked of all full-time employees and those who were at work in the reference week. The differences range between less than one hour in the Former Yugoslav Republic of Macedonia and more than six hours in Norway and Sweden. As shown before, the divergence in this

difference can hardly be explained on the basis of the differences in entitlement to paid leave.

Besides differences in entitlements for paid leave, there are of course also differences regarding sick leave or parental leave across Europe, and in age/sex structures of the work force, but it is likely that it is the bottom of the figure which shows the more correct situation, as it is more common that absences are under-reported than over-reported.

This clearly shows the quality issues in reporting absences (or it means that no Bulgarians or Romanians are ever sick, in parental leave, or on holiday). Rather ironically we see that the countries at the foundation of the working time debate, i.e. France and Germany, have results which are relatively similar to each other, at least in comparison with some other countries.

Figure 4: Difference in average hours actually worked by all full-time employees and by only full-time employees who worked in the reference week, 2014. Hours.



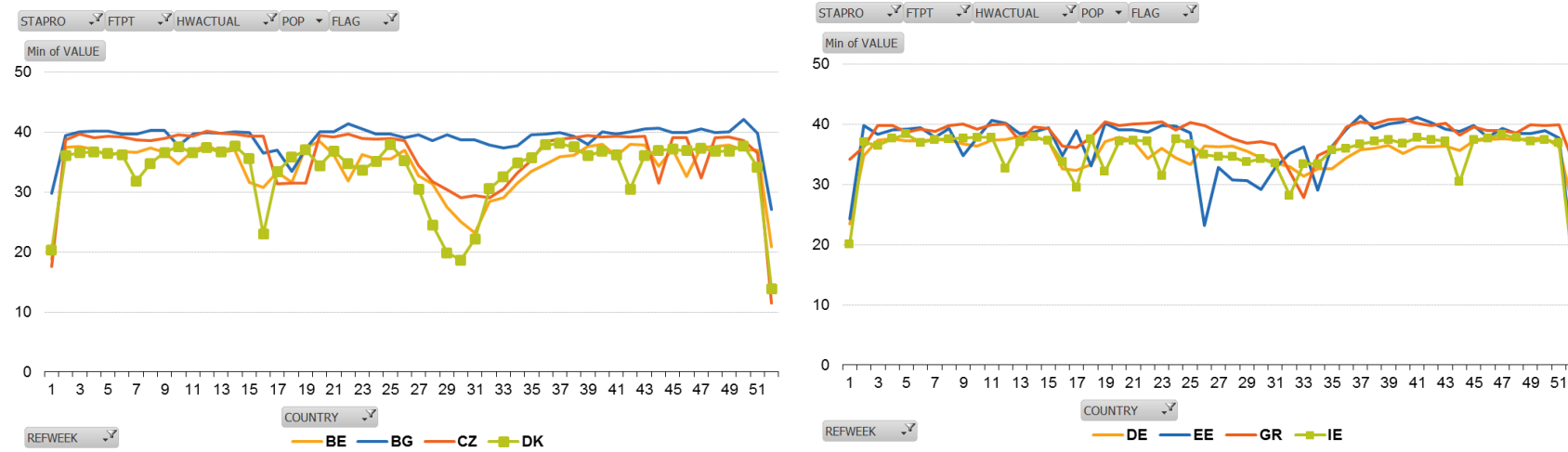
Source: Customized data extraction from the Eurostat database, EU-LFS 2014

2.3 Distribution of hours actually worked over the weeks

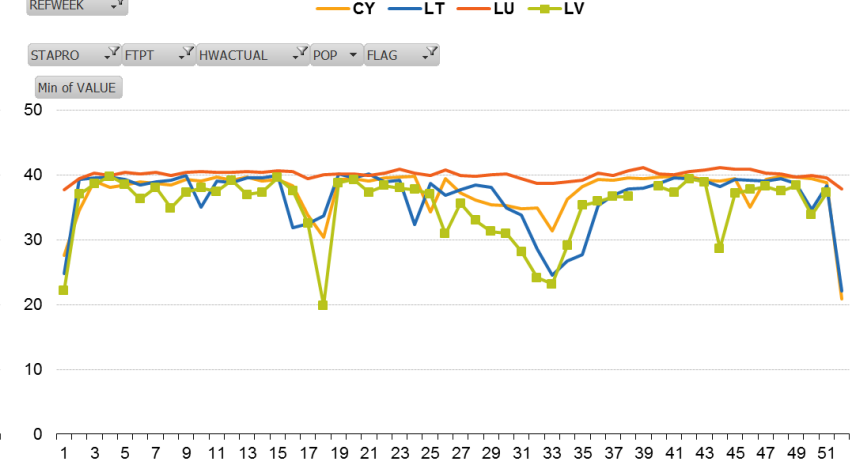
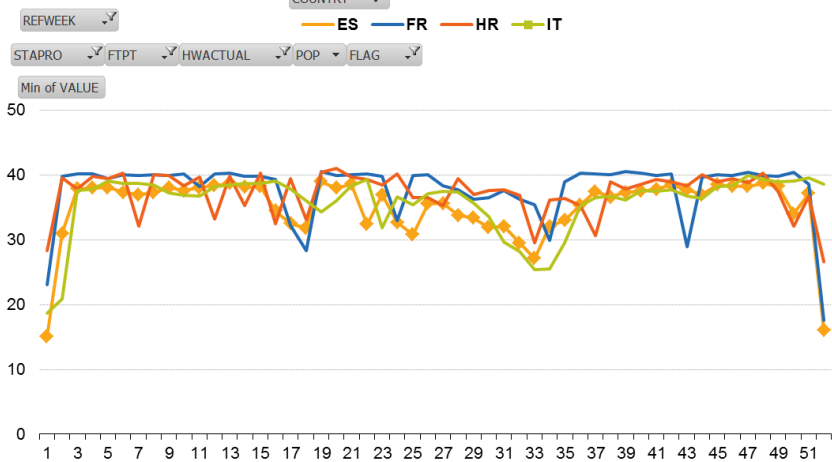
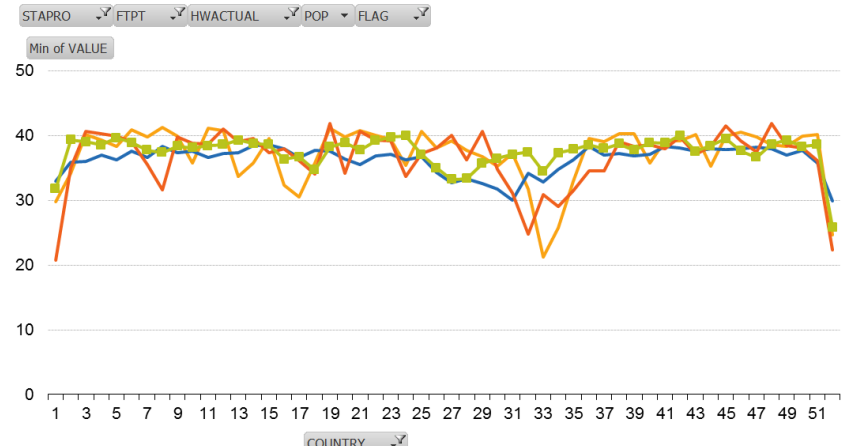
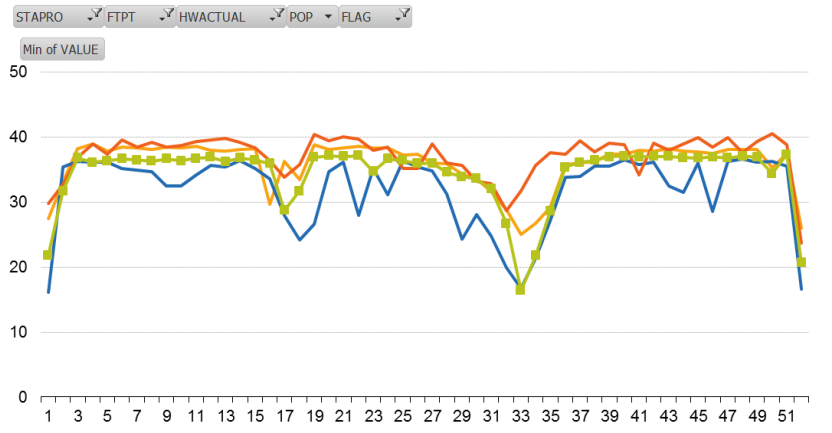
Considering that the number of hours actually worked is expected to be rather varying over the year, another and more detailed approach to looking at the results for the hours actually worked and to assess the quality of this information, is to consider each reference week, not just the average for the year. Figure 5 presents this for all countries, from a customized Eurostat database extraction. If absences are reported correctly, we will find seasonal patterns, with markedly lower average hours during the summer and Christmas breaks. It is worth noting that, as this figure shows the average hours actually worked for all full-time employees, including also those who were not at work in the reference week.

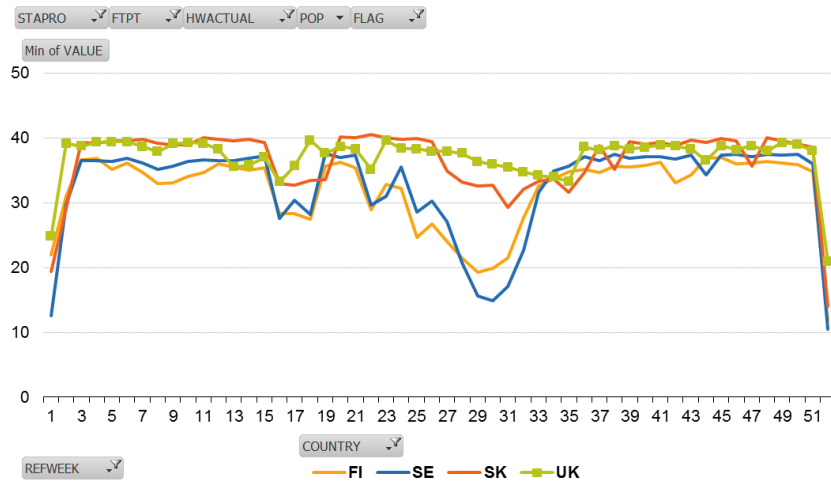
We clearly see the expected dips for a large majority of the countries, but we also see that there are worryingly flat lines over the year for Bulgaria, Germany, Lithuania, Latvia, Former Yugoslav Republic of Macedonia, Poland, Romania, and the United Kingdom.

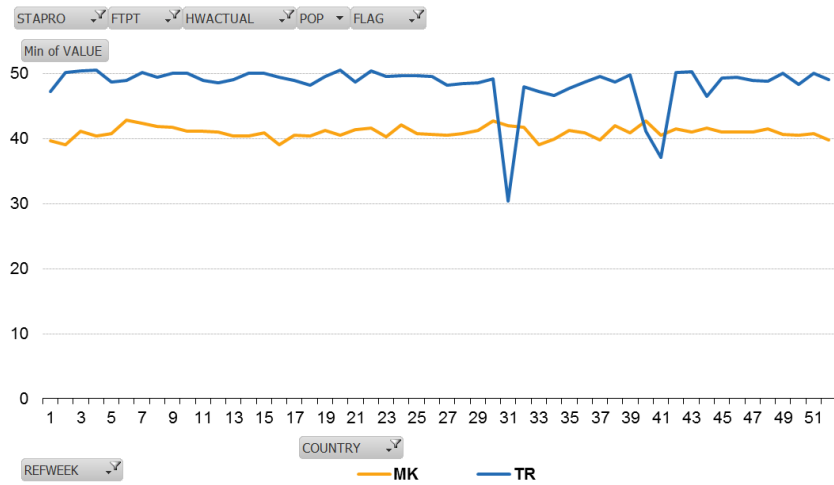
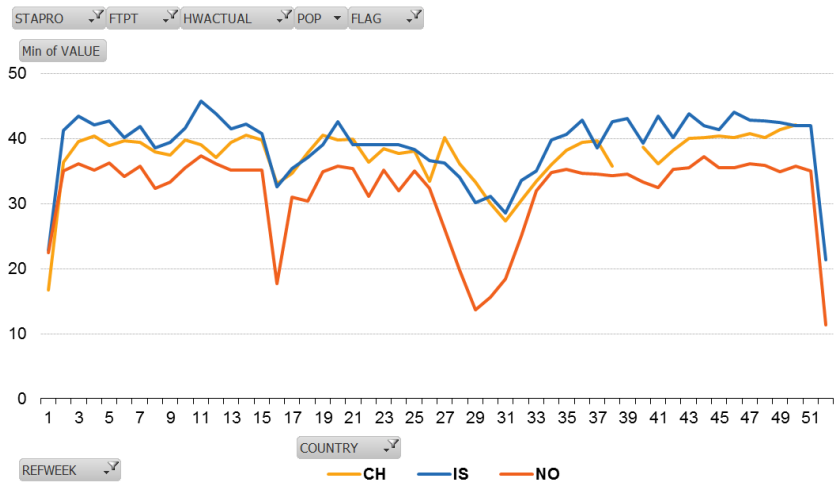
Figure 5: Hours actually worked per reference week by full-time employees, 2014⁽⁵⁾



⁽⁵⁾ The calculation of the average hours actually worked includes employees who were absent in the reference week.







Source: Customized data extraction from the Eurostat database, EU-LFS 2014

Due to weight design the weekly figures are only estimates.

2.4 Frequency of absences

Table 4: Percentage of full-time employees not at work in the reference week, 2014

Week	EU-28	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	IS	NO	CH	MK	TR
1	27	33	8	32	25	33	11	28	7	19	41	17	34	15	8	11	36	14	12	39	48	15	20	4	25	36	22	47	25	20	24	49	3	1
2	8	5	3	4	8	12	5	5	4	7	8	13	8	3	3	10	9	2	0	35	14	5	5	2	9	13	8	11	6	4	11	13	3	2
3	6	5	2	3	7	9	8	6	1	5	6	10	5	2	2	8	3	2	6	6	8	5	5	1	5	3	6	9	6	3	8	8	0	1
4	6	6	2	4	7	8	4	5	1	4	7	6	6	4	4	7	0	2	2	6	8	6	5	3	5	3	5	8	6	8	11	6	0	1
5	6	6	2	3	8	9	5	4	2	5	7	8	5	4	2	9	0	3	4	4	8	6	5	2	7	3	10	9	5	7	8	10	0	4
6	6	6	3	4	7	9	4	6	2	4	8	4	5	2	3	4	6	1	0	4	9	6	7	2	11	2	6	8	6	8	13	8	0	4
7	6	5	3	5	16	8	5	5	2	4	9	6	5	4	6	9	12	1	4	5	10	6	6	2	8	2	10	9	6	5	10	8	0	2
8	7	4	1	6	11	8	4	5	1	4	9	4	5	0	8	4	22	1	0	5	10	6	5	2	12	3	14	11	9	14	16	11	0	2
9	7	5	1	4	7	9	4	5	0	4	15	6	5	2	4	5	5	2	0	10	9	5	5	2	7	4	13	10	6	10	13	11	0	1
10	7	10	2	5	5	9	5	4	1	3	15	6	5	0	4	5	0	1	0	8	7	5	6	1	8	4	11	9	6	4	9	8	0	1
11	6	5	3	4	6	9	0	4	1	4	10	4	5	3	5	5	6	1	0	8	8	4	5	1	8	1	9	9	5	0	7	11	0	1
12	6	3	2	3	5	9	4	6	1	5	8	5	3	0	4	6	0	1	6	7	7	5	6	2	5	2	7	8	8	7	10	15	0	2
13	6	5	2	4	7	8	7	5	1	5	8	3	4	4	4	6	7	1	0	6	6	4	6	2	11	3	8	8	11	11	10	10	3	1
14	6	7	2	4	4	7	5	4	1	5	6	4	5	2	5	4	0	1	4	5	8	5	4	1	10	3	9	7	11	0	9	6	6	1
15	7	20	2	3	9	9	2	5	1	4	8	6	5	2	3	3	13	1	3	5	7	5	5	1	5	4	8	8	10	8	10	8	5	1
16	10	20	1	3	28	13	5	12	5	11	11	10	5	11	5	4	9	2	4	4	14	4	11	1	8	3	12	14	12	20	35	15	2	1
17	9	7	2	5	10	15	0	15	5	6	15	8	10	8	4	6	9	2	3	5	8	5	8	3	7	5	12	10	9	8	10	16	0	2
18	8	5	2	3	7	11	3	5	1	5	20	5	6	2	4	2	9	2	3	7	9	7	6	2	29	4	10	9	5	9	9	9	0	1
19	7	4	1	4	7	9	3	6	1	4	14	2	4	0	4	6	0	1	2	13	7	5	4	1	6	3	7	6	8	10	6	0	2	
20	6	4	2	4	8	8	5	6	1	5	9	5	4	4	4	8	15	1	0	10	7	4	5	2	4	1	6	8	6	8	7	2	1	1
21	6	6	2	4	6	9	4	5	2	5	6	3	4	2	6	10	7	1	0	6	6	5	3	2	10	2	8	7	8	14	10	8	0	2
22	7	5	2	3	4	10	5	6	1	4	10	4	3	3	3	7	6	1	3	4	9	4	6	2	8	0	12	9	11	9	8	9	0	1
23	6	6	2	4	8	11	2	8	1	4	9	7	5	3	2	8	5	1	3	8	10	4	6	1	6	1	15	10	6	5	11	11	0	2
24	7	4	3	5	7	12	5	6	1	5	8	5	5	2	4	9	13	1	0	8	10	4	8	1	8	2	17	10	7	18	11	12	0	2
25	8	9	3	5	6	13	4	7	1	6	8	5	5	3	8	9	12	2	4	7	12	5	7	3	10	2	22	14	8	13	11	12	3	2
26	8	4	3	6	10	11	15	10	3	5	8	5	7	7	9	10	8	2	4	9	14	5	9	1	12	3	29	23	8	22	18	21	3	2
27	11	14	3	15	21	11	19	12	6	9	10	6	9	6	18	18	0	6	7	8	13	11	8	3	12	12	37	30	8	20	33	7	5	5
28	14	21	4	21	36	11	24	13	10	11	18	13	12	11	16	17	13	6	4	8	16	13	8	3	21	17	44	47	9	30	50	17	4	5
29	17	30	4	24	49	13	26	15	10	14	28	14	13	10	12	17	0	10	7	12	19	15	8	3	23	19	50	60	11	38	64	23	3	5
30	18	30	5	27	53	16	27	13	9	16	27	19	15	11	21	15	8	8	16	21	15	15	3	24	20	48	61	11	33	60	32	2	6	
31	21	39	6	26	42	17	22	15	12	19	35	20	18	11	9	24	21	8	8	26	21	16	18	4	30	27	42	56	13	39	52	34	2	20
32	25	28	7	28	20	19	15	20	24	29	48	26	31	23	8	15	38	10	8	28	27	16	30	6	41	20	27	41	15	21	34	29	3	8
33	28	17	8	23	16	22	10	16	27	35	50	15	54	43	16	16	20	10	11	36	25	16	35	6	38	18	16	21	15	17	18	22	6	9
34	24	19	8	17	11	20	17	15	16	33	44	14	44	38	7	12	28	8	10	36	21	12	37	4	26	16	13	13	17	16	12	16	6	10
35	18	14	4	11	9	20	9	9	13	27	29	7	27	19	7	8	25	4	10	28	19	7	32	4	13	11	9	12	15	12	9	12	0	8
36	9	10	3	6	6	16	6	7	2	10	11	7	9	4	4	4	16	1	14	12	13	5	13	2	11	3	8	9	7	6	11	10	0	3
37	8	9	3	5	7	12	2	7	1	9	12	6	6	5	5	7	14	1	12	10	10	4	10	2	10	3	10	8	8	11	11	12	0	3
38	8	7	2	5	6	12	2	6	1	9	9	7	6	3	3	6	8	1	5	10	11	4	8	2	10	2	7	7	7	4	12	18	0	2
39	7	4	2	3	8	11	0	4	1	6	8	4	5	2	4	7	5	1	5	12	9	4	8	0	9	3	8	8	8	3	12	19	0	2
40	7	3	2	4	7	12	5	6	1	6	6	6	4	3	4	6	9	1	5	9	9	3	6	2	8	4	8	8	8	14	13	9	0	3
41	6	7	2	4	7	11	3	5	2	4	6	5	4	4	3	4	9	1	0	8	7	4	5	2	8	4	6	8	7	6	15	16	0	4
42	7	4	2	4	18	11	0	5	2	5	6	5	4	5	2	4	4	2	5	7	8	4	5	2	6	4	13	8	7	6	11	11	0	2
43	7	3	1	4	9	11	3	4	1	5	15	6	4	2	8	5	8	2	4	9	8	4	6	1	6	2	11	7	8	0	9	8	0	2
44	8	13	1	4	6	12	2	11	2	5	16	4	4	4	5	4	9	2	3	10	9	4	8	1	18	2	5	10	11	5	7	7	0	2
45	6	5	2	5	6	9	2	6	3	6	6	0	5	3	5	6	1	2	6	6	5	6	1	7	2	6	7	7	7	9	6	0	2	
46	6	7	2	4	6	9	5	4	3	5	8	5	4	0	7	4	6	1	3	5	7	4	6	1	7	3	7	7	7	4	9	7	2	1
47	6	6	1	5	6	8	4	4	3	5	7	2	4	3	5	4	9	1	3	3	8	5	6	2	4	3	6	7	5	9	5	0	1	
48	5	3	3	4	7	9	5	5	3	5	5	8	4	4	3	5	3	2	0	4	7	4	5	2	7	1	6	8	5	8	7	0	2	
49	5	4	2	4	5	8	4	4	1	4	6	3	4	6	4	6	7	2	7	5	7	4	5	2	8	3	6	7	6	4	11	5	0	1
50	6	6	2	5	5	8	5	4	1	6	6	4	5	2	5	5	8	2	5	4	7	4	6	2	13	3	6	7	6	5	9	6	0	1
51	6	6	3	8	11	10	5	5	1	6	7	6	4	3	2	10	14	3	7	5	9	4	7	3	9	4	7	10	8	11	10	16	0	1
52	27	33	8	32	25	33	11	28	7	19	40	16	26	10	17	10	28	19	20	6	34	17	19	4	NA	43	40	45	31	31	51	20	3	2

Source: Customized data extraction, EU-LFS 2014, Eurostat. Due to weight design the weekly figures are only estimates

Red: implausible (less than 1.5%)

Green: plausible for holiday season (greater than 10.5%)

White

thresholds applied for the colour coding leaves much room to account for national variations. For cells coloured red, it seems highly likely that the results are implausible, while cells coloured in green and white do not necessarily signify that there are no issues with measuring hours actually worked in these countries. The results in the following chapter show that there is considerable variation between “green/white” countries. Also the case studies in chapter 3 show that for countries not appearing conspicuous in table 4, significant measurement issues can be detected if analysing the data more closely within the specific national context.

Table 5: Percentage of full-time employees who worked less than usual in the reference week as a percentage of all full-time employees who worked in the reference week, 2014

Week	EU-28	BE	BG	CZ	DK	DE	EE	IE	EL	ES	FR	HR	IT	CY	LV	LT	LU	HU	MT	NL	AT	PL	PT	RO	SI	SK	FI	SE	UK	IS	NO	CH	MK	TR
1	56	67	53	89	58	36	85	70	41	49	80	51	45	82	28	24	44	85	86	51	72	76	72	6	76	66	82	85	55	74	57	42	2	22
2	29	7	0	7	9	16	10	2	35	54	12	42	49	71	1	0	10	2	9	50	64	62	4	1	5	73	72	79	20	13	9	13	10	1
3	8	5	0	6	4	8	9	3	4	6	14	0	3	0	2	0	8	2	6	12	16	2	5	0	6	5	16	16	20	4	8	10	0	1
4	9	4	1	6	7	8	10	2	4	4	16	0	4	3	0	0	14	1	3	13	16	3	5	0	3	3	17	16	20	7	11	11	0	2
5	9	6	1	6	7	8	5	3	12	7	14	0	4	9	3	0	9	2	2	11	13	3	4	1	7	5	17	18	20	8	11	9	0	2
6	9	6	1	5	10	7	9	3	3	5	14	0	4	0	0	0	0	1	5	12	14	1	5	0	7	7	19	17	20	7	13	10	0	1
7	9	5	0	7	16	8	11	3	3	5	15	0	3	2	0	0	0	2	82	11	13	3	3	0	6	3	20	19	20	4	13	13	0	1
8	9	4	1	7	11	7	13	5	2	4	16	2	3	2	2	0	14	2	2	12	15	2	5	0	11	6	18	19	22	18	16	11	0	1
9	10	6	2	7	7	10	68	2	4	10	16	0	3	4	0	0	4	2	3	10	10	1	5	0	9	4	19	18	21	8	16	13	0	2
10	11	8	33	5	8	10	5	2	11	7	15	0	5	61	0	1	9	2	18	13	17	1	45	1	3	4	18	16	20	10	9	9	0	2
11	9	6	1	7	8	7	9	3	2	3	15	0	4	2	2	13	6	23	5	15	14	1	4	0	5	5	16	17	20	8	8	10	0	1
12	9	6	1	6	8	6	3	58	2	8	15	0	3	2	3	0	9	1	75	11	14	1	5	0	4	6	16	19	21	0	13	10	0	1
13	10	5	1	5	9	8	2	3	43	6	13	0	4	67	0	0	9	1	16	12	16	2	5	0	7	4	17	18	27	6	13	6	2	1
14	9	5	2	6	11	7	8	3	9	5	13	0	3	72	0	0	5	2	37	13	12	3	5	1	6	3	18	18	26	9	10	11	0	2
15	9	8	1	7	10	7	11	4	8	5	14	0	3	11	2	0	0	2	0	11	15	2	5	1	6	4	20	16	23	11	9	9	3	1
16	30	11	47	11	47	39	67	15	26	51	19	6	9	63	31	3	9	8	79	11	25	10	61	0	10	73	78	81	46	65	63	38	10	2
17	48	46	41	87	31	34	10	60	34	21	72	54	48	67	25	9	20	93	7	17	66	63	68	6	64	74	77	79	42	52	58	24	7	13
18	48	50	47	86	17	36	83	5	30	46	79	40	50	71	31	11	31	91	80	28	66	66	70	2	76	72	80	81	21	38	61	18	6	18
19	23	4	39	83	12	9	5	63	3	4	75	0	4	1	5	0	0	1	4	17	12	2	4	0	8	68	20	15	38	15	11	9	0	2
20	8	5	1	7	25	7	5	4	4	7	12	0	2	0	2	0	8	2	8	16	13	3	4	1	5	5	17	17	20	9	12	10	0	1
21	8	7	1	6	13	8	9	4	2	3	12	3	3	4	0	0	0	2	4	10	13	2	5	0	7	4	17	16	22	14	12	9	0	16
22	25	47	1	5	33	30	6	5	2	4	73	2	3	3	2	0	13	3	3	10	60	1	8	0	6	4	64	72	36	33	52	29	0	2
23	14	9	0	8	36	11	9	58	1	4	13	0	31	4	0	0	6	5	13	50	14	1	4	0	8	4	19	74	19	14	11	14	17	2
24	23	34	1	8	24	25	8	3	15	4	64	0	4	69	0	0	16	91	3	15	59	3	66	0	8	4	17	22	20	19	46	13	0	2
25	20	7	1	7	9	26	9	3	2	10	13	46	4	2	2	0	0	2	35	35	63	51	4	0	7	4	82	79	20	25	9	11	5	2
26	11	7	1	8	9	8	85	4	6	13	14	51	4	4	18	20	24	2	26	11	17	1	16	0	59	4	21	19	23	10	11	11	0	2
27	10	8	1	10	10	8	10	3	7	6	14	0	4	7	0	0	6	3	17	13	13	2	8	0	10	11	18	19	23	17	13	10	0	2
28	9	7	2	10	16	7	6	4	3	5	14	0	4	4	4	0	11	4	11	12	15	2	6	0	8	9	20	22	20	7	10	0	2	
29	16	7	1	12	15	7	7	3	7	9	69	0	5	8	3	3	8	4	17	11	15	1	7	0	9	7	19	21	31	20	12	11	0	2
30	11	39	1	9	13	8	16	4	5	11	14	2	4	5	0	0	6	5	11	11	15	2	9	0	4	4	20	23	27	17	13	11	0	2
31	10	12	2	10	14	9	4	5	6	12	17	0	5	10	0	0	15	2	16	12	16	2	13	0	5	9	25	21	20	20	13	25	6	57
32	11	10	2	11	13	8	4	53	4	6	15	26	5	5	3	0	20	4	15	16	16	2	9	0	6	8	20	26	41	13	12	0	2	
33	27	41	2	14	10	10	8	4	41	26	71	52	31	58	0	16	22	7	93	14	57	51	56	1	44	5	18	18	21	20	11	15	0	2
34	13	9	1	11	8	8	75	5	3	5	17	0	5	7	0	2	0	91	10	14	17	2	7	0	14	8	19	16	23	22	9	13	0	1
35	13	9	1	10	12	7	11	5	3	6	18	3	4	5	0	0	10	4	11	11	15	2	9	0	9	56	18	13	40	14	12	11	15	3
36	10	8	1	9	7	7	4	3	4	6	16	3	4	2	0	0	11	2	11	11	14	3	9	0	6	60	20	15	19	11	13	8	0	2
37	9	5	0	6	7	7	5	2	5	12	13	0	4	7	0	0	12	2	84	12	13	3	7	0	7	7	18	18	18	16	11	7	18	2
38	9	6	4	6	9	7	6	2	3	6	12	0	4	2	0	0	4	2	5	10	12	2	7	0	6	61	17	16	19	8	11	11	0	2
39	9	4	27	6	9	7	5	2	2	5	13	0	3	0	5	0	5	2	6	12	15	1	4	0	4	4	17	17	21	8	10	12	0	3
40	11	4	1	7	8	20	4	2	3	5	12	0	2	67	0	0	8	2	6	10	13	1	5	0	6	5	17	15	21	11	17	11	0	60
41	9	4	1	6	6	8	4	3	1	8	13	53	3	5	0	0	0	2	4	12	14	1	5	0	6	4	17	15	20	6	14	11	3	66
42	9	5	0	5	21	7	10	3	4	9	13	0	3	2	0	0	8	4	3	11	14	2	3	0	5	5	22	17	21	11	9	10	0	2
43	10	4	0	7	9	7	6	4	3	4	15	0	3	3	0	0	9	92	6	12	15	1	3	0	4	4	16	18	22	12	12	10	14	2
44	14	10	1	83	8	9	6	57	27	4	20	0	5	64	0	2	11	3	0	12	18	4	4	0	66	9	16	31	21	8	10	11	0	23
45	8	7	1	5	9	7	5	2	2	4	14	0	3	2	0	0	8	2	12	12	16	3	4	0	6	4	14	15	21	8	12	11	0	2
46	22	41	1	8	8	7	10	2	8	6	74	3	3	7	0	0	0	2	8	10	17	55	5	0	7	3	16	16	22	5	12	10	0	2
47	11	9	1	81	8	7	7	2	3	3	14	0	3	3	20	0	4	2	0	10	15	2	4	0	10	53	18	18	19	4	12	11	0	3
48	9	7	0	6	8	6	11	2	3	3	16	0	4	3	0	0	0	2	3	9	15	2	4	0	5	3	17	15	24	9	14	10	0	2
49	9	8	1	7	9	7	8	2	1	4	14	0	4	4	2	0	7	2	5	11	15	1	5	6	5	3	18	16	20	8	10	10	7	1
50	15	6	1	8	9	7	7	2	5	36	13	0	35	5	0	0	4	82	12	60	2	59	1	14	6	20	16	19	12	13	7	12	2	
51	10	9	1	15	14	10	8	5	2	5	13	0	3	2	6	1	13	8	11	9	18	4	7	1	4	7	22	18	23	17	15	7	0	1
52	58	46	56	94	69	27	88																											

Finland, Sweden and the UK stand out as having a notable proportion of persons who were partially absent during all weeks, with a less pronounced seasonal pattern. This could be a sign of high use of flexible working hours.

It should be noted that in weeks with public holidays the threshold of 15 hours is much too low to distinguish plausible values. Here one would expect a share of at least two-thirds of the full-time employees who worked less than usual, depending on the prevalence of work on public holidays in the given country.

Table 6: Percentage of reasons why full-time employees worked more or less than usual hours in the reference week, 2014

	HWACTUAL > HWUSUAL			HWACTUAL < HWUSUAL												
	01. Variable hours (+)	16. Overtime	02. Other reasons (+)	03. Bad weather	04. Slack work for technical or economical reasons	05. Labour dispute	06. Education or training	07. Variable hours (-)	08. Own illness/injury	09. Maternity or parental leave	10. Personal/family reason	11. Annual holidays	12. Bank holidays	13. Start of/change in job	14. End of job	15. Other reasons (-)
EU-28	14	20	6	0	1	0	1	13	3	0	1	11	25	0	0	5
BE	2	11	11	0	2	0	0	5	3	2	4	20	38	0	0	2
BG	4	3	11	0	1	0	0	3	1	0	0	3	73	0	0	0
CZ	12	25	2	0	1	0	0	7	1	0	1	16	34	0	0	1
DK	33	32	1	0	2	0	0	10	2	0	0	10	9	0	0	1
DE	30	20	9	0	0	0	1	6	3	0	1	8	15	0	0	7
EE	30	15	3	0	2	0	0	19	1	0	1	3	36	0	0	0
IE	5	19	6	0	2	0	0	4	2	1	1	11	47	0	0	2
EL	0	5	5	1	1	0	0	0	0	0	1	9	67	0	2	8
ES	7	15	7	1	1	0	0	9	1	0	1	8	42	1	1	4
FR	3	23	7	0	0	0	2	8	2	0	1	17	22	0	0	13
HR	4	9	9	1	3	0	0	2	0	0	0	30	0	1	0	41
IT	6	17	1	1	9	0	0	1	2	1	1	12	46	0	0	2
CY	1	10	1	0	1	0	0	0	1	0	1	7	77	1	0	0
LV	20	7	1	1	2	0	0	31	2	0	0	1	54	1	0	1
LT	10	12	6	0	1	0	1	4	1	0	0	2	1	0	0	62
LU	11	46	18	0	0	0	0	2	2	0	0	9	17	0	0	5
HU	2	4	4	0	0	0	0	1	1	0	0	12	74	0	0	1
MT	3	19	3	0	0	0	0	10	2	0	1	10	49	0	0	0
NL	13	37	18	0	1	0	0	14	3	2	0	11	5	0	0	3
AT	10	26	0	0	1	0	1	21	2	0	1	9	27	0	0	2
PL	6	13	1	0	1	0	0	6	1	0	0	6	65	0	0	1
PT	8	18	2	1	3	0	0	4	2	1	1	10	46	1	0	3
RO	8	66	1	1	0	0	0	2	1	0	0	2	19	0	0	1
SI	2	35	1	1	1	0	0	2	3	0	1	22	30	0	0	2
SK	3	8	1	0	0	0	0	5	2	0	0	20	60	0	0	0
FI	14	26	1	0	1	0	0	21	6	0	2	6	20	0	0	2
SE	13	35	0	0	0	0	0	11	6	4	1	8	20	0	0	2
UK	15	10	6	0	0	0	0	39	3	0	1	11	11	0	0	2
IS	7	25	18	1	0	0	1	3	5	0	8	10	21	0	0	0
NO	36	9	15	0	0	0	0	4	11	1	3	9	11	0	0	1
CH	19	36	23	0	1	0	0	5	2	0	0	10	0	0	0	4
MK	0	18	1	1	5	0	0	0	1	0	0	70	0	0	0	5
TR	23	19	0	2	0	0	0	2	2	0	2	4	43	2	1	1

Source: customized data extraction, EU-LFS 2014, Eurostat

The figures in table 6 show, for each country, the distribution of reasons why full-time employees worked more or less than usual hours in the reference week.

For the employees who worked less than usual, in most countries, the main reasons for this partial absence are paid leave or public holidays, whereas other reasons like own illness/injury have only a little proportion. In Iceland, we observe a relatively high proportion of employees worked less than usual because of personal or family reason.

In the UK, a high proportion for the reason of variable hours is present, which is even higher than paid leave, while this high proportion of the minus side is not observed on the plus side.

Similarly, when focusing on the reasons why employees worked more than usual, countries like Denmark and Norway show a high proportion for the variable hours, but this phenomenon is not observed on the minus side. However, these variable hours might be accumulated to be compensated by the paid leave (absent whole week; see table 4). Moreover, Luxembourg and Romania mark a very high proportion for overtime.

3

Country case studies

The results presented in chapter 2 have already shown that the comparability of LFS estimates regarding the number of hours actually worked is limited. Still, an assessment of the plausibility of working time estimates for a given country is difficult to achieve in a comparison of all European Statistical System (ESS) countries, since the specific national context cannot only partly be taken into account in an ESS-wide comparison. For this reason, the present paper includes six case studies analysing the working time estimates in six countries of the ESS. First, for instance the Labour Force Survey (LFS) measurement of absences from work is assessed using other data sources and legal provisions (e.g. regarding holiday entitlements, public holidays, and sick leave). The case studies also take a closer look at the plausibility of the intra-annual working time pattern. Thirdly, they provide results from national pilot studies regarding the underlying methodological effects for implausible results. Finally, national dissemination strategies and complementary approaches towards estimating working time (e.g. working time accounting) are being presented.

3.1 Denmark

There has been an ongoing discussion in Denmark regarding the development in productivity. The Danish Government therefore established a Productivity commission in 2012 with the mandate to “Identify the reasons for the relatively weak productivity growth since the mid-1990s in Denmark.” The commission announced its final report in 2014 which initiated a discussion about hours actually worked. This was natural in the sense that hours actually worked and productivity are closely linked. However, as a side effect this initiated a discussion about the reliability of the figures of the Danish LFS regarding a potential risk of overestimating working time. The problem becomes evident when comparing the Danish LFS to administrative data sources. The primary administrative source regarding working time in Denmark is the Working Time Account (WTA). WTA is a register based data source that is the input to the National Accounts. The data basis is made up by a number of primary statistical data, which are adapted and adjusted to achieve agreement on the concepts and definitions used in the WTA system.

The statistical sources used in the WTA are:

- The Register-Based Labour Force statistics (RAS)
- Establishment-related employment statistics (ERE statistics)
- The Structural Earning Statistics (SES)
- Employment Statistics for Employees (BfL)
- The Labour Force Survey (LFS)

3.1.1 Comparison between the Labour Force Survey and the Working Time Account

The Labour Force Survey (LFS) is used as an input to WTA in order to estimate the working hours for employers and contributing family workers. The most interesting comparison is therefore to look at the figures for the employees, because these figures come from different sources. Full-time workers are in this

analysis defined as persons that have contractual hours on at least 32 hours per week in main job as well as second job. This definition enables a comparison between the two sources. The 2015 figures for WTA are not yet finalized, however they are deemed robust enough to enable a comparison. It is however important to acknowledge the differences between the two sources. WTA is a register based statistics that measures persons that are working in Denmark, while LFS is measuring persons that are living in Denmark. WTA covers all employees' jobs while LFS only covers main and second job. The differences can also be seen in the total number of employed as well as the total numbers of employees. The number of employees is for example 222.000 higher in WTA compared to LFS. The difference in level implies that care should be taken when comparing the two different sources. However the two different sources can still be used as an indication of a potential measurement error.

Table 7: Hours actually worked per employee in Denmark (2015)

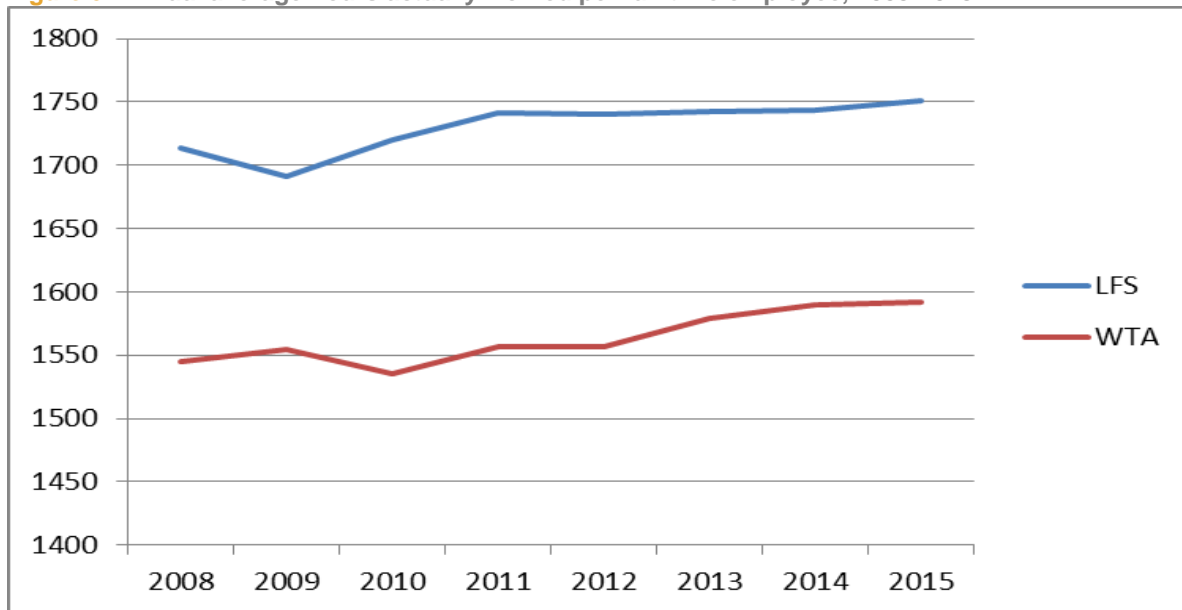
	WTA		LFS		Difference
	Per year	Per week	Per year	Per week	in %
All employees	1371	26,4	1546	29,7	-11,3
Part-time employees	917	17,6	822	15,8	11,5
Full-time employees	1592	30,6	1751	33,7	-9,1

Source: Danish LFS / WTA

The picture is not totally clear when comparing the two sources. There seems to be an issue of differences in estimation depending on whether the person is working full-time or part-time. For the full-time employees, the average hours actually worked are lower in WTA than in the LFS. The situation is the reverse for the part-time employees. For this group the average hours actually worked are higher in the WTA than in the LFS. The combined effect of these two reverse differences is that the average hours actually worked for all employees are lower in the WTA than in the LFS.

A similar pattern has been discovered earlier in a study carried out by Jens Bonke (2014). The report looks at the relation between hours usually worked and the hours actually worked in the Danish LFS. Bonke concludes that people who usually work few hours underestimate the usual hours, while people working longer usual hours tend to overestimate their usual hours. One cause to this pattern could be that people usually working few hours have a conception of "I hardly work at all", and that it is the other way around for people usually working longer hours – that is a conception of "I work all the time". The different conceptions could affect the estimation of usual hours in two different directions - that is underestimation as well as overestimation. Another phenomenon regarding usual hours is that respondents seemingly do not perceive the question as an average but as a median value instead. (Bonke 2014).

The comparison between the WTA and the Danish LFS suggests that it might be a similar pattern regarding the estimation of the actual working hours. The difference in average hours actually worked among the employees has been more or less constant over time. The annual hours actually worked per full-time employee in WTA has, with the exception of 2009, been 8-9 % lower than in LFS. Both statistics have the same upward going trend in working hours since 2010. This indicates a systematic difference between the two sources (see figure 6).

Figure 6: Annual average hours actually worked per full-time employee, 2005-2015

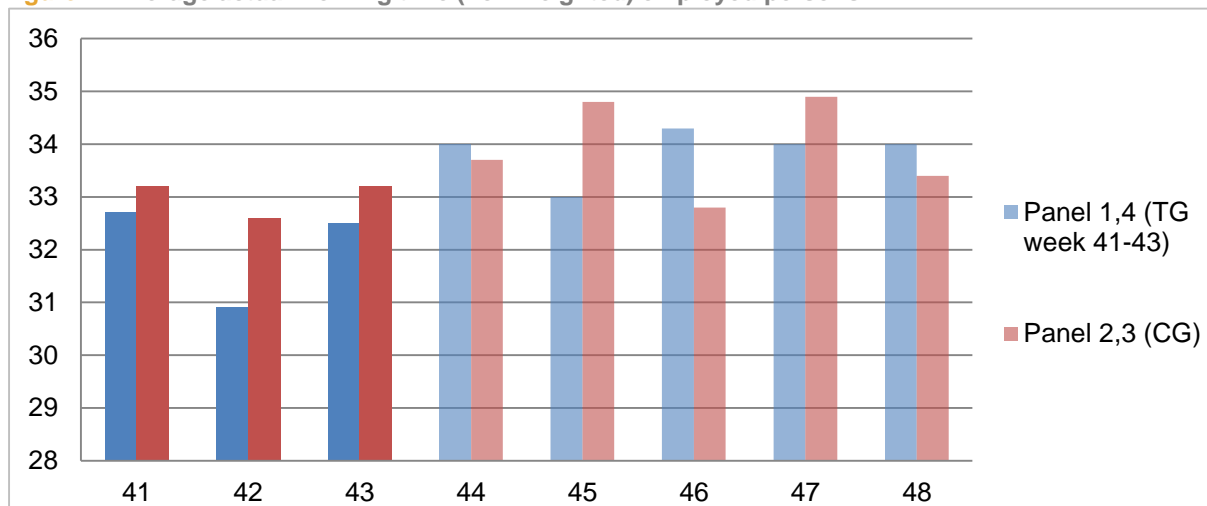
Source: LFS / WTA

3.1.2 PILOT TEST OF MODEL QUESTIONNAIRE

Denmark carried out a pilot test in relation to the participation in the Eurostat task force on measurement of absences and working time. The pilot test was a test of the draft questionnaire that the task force produced in 2013. The following text is based upon the results from the Final report written by Jonas Gielfeldt (2014). The pilot study was applied in reference week 41, 42 and 43 in 2013, week 42 being autumn holiday. The logic behind the test of the draft module was that it should be applied only for a sub-population of the LFS respondents while the rest would receive the standard module on the same reference week. This was done by defining respondents belonging to the first and the fourth panel as included in the test group, while respondents belonging to the second and third panel constituted the control group. Another decision was that the draft module would be tested in normal weeks as well as in a week including paid leave, making room for comparisons based on normal weeks rather than the 'not normal week' and autumn holiday.

The draft questionnaire has some significant differences compared to the standard Danish questionnaire.

- Reasons for absence from work, and questions regarding overtime was placed before the question regarding the hours actually worked time, instead of after, which is the situation in the standard questionnaire.
- All employed people were asked questions regarding absence from work and overtime, instead of only asking people whose contractual hours and hours actually worked differed or, if the person had no contractual hours, between hours usually worked and hours actually worked.
- A specific text was introduced in week 42 for the test group as a reminder of the autumn holiday.

Figure 7: Average actual working time (non-weighted) employed persons

Source: Gielfeldt 2014: 12

The result from the pilot test indicated some important effects of using the draft questionnaire. First of all, there were no systematic differences between the test group (TG) and the control group (CG) for the reference week where both groups had the same questionnaire – that is week 45-48. However, there were differences in the weeks 41-43 where the two groups were exposed to different questionnaires. The figures are not weighted, however the pattern is clear. The working time is lower among the respondents who answered the draft questionnaire compared to the ones who answered the standard questionnaire. Especially this difference is most significant in week 43 where people typically will be on autumn holiday.

The same effect can be seen when looking at the number of respondents who have stated that they actually were on holiday in week 43. In the test group, 32% answered that they were on holiday in week 42. This should be compared to the control group, in which only 12% answered that they had been on holiday.

Table 8: Percentage of respondents in the Danish pilot test answering that they were or were not absent from work due to holiday in the reference week

	Test group	Control group
Holiday	32%	12%
No holiday	68%	88%

Source: Gielfeldt 2014: 13

3.1.3 The future

It seems more and more obvious that there are problems with the estimation of working time in the LFS. This is understandable because it is difficult information that has to be collected and the number of questions that can be used is limited, due to the risk of a too large respondent burden. However, despite these difficulties, it is still possible to improve the quality by making ‘minor’ changes. The work of the *task force on measurement of absences and working time* point in the right direction. The result from the Danish pilot study showed that it is possible to lower the working time by introducing new texts and changing the order and filter of the questions. In other words, making the respondents more aware of the specific week we are asking for. Doing that limits the risk of the respondent answering the questions from a more general week perspective. It might be necessary to carry out further analysis on different sub-groups of employed people. The comparison between the WTA and the LFS indicated that in a Danish context the problem might not be the same for persons working few hours as for persons working full-time. This might be important to acknowledge.

3.2 Finland

3.2.1 Holiday and sick leave entitlements

During a calendar year, Finland celebrates 11 public holidays, not including Easter and Whit Sundays which are always Sundays. All public holidays never coincide with week days in the calendar. If a holiday is during a weekend, no substitute day is allowed at the midweek. The last time holidays were added in 1992 when Ascension Day and Epiphany were given days off. In 2014 (which is the reference year of this paper), there were ten public holidays outside the weekends.

Sick leave entitlement is provided in general for three days without a medical certificate and the salary is paid without suspension. The entitlement to paid leave for employees is usually 30 days, but for a civil servant who has been long in a service the entitlement is 38 days. Weekly working times are collectively agreed under the Working Hours Act, which limits daily working time to 8 hours and weekly to 40 hours, respectively. However, by the collective agreement working time is often negotiated to be shorter than that. When daily or weekly hours exceed these limits, extra compensation should be paid unless the time bank (or flexi time) is not used.

In 2015, the government planned to cut some of the above mentioned benefits by the force of the compulsory statute. This divided the union and the government seriously, and as a consequence one day (or shorter) strike was declared. During the spring 2016, so called social contract negotiations were engaged, to avoid the compulsory statute compelled by the government. According to the Cabinet, the unit wage cost should be reduced by 5 % to enhance the competitiveness. One part of the scheme would be the increase of working time and/or reducing the entitlements to paid leave or paid sick leave.

Eventually, social contract negotiations were named competitiveness negotiations. The first concrete result has been that yearly working time of employees will increase 24 hours. An interesting detail regarding the working time is also that at the beginning of 2016 opening hours of retail shops were freed from all regulation. For the first time in 2016, many grocery shops are open e.g. through Easter holidays.

3.2.2 Debate founded on same source but on different concepts

In the context of the prolonged recession period working times of the employees are constantly onstage. Working time in Finland versus other countries dominates the public working time debate. Employers (using the Eurostat data base) argue, that actual working time of the Finns in the full time work per week is three hours less than in Germany, and one hour less than in Sweden, and much below the EU average; paid leave, midweek holidays and other absences shorten working time of the Finns more than in other EU countries (see, e.g. Kauhanen 2015). In contrast (using the OECD data base), the annual working time of employees in Finland is near the EU average; and in socio-economic analysis, long working hours do not coincide with sound economic development and happiness (see, e.g. Kaunisto 2015).

The working time data used in a public debate in Finland consist nearly entirely of the LFS working time results, which also are the main working time source for the National Accounts. Statistics Finland publishes a short yearly review of working time, but that does not catch much public interest because the review uses domestic data only and working time changes slowly. In quarterly periodicity, Labour Force Survey results are disseminated for the number of hours worked of employed persons and employees by economic activity.

Also the average annual hours worked are based on LFS data in Finland. Average annual hours worked is defined as the total number of hours actually worked per year divided by the average number of people in employment per year, including the hours of the second job. That gives a “better rank” to Finland than weekly hours in the main job in the OECD database (which compares the National Account’s estimates that are not mainly based on the LFS in some of the other countries; OECD 2016).

3.2.3 Overview of plausibility of results

According to the data of hours actually worked in the main job, Finnish full-time employees have the shortest working week in the EU (2014: Finland 37.3 vs. EU 39.5). At the same time, the average number of hours usually worked by the full-time employees in Finland (39.0) is nearer the average of the EU (40.4). The difference between these two variables results from the high level of reported absences in Finland in the reference week.

ABSENCES

Of those employees, who worked at least one hour during the reference week, 8.0% worked less due to public holidays. This could be compared with the number of weeks, which probably produces public holiday as the main reason for absence: in 2014, the number of such weeks was six. That means that 11.5% of the calendar weeks (6/52) in 2014 should have less working hours due to public holiday. During those six weeks, there are supposedly also other main reasons to work less, namely paid leave (e.g. 2 days paid leave and 1 day public holiday, when the public holiday is not counted as the main reason). In some cases, even variable hours could be named as the main reason working less though there is a public holiday at the week. So, it is plausible that 8.0% worked less due to public holidays, even the share could be somewhat higher.

One obvious reason for the accuracy of the data is that proxy interviews are rare. In 2014, the share of proxy interviews in the LFS was 2.3%, which consists mostly of parents on behalf of a youngster. In only 0.8% of the interviews the responses were given by spouses of the respondent him or herself.

Then, we should look at the questionnaire. The absence from work because of own illness or injury is asked separately before asking hours worked in the reference week. So, the respondents have an opportunity to recall possible absences before given working hours. However, any other reason of absence (variable REASNOT) is asked only at the end of the module.

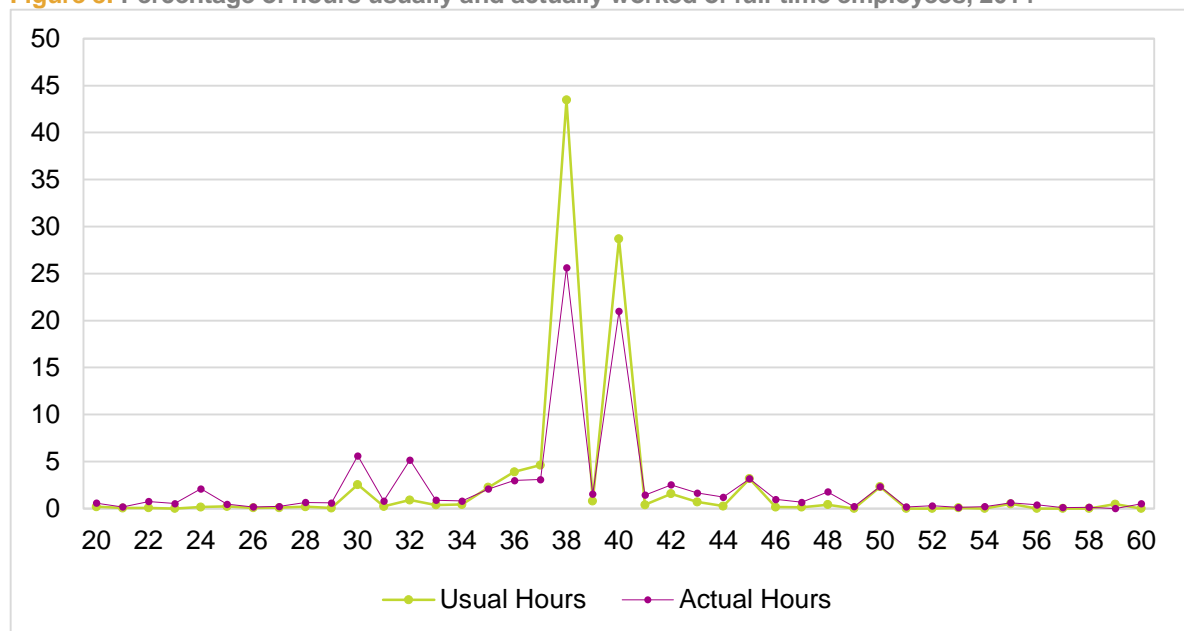
ACTUAL HOURS

Also it should be paid attention to the hours actually worked, which tend to be measured relatively low in Finland. At the questionnaire, the number of the reference week's working days are asked as like as working on Saturday and Sunday (not to mention overtime in detail) before the actual question of worked hours. So it is not plausible that the hours actually worked would be underestimated at least due to the questionnaire structure.

Among full-time employees, a special treatment at the questionnaire is given to period-based workers. Their hours usually worked are measured by asking the number of hours per period and the number of weeks per period (e.g. 115 hours in three weeks equals 38.3 normal weekly hours). However, period based workers may have some difficulty in giving both period hours and actual hours.

In these and other tricky cases the help of the interviewer is valuable when measuring working time. The vast majority of interviews are made by phone and interviews are quite short in the Finnish LFS in particular after the first round when the dependent interview is possible. Although detailed information concerning the work is possible to confirm to remain the same as before, the time and days in a paid job in the reference week are of course asked again in the later rounds, without any clues to interviewers what was the answer at the last time.

Also the infra-annual pattern of working hours indicates the reliability on the Finnish LFS data. For instance the number of weekly hours actually worked starts to lower at the beginning of June when school holidays start. The lowest average weekly hours are recorded in July, somewhat earlier than in the most European countries but the holiday season spreads out in three summer months, according to the LFS working time data. To study the working hours during the year underlines the importance of the LFS data, namely it is not possible to find any official "holiday statistics" – except for the LFS results.

Figure 8: Percentage of hours usually and actually worked of full-time employees, 2014

Source: Finnish LFS

ROUNDING

Nowadays, if working time is given by a respondent as accuracy of half, the rounding rule at the Finnish LFS is exceptional: the halves of hours are raised upwards if preceded by an odd number (e.g. 37.5 hours = 38). If preceded by an even number, rounding up is not done (e.g. 38.5 hours = 38). It is not known how much interviewers must use this rule.

Another question is how much interviewees round before they give an answer. According to the 2014 data, there is two hour peaks: 40 hours and 38 hours in both hours actually worked and hours usually worked. The latter is more clustered than previous, because over 43 % of the full-time employees worked usually 38 hours when 25.6 % actually worked the same amount (see figure 8). That could be seen as an evidence that hours actually worked are not captured directly from hours usually worked.

3.2.4 Test results and other findings

TESTING MODEL QUESTIONNAIRE OF ABSENCES AND WORKING TIME

Statistics Finland's survey laboratory tested the LFS model questionnaire of absences and working time in 2014-2015 and provided a report on the test results (Kotilainen 2015). They show some weaknesses in understanding of definitions, e.g. what an absence means; is weekend not at work also an absence from work. Also terms like regular or unpaid overtime, extra time, time off in lieu, and "other reasons for absence" were understood variously by respondents according to the test report. Notably, the translation issue was confessed.

An interesting feature of the test report is the case of rounding though the test results are not statistically significant. According to the report, half of the respondents (18) gave the number of actual hours as rounded (upwards) although the number of hours was wanted not rounded. In the report, it was interpreted as a "spontaneous way of answering". However, rounding was done to the nearest integer, not to 40 hours, for instance.

The test showed two kinds of attitudes towards the questionnaire: on the other hand, the order of the sub module was praised, but the critique was given to repetition, the length of questions and ambiguous terminology. Also respondents predicted trouble when a respondent has got variation in weekly working hours or the number of monthly working days.

All in all, the test results produced the simplified model questionnaire developed by the task force of absences and working time. For example, it was concluded that it is not reasonable to ask different types of labour agreement (zero hour, min-max, not a specific number of hours, neither of these) or to ask the

compensation type of over or extra time.

TRANSFER TO COMBINED WEB AND TELEPHONE SURVEY

Statistics Finland is planning to offer respondents a possibility to use web interview in all household surveys. Quantitative tests relative to the working time module have been carried out and some results have been published (Larja/Taskinen 2014). Recently (in 2015), two cognitive laboratory test rounds were conducted to pilot the LFS web questionnaire (which is not based on the future working time questionnaire). Some interesting traits were perceived concerning the measurement of working time.

The web questionnaire includes instructions at the screen and behind the help button. A remarkable portion of the test interviewees didn't notice the help button at all. For some of them, instructions and help texts were useful, but there wasn't a clear opinion which is better, instructions on the screen or behind the help button. These test rounds also emphasized the disadvantage of the guidelines: they may cloud the real question and lead to the answer which is picked up from a help text. Findings were discovered in laboratory test interviews and are not based on probability, but given that the working time module involves plenty of explanatory text they are worth to take account when shaping a web questionnaire.

Also in the web questionnaire tests, answering the overtime questions were found difficult, especially reimbursement of the overtime. This was also noted in the testing of the future working time module (as mentioned above) and thus, the variable on the compensation was cut out of the model questionnaire.

ZERO-HOUR CONTRACT RESULTS

A demand for the information on the so called zero hour contract has appeared in Finland. The issue has a strong political dimension. In the spring of 2016, a civil initiative was brought to the parliament to deny zero hour contracts.

As a special type of agreement, zero hour contracts have a direct link to the measurement of working time: hours usually worked may be hard to define when the working hours are irregular. This applies also to the other working time aspects. At the Finnish LFS, asking zero-hour (or any kind of) contract is not a regular part of the survey but it was conducted in 2014.

Statistics Finland published the results of the zero-hour question connected with the basic LFS information (Official Statistics of Finland 2015). According to the results, four percent of all Finnish employees aged between 15 and 64 worked on so-called zero-hour contracts. The average usual weekly working hours of everyone working on zero-hour contracts was 23 hours per week when the average of usual hours of all employees was 36.2 hours and of all part-time employees 19.5 hours.

The estimates for zero-hour contract are based in one question (concerning the main job): "Is your employment contract a so-called zero-hour contract where the agreed number of working hours is at the minimum zero hours (e.g. 0 to 29 hours per week)" and the answer categories were yes and no. It is notable that the definition of the zero-hour contract is not sound and it does not necessarily include all "untypical" work arrangements of employees.

3.3 France

3.3.1 Comparison with other data sources

Since the year 2000, in France⁽⁶⁾, the legal number of working hours per week provided by law is 35 hours (i.e. 1607 annual hours). It is the reference duration, a threshold for calculating extra hours or part-time working. Concerning the working time, there are two major indicators:

- The first one refers to collectively agreed weekly hours offered by firms, as they are posted in the workplace. These weekly hours are those registered in the collective agreements, which apply to the full-time employees (for part-time or at fixed rate being⁽⁷⁾ employees, the duration is fixed by the individual contract). This indicator is measured with a quarterly survey on firms with 10 employees or more in the competitive sectors (except agriculture and public sector)⁽⁸⁾: the results are published every quarter⁽⁹⁾; a long series exists starting from 1945. This first indicator is a basic one. It does not cover all the economy and does not allow describing the important variability of the duration among weeks, due to individual or collective factors.
- The second one refers to annual hours actually worked per person in employment according to National Accounts (NA). The National Account's method of estimation is a component method, in which the LFS is marginally used. In a first step, the theoretical volume of annual hours is estimated on the basis of the former indicator on collective weekly hours for full-time employees – completed by an equivalent coming from LFS for agriculture and non-competitive sectors, the number of weeks in the year and the number of full-time equivalent employees. In a second step, these hours are reduced (by about 22%) to take into account public holidays, sickness absences, maternity leaves, parental leaves, accidents at work, bad weather, strikes etc. and increased (by about 2%) to take into account overtime working (extra hours declared and paid) and an estimation is made for self-employed (ratio if extra work performed by them). Finally, in a third step, the total annual hours actually worked are divided by national account's employment figures (estimated using administrative data). The method does not allow providing a number of annual actually hours worked in breakdown by full-time and part-time employees.

In France, the Labour force survey (LFS) is not the main source for annual hours actually worked per employee, but in the past (ad hoc studies) and in the recent years, It was used several times for this purpose (see section 3.3.3).

The comparison of LFS results with these two major indicators delivers the following messages:

- The number of hours usually worked per full-time employee – 39 hours on average measured in the LFS 2014 – is not comparable with the collectively agreed hours. First, the hours usually worked include regular individual overtime, paid or unpaid, and collective weekly hours only include collective and regular paid overtime. But there is another reason. For example, let's consider the case of a full-time employee working every week 38 hours instead of 35 hours and in return enjoying 17 days off per year in compensation as "jours de repos" (Réduction du temps de travail, RTT). The collectively agreed number of weekly hours reported by the employer will be 35 hours. In contrast, in the LFS, the number of hours usually worked per week reported by the employee would be 38 hours (including three hours of regular overtime). If the employee is partly absent during the reference week due to reduced working days (RTT), he or she will indicate the number of these days of absence and deduct them from his or her weekly hours actually worked.
- The number of annual hours actually worked per employee is superior by 10% in the LFS in comparison with the NA. The comparison between LFS and NA can only be made for all employees and not separately for full-time employees.

⁽⁶⁾ In firms with less than 20 employees, the law has applied since January 2002.

⁽⁷⁾ In France, some employees work on the basis of a number of days fixed annually.

⁽⁸⁾ Survey « Activité et les conditions d'emploi de la main-d'oeuvre (Acemo) »

⁽⁹⁾ The results are completed one time per year with a survey on firms with 1 to 9 employees.

Table 9: Annual hours actually worked per employee according National Accounts and Labour Force Survey in 2012 and 2014

	National Accounts (NA)	Labour Force Survey (LFS)
2012	1 441	1 550
2014	1 425	1 532

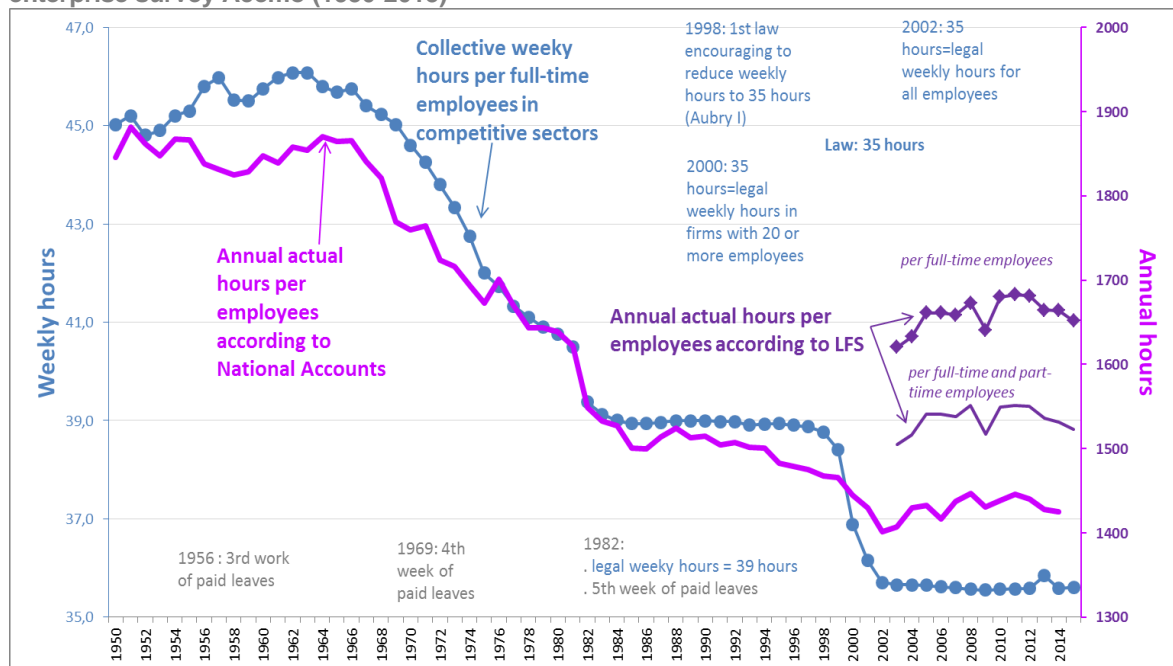
Source: French National Accounts / Labour Force Survey

Given the component method used by the NA (see Lefèvre/Rakotomalala/Toulemonde 2012), it is very difficult to explain the difference between NA and LFS. Some explanations would be the following:

- The duration in the NA can be underestimated: For example, one can suppose that there are differences between theoretical paid leave and paid leave in practice because of working time accounts. Some employees are required to work on public holidays: in the Labour code, the 1st May is the only public holiday and the other public holidays are based on collective agreements.
- The duration in the LFS can be overestimated: It may be difficult not to forget recovery days or reducing working days due to hours superior to the conventional hours per week. There are also methodological issues: hours would be overestimated with proxy answers. On the other hand, paid overtime is underestimated in the LFS (see section 3.3.3).

As shown in figure 9, at the end of 2015, according to the Acemo survey, the collective duration of work was equal to 35.6 hours per week for full-time employees in firms with 10 employees or more, except the 13.6% of them under a fixed rate of days in the year. It had been 45 hours in 1950. Since 1998, year of the first law encouraging the reduction of working time to 35 hours per week, it decreased by more than 8%. It is superior to 35 hours, because in some firms, the collective hours contain regular overtime. According to the National Accounts, between 1950 and 2014, the annual hours actually worked per employee decreased by 23%. From 1998 to 2002, the main cause of this reduction was the implementation of the 35 hours law. Since 2002, the annual hours actually worked have been more or less stable. In 2014, the number of annual hours actually worked was 1 425 hours per employee. In 1950, it had been 1 846 hours. The results of the LFS, in figure 9, start in the year 2003, when the LFS was started as a continuous survey in France. According to the LFS, in 2003, the number of annual hours actually worked was 1,505 per employee. Until 2014, this number slightly increased and reached 1,532 hours per year (1,664 hours per full-time employee).

Figure 9: Annual hours actually worked per employee according to National Accounts (1950-2014) and Labour Force Survey (2003-2014), collective weekly hours per full-time employee according to the enterprise survey Acemo (1950-2015)



Sources: Acemo, French Labour Force Survey, French National Accounts

3.3.2 Assessment of the plausibility of the Labour Force Survey results and some methodological issues

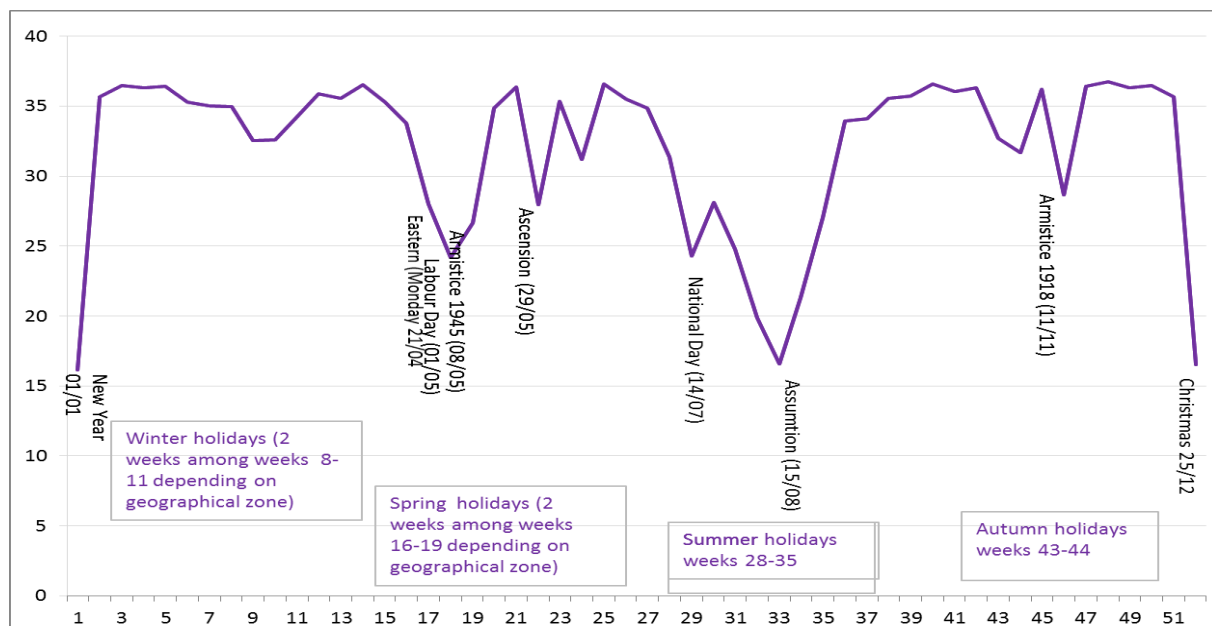
The French questionnaire is extremely detailed (even if the questions about working time have been reduced in 2013⁽¹⁰⁾) and allows individuals remembering every event that occurred in the reference week.

Concerning the absences, as can be seen in figure 10, the weekly hours actually worked per full-time employee in 2014 varied according to the public holidays (8 public holidays in 2014 not falling a Saturday or a Sunday) and to the school holidays (two weeks in winter during February and March depending on three different geographical zones; two weeks in spring during April and beginning of May depending on the same three different geographical zones; two months in July and August; two last weeks of October and, for Christmas, two last weeks of December).

As already documented by Loup Wolff (2012; see also Biauxque/Thévenot/Wolff 2012), the number of absences for paid leave, sick leaves and other absences seems to be correctly estimated according to the law or administrative data.

10% of full-time employees were absent the whole week due to holiday, reducing working or recovery days and 6% were partially absent for the same reasons. The average days off corresponding are 33.9. For the same year, the National Accounts consider 37.7 days per full-time equivalent employee to be deducted from the collective hours extrapolated to the year (these days do not incorporate reducing working days as the collective hours take them into account).

⁽¹⁰⁾ The French questionnaire and the survey process have been changed in 2013. Some changes were introduced in the questionnaire for questions concerning the ILO labour status, but also Education and training variables or working time. The rationale was to simplify question wording and routing, in particular to avoid re-wording of difficult questions by the interviewers. The choice has been made here to present elements already discussed during the TF Working time based on 2011 and 2012 LFS with the previous questionnaire.

Figure 10: Hours actually worked per reference week for full-time employees, 2014

Source: French LFS 2014

The number of days off due to illness or accidents at work was 8 days per full-time employee in the LFS in 2012. In comparison, the estimation made by NA based on administrative data is a little more generous.

Table 10: Absences from work in the reference week for full-time employees, 2012

	Number of days off (average)	Absent the whole week (in %)	Absent partially during the week (in %)
Paid leave, reduced working days, recovery days	33.9	10% (*)	6%
Public holidays, bridges	7.4		8%
Sick leaves	8.1	3%	1%

Source: French LFS 2012; (*): For 2.5% full-time employees, there was a public holiday in the reference week. In that case, the number of days off due to paid leave is 4 if the individual usually works 5 days per week the week and not 5 days. In 2012, there were 7 public holidays, which were not Saturdays or Sundays.

The annual number of overtime hours worked in the LFS was 32.5 on average per full-time employee and only 13.8 of those were paid. According to the NA (based on specific establishment surveys on this topic) the paid overtime hours worked per full-time equivalent employee were 32.2 hours.

As for other topics, one can observe differences between different data collection modes as well as in the case of proxy interviews. In particular, the number of hours actually worked is higher for proxy interviews (Körner/Wolff 2016).

The details of the French questionnaire allow to consider that individuals are partially at work during the reference week and having at the same time worked more than usually (see table 11).

Table 11: Percentage of full-time employees who worked less, equal or more than usually in the reference week, by absence from work in the reference week, 2011

	Hours actually worked. . .			Total
	. . .less than usual	. . .equal to usual	. . .higher than usual	
Absent the whole week	100%	0%	0%	100%
Not absent the whole week	22%	66%	12%	100%
. . .partially absent	93%	4%	3%	100%
. . .not absent at all	9%	77%	14%	100%

Source: French LFS 2011

Until 2012, in the French LFS questionnaire, respondents were given the opportunity to indicate their (partial) absences in the reference week either in hours or in days, according to their preferences. As can be seen in table 12, the answers were most frequently given in days. As this approach was very complicated for interviewer to administer, in 2013, the modalities were simplified and only the possibility to answer in days (or half days) were offered in the new questionnaire.

Table 12: Percentage of respondents indicating the duration of their absence in hours or days respectively, by reason of absence, 2011

	Answer in hours	Answer in days
Paid leave	13%	87%
Extraordinary leave (marriage, birth...)	18%	82%
Public holidays	12%	88%
Bridge days granted by the employer	16%	84%
Reduced Working days	19%	81%
Recovery days	23%	77%
Personal unpaid leave (unpaid leave, parental leave...)	21%	79%
Partial unemployment, bad weather (or: bad weather)	24%	76%
Training activity	37%	63%
Strike, workplace conflict	41%	59%
Illness or accident at work	12%	88%

Source: French LFS 2011

3.3.3 National dissemination strategies

The hours usually worked by week, the number and characteristics of full-time and part-time workers are the main LFS indicators published by the INSEE and the Ministry of Labour (Dares).

The National Accounts allow a coherent analysis for employment, hours and production and are the reference for annual hours actually worked. However, they do not allow to provide breakdowns by categories of employed persons. For this reason, LFS is also used to provide results on the annual number of hours actually worked.

LFS has been used in the past in *ad hoc* studies, about French workers (see, e.g., Befy 2006 and Gonzales/Mansuy 2009), but also in comparison with other countries (see, e.g., Bruyère et al. 2006). Annual hours actually worked per person are published every year by both the Insee and the Ministry of Labour. The always lively debates on the impact of 35 hours in France and a recent study comparing annual hours actually worked per full-time employee in France and in Germany (see *Box*) put the LFS back on track on this subject, even if there are a lot of debates on the quality of the LFS for European comparisons. So, these last years, the LFS was used several times for this purpose.

Box: The Coe-Rexecode affair

In 2012, the Centre d'observation économique et de Recherche pour l'Expansion de l'économie et le Développement des Entreprises (Coe-Rexecode) published a first report comparing annual hours actually worked in average per full-time employees in France and in Germany (Coe-Rexecode 2012).⁽¹¹⁾

By mobilising the LFS for a comparison of annual hours actually worked, Coe-Rexecode declared “a set of previously unpublished data on the annual hours actually worked time in countries of the European Union” (which actually was not correct, see Bruyère et al. 2006) and explained the very strong decrease of hours in France between 2002 and 2003 because of Law on 35 hours (while the 35 hours were implemented in 2000 or 2002). In fact, the observed reduction between 2002 and 2003 was due to an erroneous and overestimated annual estimation for hours in 2002, as the continuous LFS survey took place only in 2003. The data were calculated by Eurostat upon Coe-Rexecode request using the LFS micro data.

Nevertheless, the study had the merit to remind the big interest of the LFS for the analysis of annual hours actually worked and for European comparisons.

This study was criticized for several reasons (see, e.g., Heyer/Plane 2012; Chagny 2012):

- A methodological criticism: the French and German LFS are not sufficiently comparable because of an underestimation of the absences in the reference week and a not uniform distribution of reference weeks in Germany.
- The field of the study: focusing on the full-time workers, the study forgets the high number of part-time workers in Germany and their long duration. If one consider together part-time and full-time workers, the differences between France and Germany are smaller.

In reaction to this study, Thomas Körner and Loup Wolff (2016) examined methodological issues on the measurement of actual hours in the LFS. We can also consider that this affair is an explanatory element of the constitution of the task force at Eurostat.

Coe-Rexecode (2014), in follow-up study took into account some of the criticism and a study of the Direction of the Treasury of the Ministry of the Economy (Costes/Rambert/Saillard 2015), based on the LFS and published in 2015, proceeded to a comparison of annual hours actually worked in France and in Germany including part-time workers.

⁽¹¹⁾ Coe-Rexecode is a private institute providing economic analysis for firms.

3.4 Germany

3.4.1 Comparing Labour Force Survey and National Account working time estimations

Although the German results for the hours actually worked are not marked as particularly implausible in the analyses presented in chapter 2, comparisons with other data sources nevertheless raise some questions and indicate a number of measurement issues. This is already apparent when comparing the results of the LFS with the National Account's estimation of the annual hours worked.⁽¹²⁾ In contrast to many other countries, the working time estimation of National Accounts makes only limited use of LFS data in the German case (the most important use being the estimation of the working time of the self-employed). The estimation of working time for National Accounts is based on a differentiated component wise accounting approach that combines 20 different statistics (see Wanger et al. 2015). The fact that this estimation is largely not based on LFS data makes it a very useful source for comparisons.

Comparing the data for 2014, one quickly spots some striking differences. As shown in table 14, for employed persons as well as for full-time and part-time employees, the average number of hours actually worked is significantly lower according to the National Accounts. The difference is smaller for employed persons than for employees, because the LFS is used as one of the main sources for the estimation of the working time of self-employed and contributing family workers (so that the results are very similar for this group) and to a much lesser degree for employees. While the comparison for the working time of part-time employees is not straightforward, since already the number of part-time employees (as well as their structure) differs in the data on which the National Account's estimation is based, comparisons are straightforward for the group of full-time employees.

Table 14: Hours actually worked per person in Germany (2014)

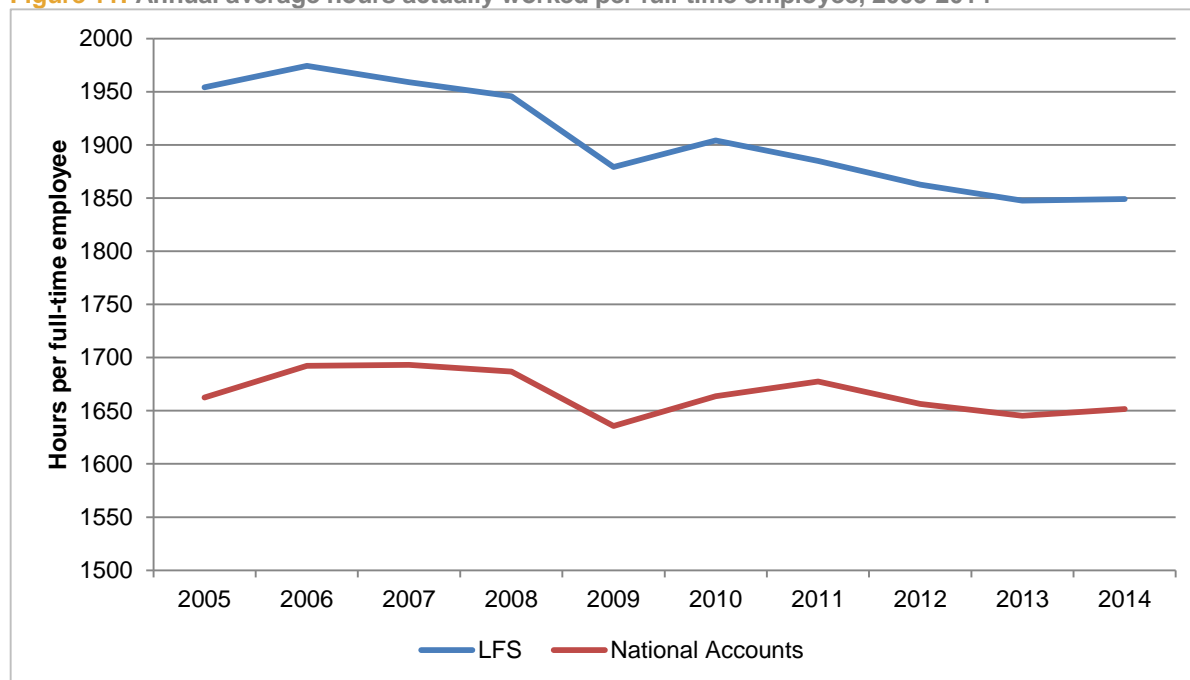
	LFS		National Accounts		Difference in %
	Per week	Per year	Per week	Per year	
Employed persons	31.1	1616	26.3	1366	-15.5
Employees	30.2	1570	24.7	1282	-18.3
Full-time employees	35.6	1849	31.8	1652	-10.7
Part-time employees	16.4	852	13.3	692	-18.8

Source: German LFS; IAB 2014

For the full-time employees, the average hours actually worked were 10.7% lower in the National Accounts than in the LFS, in 2014. Assuming that the group of full-time employees is relatively easy to measure in surveys, this divergence raises some concern and was one of the reasons to study the measurement of working time in the German LFS more closely (see Körner 2012; Körner/Wolff 2016).

Over time, the overall of the patterns LFS and NA series are roughly similar: Nevertheless, the average hours actually worked shows a downward trend (-7%) from 2005 to 2014 in the LFS while it is rather stable according to the National Accounts (see figure 11). The decreasing trend in the LFS estimates can probably to a large part be attributed to improvements of the questionnaire that have taken place from 2005 to 2011.

⁽¹²⁾ In Germany, the working time estimates of the National Accounts are provided by the volume of labour accounting of the Institute for Employment Research (IAB), which closely co-operates with the unit of the Federal Statistical Office in charge of the Employment Accounts (Lüken 2012).

Figure 11: Annual average hours actually worked per full-time employee, 2005-2014

Source: German LFS; IAB 2014

3.4.2 How plausible are Labour Force Survey estimates on absences from work?

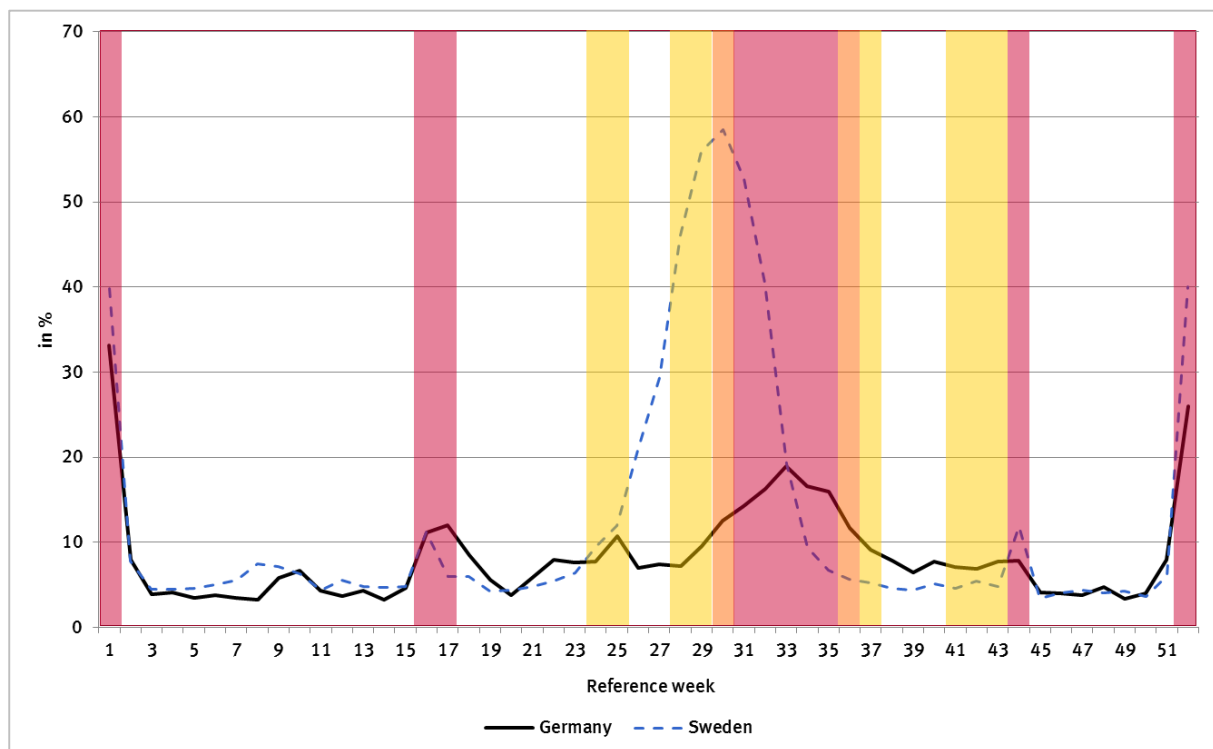
To further analyse the LFS estimates on hours actually worked, the average duration of absences due to paid leave, sick leave and public holidays were estimated for full-time employees based on LFS data on hours actually worked as well as the respondent's answers to the question regarding the main reason for not working or working less than usual in the reference week.⁽¹³⁾ For each of these absence types a plausible magnitude can roughly be estimated from external sources and compared with the LFS estimates:

- **Paid leave:** While the statutory minimum of paid leave for full-time employees is just 20 days in the case of a week with five working days, the actual entitlement to paid leave (e.g. laid down in collective agreements) is significantly higher. According to the Structure of Earnings Survey 2010, the average entitlement for paid leave was a little less than 29 days in case of full-time employees. Collective agreements (which do however not cover all employees) on average lay down an entitlement of 29 days of paid leave, too (Bispinck 2015). Little information is unfortunately available regarding the number of days of paid leave actually taken. While the volume of labour accounting in the context of the National Accounts basically assumes that all days for which workers are entitled are taken (Wanger et al. 2015: 18), a recent study suggests that, on average, full-time employees do leave unused about 3 days of holiday entitlement each year (Schnitzlein 2012). In conclusion, a rough estimation of the number of days of paid leave actually taken would be around 25 days. An equally rough estimation based on the LFS results in a number of 18.5 days of paid leave actually taken, i.e. significantly lower than the results suggested by other sources. Against this background, it seems likely that the LFS underestimates the magnitude of absences due to paid leave (and consequently overestimates the hours actually worked).

Nevertheless, as shown in figure 12, the intra-annual distribution of absences due to paid leave seems to be plausible: The share of full-time employees (fully or partly) absent in the reference week due to paid leave is increasing and decreasing together with the (school) holiday intensity. Still, a comparison with data for Sweden confirms the suspicion about the (too low) overall level of absences due to paid leave.

⁽¹³⁾ The methodology of this estimation is documented in Körner/Wolff 2016.

Figure 12: Share of full-time employees having not worked or worked less than usual in the reference week due to paid leave, 2014



Source: German LFS 2014; customized data extraction from the Eurostat database for Sweden

Background: School holiday density for Germany:

Yellow: 20% to 40%

Orange: 40% to 60%

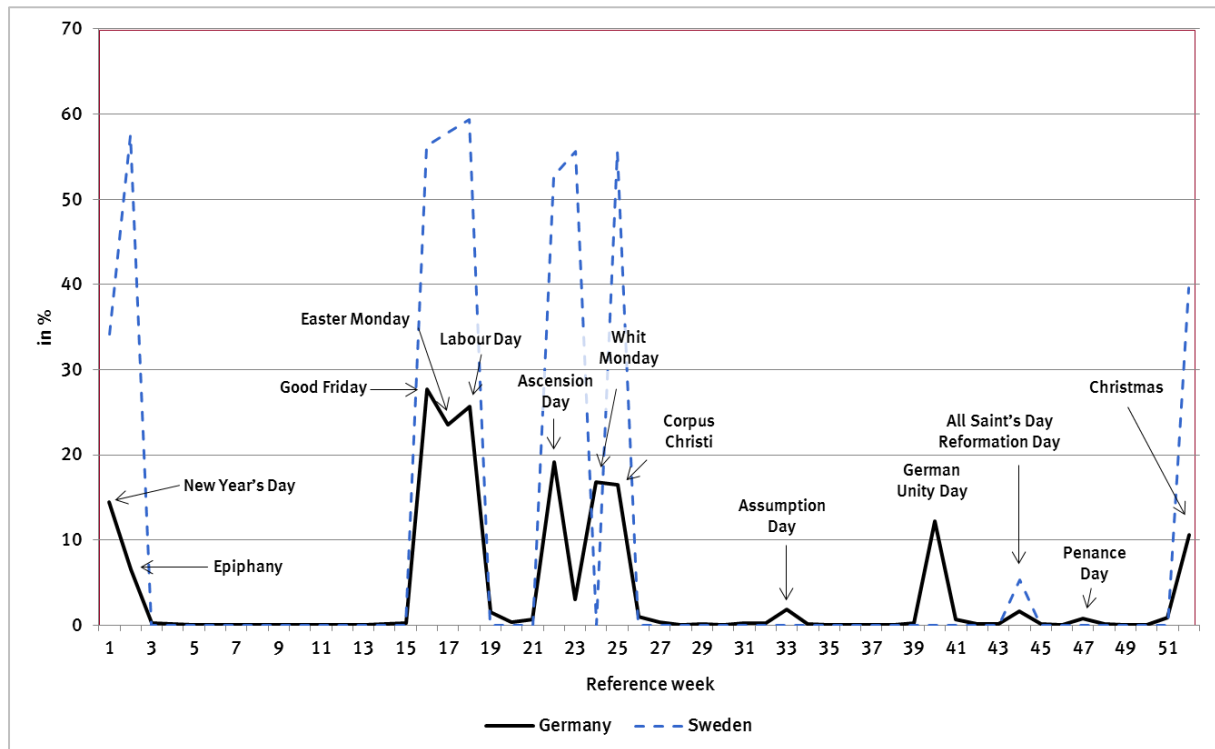
Red: more than 60% of the inhabitants

- Sick leave: The discrepancies for sick leave are less important compared to paid leave. The volume of labour accounting in the context of the National Accounts, based on data from the German statutory health insurance statistics, estimates that, in 2014, the average number of days of sick leave for full-time employees was 9.4. This is higher than the estimation based on the LFS that results in 8.5 days, but the difference is smaller compared to paid leave (- 10% for sick leave compared to - 25% for paid leave).
- Public holidays: The absences from work in weeks with public holidays can be analysed when looking at the average number of full-time employees who worked less than usual in weeks with public holidays. In 2014, there were 9 nation-wide public holidays in Germany that did not coincide with a weekend (New Year's Day, Good Friday, Easter Monday, Labour Day, Ascension Day, Whit Monday, German Unity Day, Christmas Day and Boxing Day). In the weeks of these holidays, 42.8% of the full-time employees indicated having worked less than usual (thereof 19 percentage points for the main reason "public holiday"). Even assuming that a little less than 15% of the employees regularly work on Sundays and public holidays (LFS 2014) and some may have worked overtime hours that compensate for the time not worked on the public holiday, this share nevertheless appears conspicuously low. One would rather expect at least three quarters of full-time workers to work less than usual in weeks with a public holiday (which is, e.g., close to the result for France, see Körner/Wolff 2016). While the impact of public holidays on the average number of hours actually worked is comparatively low (already since only less than 20% of the weeks per year are concerned), it still can provide important methodological insights in the problems of measuring working time with LFSs.

As in the case of paid leave, the intra-annual distribution is nevertheless plausible (figure 13): The share of full-time employees working less than usual is high only in reference weeks with nation-wide public holidays, and tends to be smaller in weeks including regional public holidays (like Assumption

Day, Epiphany or Reformation Day). Again, the comparison with Sweden confirms that the overall level of absences is obviously too low.

Figure 13: Share of full-time employees having worked less than usual in the reference week due to public holiday, 2014

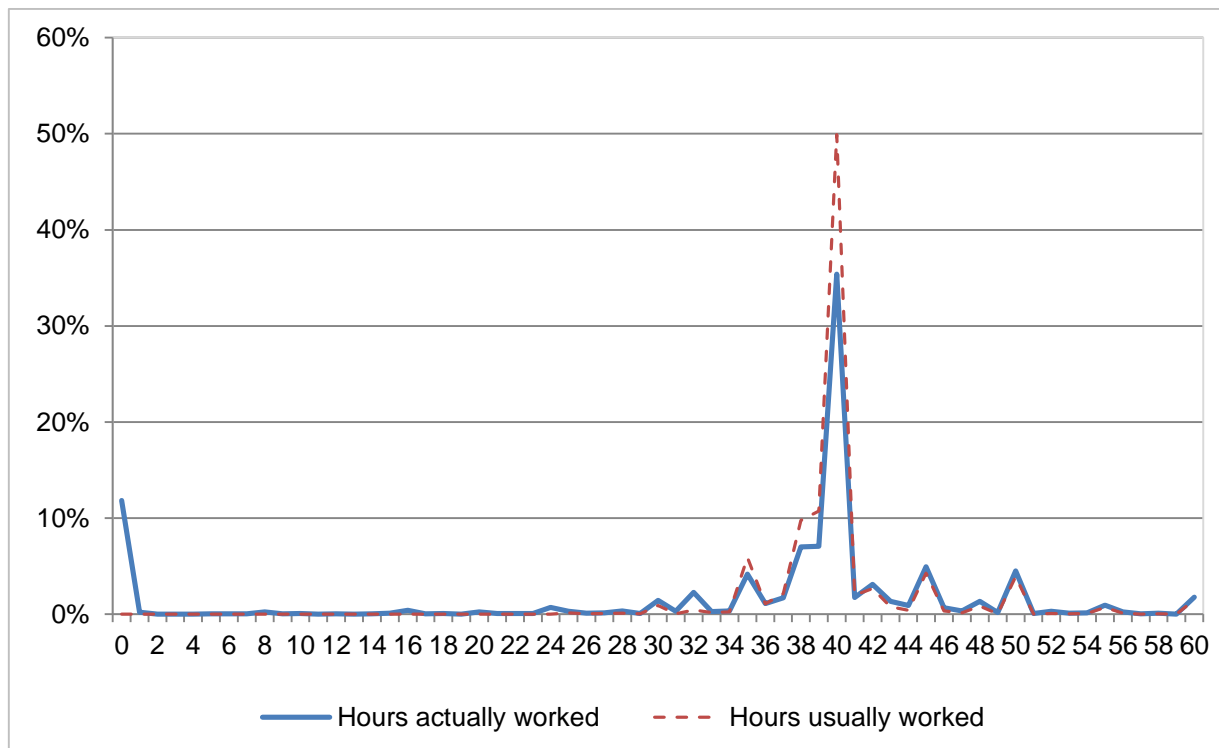


Source: German LFS 2014; customized data extraction from the Eurostat database for Sweden

3.4.3 Methodological effects impacting the measurement of working time and absences

Methodological analyses carried out at the Federal Statistical Office Germany since 2012 showed that a whole range of methodological effects contribute to these implausible results. While measurement errors in relation with the questionnaire design play an important role, also effects to the sampling design as well as due to editing should not be neglected either. The following effects were identified during the data analysis (for a detailed presentation, see Körner/Wolff 2016):

- Questionnaire design: Like many other countries, the German LFS relies on a single question approach for the measurement of hours actually worked. Respondents are asked to calculate the number of hours they actually worked in the week before the interview, taking into account all periods of absence and extra work in that particular week. This is a cognitively challenging task that might be prone to omissions of absences and extra-work and show a tendency towards referring to the usual situation. Comparisons with countries using a more differentiated measurement approach (the model questionnaire of the task force being based on these experiences) suggest that the single question approach underestimates absences and consequently overestimates the average number of hours actually worked.

Figure 14: Hours actually worked and hours usually worked by full-time employees in Germany, 2014

Source: German LFS 2014

- Rounding:** In the German questionnaire, respondents are asked to round their response to the next integer. In practice, data show that they frequently not only “round” to the next integer, but to integers ending on a “5” or a “0”. In 2014, 54.4% of the values concerned such integers, with 35.4% of the all full-time employees responding 40 hours actually worked (see figure 14). Given that the average number of contractual hours of work of full-time employees was 37.7 (assuming that many employees more or less work the number of hours stated in their contract), “rounding” up to 40 hours could be a frequent situation which would equally lead to a biased measurement of hours actually worked. Considering the cognitive complexity inherent to the single question approach, such rounding strategies would probably not be surprising.
- Proxy effects:** Although no suitable experimental data are available to analyse proxy effects, some insight can nevertheless be drawn from a comparison of direct respondents with proxy respondents in the regular LFS data: Proxy respondents on average less often indicate full absences in the reference week (2014: 9.3% of all proxy respondents compared to 12.4% of all direct interviews), more often provide “rounded” figures (61.2% compared to 51.9% for direct responses with integers ending on “5” and “0”) and more often answer “40 hours” (43.1% compared to 32.6% for direct interviews). Although the analysis cannot be based on randomly assigned groups, it seems at least likely that a high proxy rate (which is currently 25% in Germany) increases the risk of an overestimation of hours actually worked.
- Editing effects:** Since, in electronic data collection instruments, routing and plausibility checks are to a large degree integrated in the electronic questionnaire, editing rules may have unintended effects that could contribute to a biased measurement. In Germany, respondents who, in the block of questions asking for the employment status in the reference week, answered that they were at work in the reference week in the beginning of the interview, are not allowed to answer “0” hours later on when asked about the number of hours they actually worked in the reference week. As correcting the initial answer would result in going back to an early part of the interview, respondents may feel urged to change their response regarding the hours actually worked in order to bring it in line with the editing rules and quickly finalise the interview. Results from an experiment in Germany, in which the questionnaire was partly used without implementing the editing rules, suggest that the plausibility check contributes to underestimating the share of employees who were absent from work.
- Sampling design:** Unlike most other member states, Germany applies the principle of the sliding

reference week, i.e. the reference week is by definition the week directly preceding the interview. This methodological feature contributes to an uneven distribution of interviews over the calendar weeks, which goes along with many drawbacks, but has no significant impact on the measurement of working time. Still, the principle of the sliding reference week plays a more important role in another respect. Analyses suggest that respondents are unlikely to make an appointment for a face-to-face interview in a week directly following an absence, e.g. after one week of holiday. If the interview then “slides” to the next calendar week, the reference week will no longer be the one in which the respondent was absent.

While this paper concentrates on the group of full-time employees, it should nevertheless be noted that measuring working time is not necessarily straightforward for other respondent groups. A recent pilot study revealed that measuring hours actually worked, but also hours usually worked is facing specific difficulties for respondents with irregular working hours like employees working in changing shifts or (for instance) part-time self-employed without a regular pattern of working time (e.g. private tutors; see Vallé et al. 2014).

3.4.4 Dissemination strategies and the way forward

Given the apparent issues on the measurement of the hours actually worked, dissemination of LFS data focuses mainly on results for the hours usually worked (which are anyway considered the more relevant concept for most types of social analysis). Nevertheless, the hours actually worked are equally available in standard tables and are made available in special tabulations. Still, in the press coverage, as well as in macro-economic research the figures from the National Accounts are most broadly used.

The dissemination of working time results will hopefully be revised with the introduction of the new model questionnaire on working time, which will not only improve the analytical potential of the hours actually worked, but at the same time provide data in a number of areas that are so far not sufficiently covered by statistical data: The introduction of a variable on contractual hours of work, but also the more accurate measurement of time spent on paid leave and sick leave will close important data gaps and greatly enhance the possibility to use the LFS, e.g. for analyses regarding quality of employment.

3.5 Italy

In recent years, Statistics Italy (Istat) dedicated several analyses on the number of working hours estimated by the Labour Force Survey (LFS), due to many reasons. On one hand, the initial input came from the European side, because of the studies conducted by France and Germany (Körner and Wolff, 2016) and subsequently the participation to the Eurostat task force on the measurement of absences and working time in the LFS, with the aim of assessing the quality of this piece of information. On the other, the Italian National Accounts (NA) unit recently renewed the methodology for the estimation of the labour input in terms of both employed people and worked hours: LFS estimates on working hours have been analysed and integrated with information coming from administrative sources in order to produce the NA estimates.

In the following, first, some plausibility analysis on Italian LFS figures on working hours are shown, focusing in particular on the distribution of absences over the reference weeks, due to public holidays and paid leave. Then, the results of a pilot study conducted in Italy are reported, concerning the introduction of a “warning” text in the LFS questionnaire in order to remind the presence of a public holiday in the reference week (if any). After the introduction of this “warning” text, the estimated working time slightly improved. Finally, the methodology for the integration of LFS data with administrative sources to compute NA estimates on worked hours is described and the main results are shown.

3.5.1 Some plausibility analysis on Labour Force Survey estimates on working hours

Some plausibility analysis on Italian LFS estimates on working hours have been conducted, being inspired by the work conducted by France and Germany (Körner and Wolff, 2016). The goal was to assess the quality of this piece of information and to explore whether the problem of underreporting of absences affects also Italian LFS data.

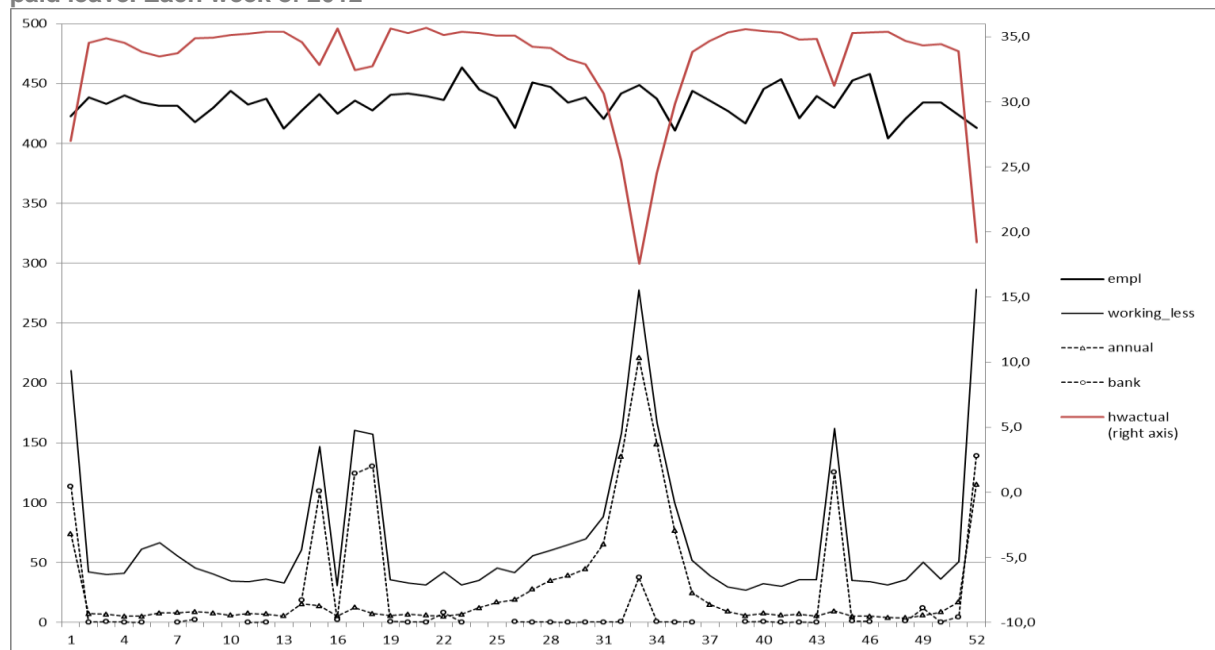
Figure 15 shows, for the 52 weeks of 2012, the number of employed people, the hours actually worked, the number of employed who worked less than usual in the reference week and, among them, those who worked less due to public holidays or paid leave.

At a first glance, it seems that the survey captures the expected seasonality of the phenomenon, especially the peaks of absences due to public holidays and summer holidays in the intra-annual distribution. In the weeks containing public holidays or in which it is usual taking paid leave, the average number of hours actually worked is always lower and the share of employed people who claim to have worked less because of one of these reasons is higher. Although these results seem to be consistent with our expectations, we expected a bigger reduction of hours worked due to absences, especially in certain weeks characterized by public holidays and paid leave.

No significant evidences resulted when focusing on the effect of the time lag between reference week and interview week (memory effect) and on proxy interviews or technique (CAPI or CATI).

Looking at the total number of employed people, the average number of hours actually worked (per week) in 2012 was 33.3 (that is 33 hours and about 20 minutes; for simplicity in the following minutes are always expressed in decimals). Over the 52 weeks in 2012, the number of weekly worked hours goes from 17.6 (in the middle of August, when 61.9% of the employed people worked less than usual, 49.2% because of paid leave as main reason and 8.3% due to the public holiday of 15th August), to the maximum number of worked hours that is 35.7 in a “normal” week. Focusing on the weeks containing at least one public holiday, the average number of actually worked hours was 27.6, and the share of people declaring having worked less because of public holiday as the main reason goes from 8.3% to 33.6%.

Figure 15: Persons in employment, hours actually worked, and absences due to public holidays and paid leave. Each week of 2012



Source: Italian LFS 2012

Looking at the main economic activity sectors, differences in working hours and absences are rather consistent with expectations: employed in manufacturing and services benefit more than employed in agriculture from the paid leave. But once again the magnitude of the reduction of worked hours seems to be lower than expectations. Going more deeply, the differences between two particular activity sectors among the services do not seem to fully reflect our expectations. We compared employed in hotels and restaurants, which are the ones who should enjoy less of public holidays within the services sector, and those in banks and insurance companies, who should enjoy it more. As a matter of fact, in the weeks containing public holidays, up to 21.9% of the employed in hotels and restaurants declared having worked less because of this reason, versus 52.1% of the employed in banks and insurance companies. We expected a larger percentage among the latter.

In table 15 we show the results of the estimation of the number of days off due to paid leave throughout the year 2012. We intended to replicate the analysis conducted by France and Germany (Körner and Wolff, 2016). In particular, restricting to full-time employees who declared having worked less in the reference week because of paid leave, the total amount of not worked hours per week is defined by “usual – actual + overtime” hours. This amount is then divided by the number of full-time employees multiplied by the number

of weeks per year (52) in order to obtain the number of hours not worked due to paid leave for each full-time employee throughout the year. Dividing the resulting amount by the average number of daily worked hours, which for simplicity is supposed to be 8, we obtained the number of days off because of paid leave, which is equal to 14.0.

Table 15: Days not worked because of paid leave for each full-time employee throughout the year, 2012

Total amount per week of not worked hours due to paid leave	Full-time employees	Number of weeks	Hours not worked due to paid leave per single employee throughout the year	Days not worked due to paid leave per single employee throughout the year
29,977	13,894	52	112.2	14

Source: Italian LFS 2012

14 days of absence due to paid leave is again lower than expectations. Going deeper into the analysis, we noticed that some employees answering that they had been absent because of public holidays, declared a number of hours not worked during the reference week higher than a normal working day (> 10) even if in that week there was just one day of public holiday. This probably comes by the joint use of paid leave with public holidays ('bridge' effect). These additional hours off resulted in 0.6 days of paid leave, adding them to the previous 14.0 days give a total of 14.6 days off because of paid leave per year.

This result, compared with our prior expectations, considering the usual number of days off in the labour contracts for full-time workers, and compared with the results obtained by France and Germany, seems to underestimate the number of days off due to paid leave per year.

3.5.2 A pilot study on the Labour Force Survey questionnaire

A pilot survey over a sample of 500 households was carried out in the middle of November 2012 taking as reference week the first week of November. The aim was testing the questions for the LFS ad hoc module 2013, but it was decided to additionally test some changes in the questions on working hours. In particular, we tried to help the respondent to remember if he took days off because of public holidays or paid leave, highlighting the presence of a feast in the reference week (the 1st November). This was the reminder message that was introduced before the questions on actual working time referred to the reference week: «Next questions refer to the hours worked LAST_WEEK that is the week from Monday... to Sunday... Please remind that LAST_WEEK there was the 1st November holiday and consider also eventual paid leave, illness, overtime...».

The results were satisfactory, the percentage of employed who declared having worked less in the reference week increased from 54.1% (resulting from the normal sample for this reference week, without the reminder message) to 76.9% (in the pilot sample, with reminder message) and the percentage of those who enjoyed public holidays increased from 43.7% to 66.2%. It is worth noting that the percentage of those who declare having enjoyed paid leave increased too (probably the remind effect helps to focus on the reference week, to remind all the events that could have been occurred in this week).

Table 16: Pilot and normal sample results

	Normal week sample	Pilot sample
Hours actually worked per week	28.6	26.2
Percentage that worked less hours than usual	54.1	76.9
Percentage that worked less because of public holidays	43.7	66.2
Percentage that worked less because of paid leave	3.2	5.2

Source: Italian LFS 2012 and Italian LFS AHM 2013 pilot data.

Starting from 2013 this warning about the presence of public holidays in the reference week (if this is the case) has been included in the current Italian LFS questionnaire. Such message has been included in the model questionnaire on working time suggested by the task force on the measurement of absences and working time in the LFS and approved by LAMAS working group.

We replicated the computations shown in previous paragraph considering 2014 LFS data, in order to check if we had any improvements after the introduction of the warning.

The share of people who declared having worked less because of public holidays (in the weeks containing

at least one public holiday) was up to 43.1% (against 33.6% in 2012). Looking at people working in banks and insurance companies, this percentage is 62.7% (against 52.1% in 2012). The estimated number of days off because of paid leave, in 2014, resulted 15.0, 15.8 if we consider the additional “bridge effect”.

Concluding, the introduction in the Italian questionnaire of the warning highlighting the presence of a feast in the reference week improved the collection of this piece of information, but the results are still not fully satisfactory, the reduction of hours worked due to absences seems to be still underestimated, causing overestimation of the hours actually worked. Further improvements on LFS variables on working time are expected when the new set of variables approved by LAMAS will be introduced in the LFS and the model questionnaire proposed by the task force on the measurement of absences and working time in the LFS will be adopted.

3.5.3 Integration of Labour Force Survey estimates and administrative sources on working time to produce National Accounts estimates

The Italian National Accounts (NA) recently renewed the methodology for the estimation of the labour input in terms of both employed people and worked hours: as for working hours, LFS information have been analysed and integrated with information coming from administrative sources in order to produce the NA estimates.

The set of information usable to this aim is the integrated database LFS-ADMIN, which is the result of the micro-linkage between the LFS sample and the administrative records in the registries taken by the social security institution. The goal is to assign to each individual in the sample a figure of the actual worked hours in the reference week, exploiting all the information available from the different sources.

The baseline information is the information collected by LFS about the hours actually worked in the reference week, on both first and second job. Additional information is coming from the administrative source. The estimation of hours actually worked produced by the NA is the result of checks and eventual corrections of the LFS variables and statistical imputations for people for which LFS information is missing (because they are employed in LFS but do not declare the number of worked hours, or because they are classified as not employed in LFS, but resulted as having worked in that week from the administrative source). A large set of information about the individual characteristics in the LFS sample have been used to this aim. Imputations have been done using probabilistic donor’s hot deck techniques.

Preliminarily some distortions that could affect the LFS variables on hours worked have been corrected, such as: the underestimation of sick leaves; the overestimation of hours worked because of proxy interviews; the overestimation of hours worked because of underreporting of lay-off (not working at all in the reference week, as resulted in the administrative source). For a limited number of individuals, the hours actually worked were missing and they have been imputed exploiting the available information on the hours usually worked. Moreover, it was measured and corrected the overestimation of worked hours in the main job by individuals resulted having also a second job through the administrative source (but not declaring it in LFS), assuming that they have mistakenly declared the total number of hours actually worked in the reference week on both the first and second job, concentrating them to the first job.

In the following table 17 the effect of corrections on the LFS hours actually worked on the main job exploiting information on administrative sources, in order to produce NA estimates on worked hours is shown.

Table 17: Corrections on the LFS hours actually worked in the main job exploiting information on administrative sources

	Hours actually worked 2010	Hours actually worked 2012
LFS hours actually worked	34.3	34.2
Correction for sick leaves	33.8	33.8
Correction for proxy interviews	33.7	33.6
Correction for lay-off	33.6	33.5
Imputation of hours usually worked	33.6	33.5
Separating first and second job	33.4	33.3

Source: ISTAT National Accounts calculations

Looking at the individual characteristics, these correction effects were more pronounced in the third quarters, among women in the South, among no-citizens (mainly outside EU) and in the extreme age groups.

These analyses have been conducted in order to renew the methodology for the production of NA figures on worked hours. Through the integration of information from the LFS and from administrative sources a potential bias in LFS estimates on worked hours can be detected and corrected. Up to now these corrections take place in order to produce NA estimates, but no correction is done on LFS variables.

Future planned work projects in Istat concern the integration of survey data and administrative data in order to improve the quality and the quantity of the available information. On the other hand improvements on LFS variables are expected when the new variables approved by LAMAS working group will be introduced in the LFS and the model questionnaire proposed by the task force on the measurement of absences and working time in the LFS will be adopted by the Italian LFS questionnaire. This framework is expected to guarantee in the next future a higher quality of Italian LFS estimates on working hours and more comparable and harmonized figures among EU Countries.

3.6 Switzerland

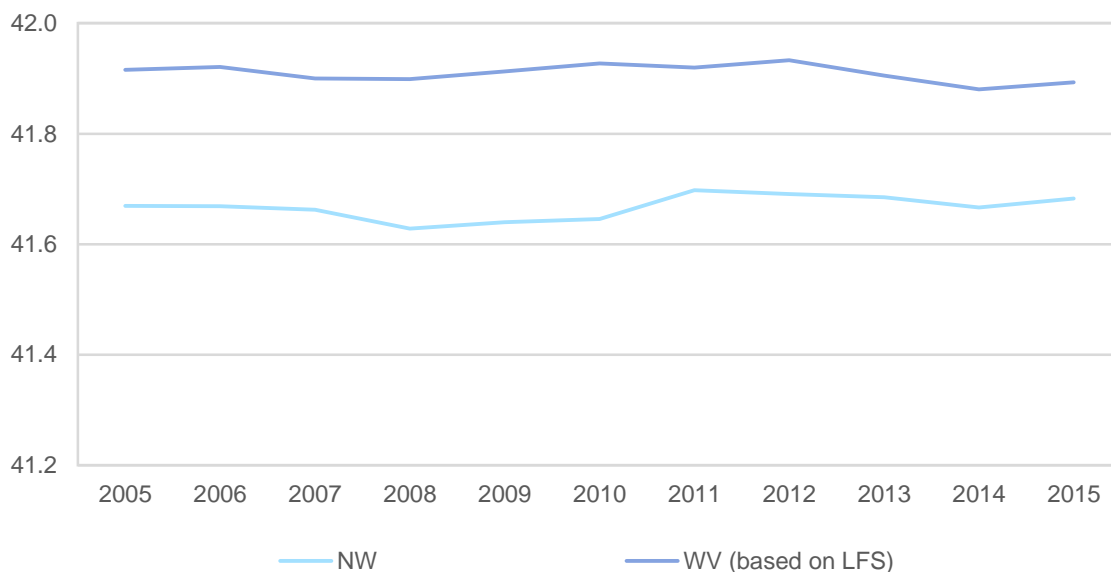
3.6.1 Current measurement of working time

There are two major sources on working time:

- The Work Volume Statistics (WV), mainly based on the Swiss Labour Force Survey (Swiss LFS), is the most important data source on working time. It provides first the macroeconomic data on the total number of hours worked in Switzerland, which is used to calculate the national labour productivity per hour worked. The WV also presents the “normal” hours worked (hours usually worked for self-employed; contractual hours of work for employees), the hours actually worked, absences, overtime and the number of weeks of paid leave. Other indicators such as the rate of absences and the overtime rates are also calculated in the WV.
- Another data source on working time is the Statistics on normal working time in companies (NW). These administrative data are based on employees’ accident claims, where the number of hours a company full-time employee is contractually required to work each week should also be reported (with neither overtime hours nor reductions in working hours).

These two statistics show a difference of 0.2 hours (12 minutes) per week when comparing the number of contractual hours of work per full-time salaried employee for 2014 (41.9 hours in the LFS and 41.7 in the NW). This small difference is due to the different methods (e.g. number of hours has to be given without decimal place in the LFS while this is not the case in NW, special set of questions for teachers/professors in the LFS, etc.).

Some imputations applied to the work volume statistics are based on the NW, e.g. in the case of employed persons whose contractual hours of work are not reported.

Figure 16: Contractual hours of work per full-time employee per week, 2005-2015

Source: Federal Statistical Office Switzerland. Statistics on normal working time in companies (NW) and Work Volume Statistics (WV)

Regarding paid leave, the LFS shows also strong compliance when comparing with actual entitlement to paid leave. According to the results of the Swiss LFS⁽¹⁴⁾, the older full-time employees (50-64 years old; 5.4 weeks in 2014) and the youngest (15-19 years old; 5.3 weeks) have more weeks of paid leave than the full-time employees aged 20 to 49 years (4.8 weeks). This difference due to age complies well with the legal provisions.

According to the Code of Obligations, the employees are entitled to at least 5 weeks of paid leave until the age of 20 years, then to 4 weeks after this age. In addition, many companies and collective labour agreements provide 5 weeks or more for employees aged 50 and older.

In the WV statistics, the yearly number of public holidays is defined for each canton by using an external source (cantonal provisions), given that this number is different in various cantons.

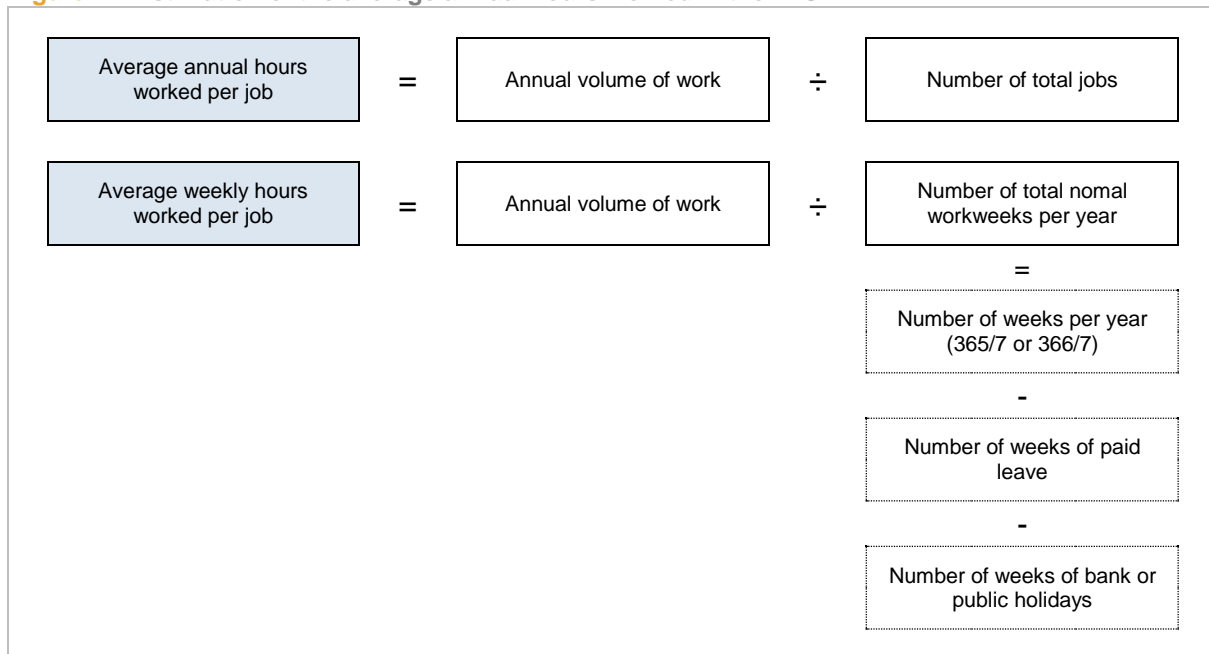
3.6.2 Assessment of the average results

The key indicators of the LFS are calculated individually for each employed person first on a weekly basis, extrapolated to annual indicators. The annual volume of work is then calculated by aggregating the number of annual hours worked of the total employed persons.

The average annual hours worked per job⁽¹⁵⁾ is obtained by dividing the annual volume of work by the number of total jobs, while the average weekly hours worked are obtained by dividing the annual volume by the number of total normal workweeks per year. The latter is calculated by deducting the number of weeks of paid leave and bank or public holidays to the number of weeks per year (365/7 or 366/7).

⁽¹⁴⁾ The results of paid leave are given in weeks, one week being equivalent to 5 days of work (e.g. 4 weeks paid leave = 20 days paid leave).

⁽¹⁵⁾ In the Swiss LFS, respondents are required to answer regarding their main job as well as their secondary job, which makes it possible to change from the concept of person to the concept of job (an employed person can have two or more jobs).

Figure 17: Estimation of the average annual hours worked in the LFS

Source: Federal Statistical Office Switzerland. Labour Force Survey.

The homogeneous distribution of interviews on every week of the year ensures the correct estimation of the annual volume and the annual average.

The estimation of hours actually worked is not calculated by extrapolation of the variable HWACTUAL, but by using a component method. With this method, the hours actually can be calculated by adding overtime to the normal hours worked and deducting absences. We greatly prefer the component method for several reasons:

- Hours actually worked during the reference week are very likely to be biased due to an underestimation of absences reports (see also this point in section 3.6.3 below).
- It is difficult for respondents and for us to determine which extra hours are real overtime without asking additional questions on the ways in which extra hours are compensated (see also this point in section 3.6.3 below).

When using the variable HWACTUAL, the results for Switzerland convey positive differences between the average actual and normal hours worked in the reference week by full-time employees. This means that a high number of overtime is presented. However, absences are higher than overtime among full-time employees, when using the component method.

3.6.3 Further analyses on components of working time

ABSENCES

In the Swiss LFS, we have separate questions for reporting absences due to the following reasons:

- Number of days/half-days of absence due to illness/accident (past 4 weeks)
- Number of weeks of absence due to maternity leave⁽¹⁶⁾ (past 4 weeks)
- Number of days of absence due to military service (past 4 weeks)

These questions on absences all refer to the past 4 weeks, instead of one week. Our experience shows that the reporting on absences only for the reference week has a negative impact on the number of observations and conducts to strongly biased results as well. This is at least the case in the Swiss LFS where the reference week is always the week preceding the interview.

⁽¹⁶⁾ Employed women (both full-time and part-time) are entitled to at least 14 weeks maternity leave in Switzerland.

Injured or ill persons during the reference week have a smaller likelihood of being reached and interviewed in the following week(s). Extending the reference period to four weeks to measure absences for these reasons allows minimizing the bias.

A test of our data shows in the aggregated results an increase in hours of absences per year when reporting on a 4-week period. The test was carried out for 2014 for absences due to illness/accident. The reporting on a 4-week period leads to a volume of absence per year which greatly exceed (+48%) the volume of absence based on a 1-week reporting period (see table 18).

Table 18: Absences due to illness/injury of full-time employees, 2014

	Reference period: last week	Reference period: last 4 weeks	Difference
Percentage of employees who were absent due to illness/injury (in %)	2.4	11.5	9.10%
Average annual days of absences due to illness/injury (in days per employee)	4.2	6.3	+ 2.1 days
Annual volume of absences due to illness/injury (in million days)	9	14	48%

Source: Federal Statistical Office Switzerland. Labour Force Survey.

PAID LEAVE

We suspect that there is very likely to be a similar bias, even larger, for the reporting of paid leave for the reference week. A respondent absent due to paid leave during the reference week has a smaller probability of being reached. We ask therefore in our survey the number of weeks of paid leave in one year (paid leave according to the contract for the employees, number of weeks usually taken per year for the self-employed). Although the number of days of paid leave according to the contract is not exactly those are actually taken, this allows the actual annual working hours to be deduced without referring to the reference week, which might be too strongly biased.

OVERTIME

It is difficult for respondents to declare overtime correctly because of its complex nature. Respondents often understand the word “overtime” as the actual working time exceeding the usual working time, without distinguishing the ways in which it is compensated.

As only overtime compensated by pay or not compensated at all is considered as overtime, the extra time compensated by leave or by flexible hours is not included in overtime. That is why we have an additional question on the most frequent form(s) of compensation for persons who have reported extra time, allowing an approximate estimation of overtime. The LFS shows that about 60% of persons who worked more during the reference week indicate that this overtime will be compensated by leave.

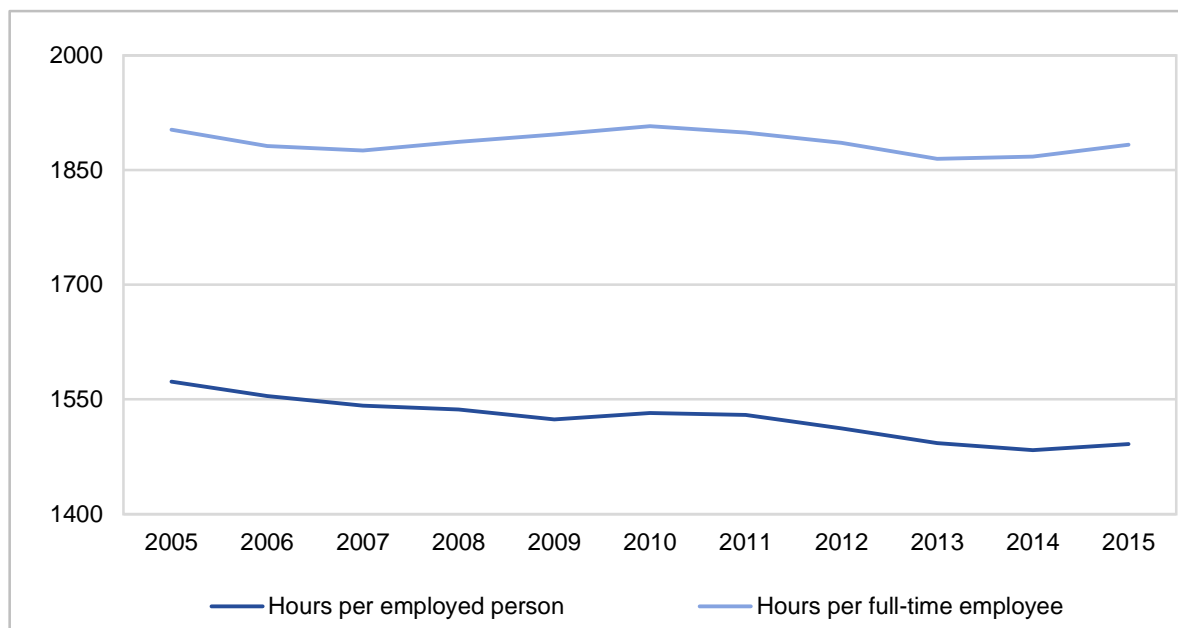
Unfortunately, the model questionnaire cannot give a more precise estimation either. The question proposed in the model questionnaire asks for all types of additional hours worked. It serves rather the purpose of reminding respondents to consider all the aspects of working time (including overtime) when reporting the actual hours worked.

In conclusion, we notice that for the moment, it is not possible to guarantee a reliable measure and international comparison of the variable HWACTUAL. As an alternative, we suggest a comparison based on the contractual or usual hours. The number of weeks of paid leave and an estimation of the number of bank or public holidays could complete the comparison.

3.6.4 Dissemination strategies

The results of the work volume statistics are calculated once a year and disseminated in the form of standard tables and an annual press release, which are available on the portal of the Swiss Federal Statistical Office.⁽¹⁷⁾ As a country with a high proportion of part-time employed persons (36.0% in 2014), the average hours worked is substantially decreased by the reduced hours worked by this group (see figure 18). This is why most of the indicators of the work volume statistics are also disseminated for full-time employed persons, allowing comparisons.

⁽¹⁷⁾ <http://www.bfs.admin.ch/bfs/portal/fr/index/themen/03/02/blank/data/06.html>

Figure 18: Annual average hours actually worked, 2005-2015

Source: Federal Statistical Office Switzerland. Work Volume Statistics (SW)

The table below shows some key indicators published in the Work Volume Statistics.

Table 19: Key indicators in the work volume statistics, 2014

	Average annual hours actually worked	Average weekly hours actually worked
Full-time employed persons	1,887	41.6
thereof full-time employees	1,868	41.3
Part-time employed persons	885	19.2
Total	1,484	32.5

Source: Federal Statistical Office Switzerland. Work Volume Statistics (SW)

The annual press release is largely reproduced by the press, who give prominence to the total work volume and on the comparison of usual/actual hours and overtime by economic sections, without misunderstandings.

4

Conclusions and outlook

The analyses presented in this paper have clearly shown that the harmonisation of the measurement of hours actually worked in the LFS needs improvement in a number of respects. In particular, the differences in the share of employees being absent from work make it difficult to internationally compare the estimates for the hours actually worked. Also a simple comparison of the hours actually worked with the hours usually worked provides further evidence for lacking comparability.

At the same time, comparisons with the National Account's estimates on working time show the huge potential the LFS has in measurement of working time: With its reference period being equally distributed over the calendar weeks, it can contribute empirical data on working time and its components that are hardly covered by other statistical sources (and could become an important input also to National Accounts). Few countries currently dispose on information regarding the actual duration of absences from work due to paid leave or sick leave, and also the estimations of the National Accounts often have to be based on assumptions or legal provision, without always having the possibility to empirically check their actual application.

It is also encouraging to see that, while the measurement of hours actually work remains a challenge, the improvement measures necessary to harmonise the measurement of the hours actually worked are relatively clear and straightforward in implementation: Countries using a differentiated measurement approach, asking for absences and overtime before putting the question regarding the number of hours actually worked (e.g. France, Finland and Sweden) are more successful in capturing absences from work and consequently provide more consistent figures on the hours actually worked.

The experiences of these countries have guided the task force on the measurement of absences and working time in developing a model questionnaire that enables an improved and more harmonised measurement. The model questionnaire tries to remind the respondents about absences in the reference week before asking about the hours actually worked in the reference week. This is achieved by a sequence of questions regarding absences due to paid leave, sick leave and other reasons. A further question aims at reminding the respondent about extra hours of work that equally need to be considered in order to come up with an accurate response on the hours actually worked. Two rounds of tests have shown (e.g. in Denmark, see section 3.1) that this approach can help to significantly improve the measurement. Further important features that try to remedy some of the methodological issues include specific reminder about public holidays for reference weeks including a public holiday (see the Italian pilot study in section 3.5) and the requirement to ask for the hours work with one decimal place (in order to reduce rounding effects as much as possible).

While the model questionnaire has been endorsed by the Eurostat Working Group Labour Market Statistics (LAMAS) in December 2015 (see Eurostat 2015b), the most important step is still to take place, i.e. the implementation of the model questionnaire in ESS member states (foreseen at the same point in time as the entry into force of the new legal basis for the LFS, probably in 2020). Although the model questionnaire has the status of a recommendation, improvements of the harmonisation of LFS estimates on hours actually worked can only be achieved if deviations from the model questionnaire are restricted to a minimum of duly justified cases.

For the time being, in particular international comparisons of LFS estimates of hours actually work require specific care. The country case studies in this paper provide examples for possible limitations and how they can be detected. To avoid issues, one may use the data together with information on the hours usually worked (see section 2.2), or focus on the hours actually worked of the sub-population of employed persons

that was not absent from work in the reference week (current practice at the Eurostat online database). Still, also in the latter case, not all measurement issues can be removed from the data as the results presented in section 2.3 clearly show. A further approach to avoid misleading interpretation is to compare LFS estimates with the results of complementary measurement approaches, e.g. enterprise surveys or working time accounting systems that have been implemented in many countries (see the case of the component based volume work accounting in Switzerland presented in section 3.6).

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Getting in touch with the EU

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Quality issues regarding the measurement of working time with the Labour Force Survey (LFS)

This report describes the problems with measuring working time coherently across countries in the European Labour Force Survey, with a special focus on actual working time in the reference week of the survey. The first part of the report gives a brief overview of the results for all EU member states, plus Iceland, Norway, Switzerland, the Former Yugoslav Republic of Macedonia, and Turkey. More in-depth case studies are provided for Denmark, Finland, France, Germany, Italy, and Switzerland

As working time is a key component of labour market statistics, Eurostat commissioned a task force to solve these comparability and measurement problems. The recommend improvements from the task force are also presented here.

For more information

<http://ec.europa.eu/eurostat/>