Hours actually worked in the French LCS

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Abstract

To estimate how much employers must pay for one hour of effective work, it is impossible to rely only upon declared paid hours: some paid hours are not worked, and the differences between worked hours and paid hours may vary according to country, sector, firm size or employee characteristics. However, worked hours are difficult to assess. They are not available in administrative sources, only paid hours are. Furthermore, employers may not be able to declare precisely and directly the hours worked by their employees in surveys. The general strategy to assess worked hours in the LCS is to ask employers to report paid hours, and every component (days off, sick leave…) allowing worked hours to be reconstructed from paid hours. The idea is to subtract un-worked paid hours from declared paid hours. However, this strategy has no longer been adapted in the French case since the "35 hours working time reduction" law. Indeed, in most firms employers are not able to dissociate holidays from "days of reduction of work time" (French RTT), which are days off to compensate for working more than 35 hours per week. As a consequence, we instead use a method that relies on usual weekly/daily work time and number of worked days. To assess the validity of this method, a similar strategy is applied to recalculate paid hours, which are then compared to the paid hours reported in the survey and in administrative sources.

French LCS

One of the main goals of the European Labour Cost Survey is to estimate comparable hourly labour costs across countries. Relevant hourly labour costs must rely on hours actually worked (or more humbly, hours spent at work). However, paid hours are generally easier to measure than worked hours. The number of paid hours is usually different from the number of hours actually worked, and the gap between the two may vary strongly according to the economic background (country regulation, activity, etc.).

The LCS is part of the French labour cost and structure of earnings annual survey (Ecmoss): over two years, the survey is labour-cost oriented (LCS), and over the following two years, the survey is wage-structure oriented (SES). The 2012 LCS data cover 32,000 local units of firms employing at least 10 employees in (metropolitan) France and 300,000 employees (data were collected in 2011 and 2012). The sample design relies on a stratified two-step sample with between one and 24 employees interviewed in each establishment. The sample design is obtained by minimizing the variance of the hourly wage. The sample frame is provided by exhaustive administrative sources (mainly the Annual Declarations of Social Data, DADS), from which some variables are also added to survey responses to reduce the response burden for employers and to adjust/correct/validate survey responses.

There are two questionnaires in the LCS. The "local unit questionnaire" covers the main constitutive components of labour costs, including social security contributions & social welfare and bonuses. The "employee questionnaire" contains questions about the main elements that make up pay and employer contributions and especially questions about working hours, including compensation & time worked in the year.

Paid hours are contractual and officially reported. There is no difficulty for the employers in reporting paid hours. Paid hours include normal and overtime hours worked during the year and some hours that are un-worked but nevertheless paid, such as:

- Annual holidays / vacations
- Official public holidays
- Absences due to sickness
- Maternity / paternity leave

In France the weekly legal work time is 35hrs, a full time worker without overtime having 1820 paid hours in a year. There are still some workers working 39hrs on a regular basis in some sectors or professions.

Worked hours are not directly available. We cannot expect employers to compute them. The LCS strategy is instead to ask employers to report the complete information needed for the computation by components. One limitation of this strategy is that unpaid overtime is generally missing, but employee overestimation of own working time is avoided. There is certainly a gap in worked hours between countries that use employee-reported worked time and those that use employer-reported working time. The former are more likely to overestimate work time while the latter (such as France) are more likely to underestimate it.

In the employee questionnaire, the employer is asked to report for the employee of interest:

- Paid hours (annual total also reported in the DADS)
- Paid overtime hours
- Contractual working hours
- Usual weekly working hours
- Usual weekly working days
- Number of days of paid leave and RTT (*from 2011, employers are asked to report RTT separately but it is unlikely to be reliable enough for direct use*)
- Days paid into a time savings account
- Number of days of absences due to sickness, accident
- Number of days of absences due to maternity / paternity leave, partial unemployment, strikes, etc.
- Amount of working time (if part time)

This information is then matched with the employee DADS, which contains the employment period, the number of paid hours in the year, and the amount of working time for part-time workers.

Worked hours computation

A simple way to compute the annual number of worked hours could be to subtract the un-worked paid hours from the annual paid hours. This strategy has no longer been adapted to the French case since the 35hrs working time reduction. It would require a clear distinction between RTT and holidays, which is usually impossible in practice. Indeed, RTT are days off to compensate for working more than 35 hours during the week and not paid leave as holidays. The following example illustrates this difficulty:

Example

- 2 employees in 35-hour firms, no overtime hours => 1820 hours paid
- 25 normal holidays / vacations + 6 public holidays
- No absence for sickness
- 5 days a week

Employee 1: 35 hours a week, without RTT days. Hours worked = 1820h – (25 + 6) * 7h = 1603

Employee 2: 37h30 a week + 15 RTT days. Hours worked = 1820h – ((25+15) + 6) * 7.5h = 1475

Difference: 128 hours less for employee 2!

To avoid this, we rely on the days actually worked (rather than hours) and the reported usual weekly and daily hours of work:

Hours actually worked = (days actually worked * usual daily hours) + overtime paid hours

With **days actually worked = number of weeks * usual reported weekly days of work – (holidays & RTT + public holidays + absences)**

With this formula, the hours worked by the two employees above are much more similar. Another example:

- 52 weeks, 5 days a week, 7hrs a day, 25 holidays & 5 public ones, 50 overtime hours, 10 days of absences.
- Bdb = 52 * 5 = 260
- Days actually worked = 260 – 25 – 5 – 10 = 220
- Hours actually worked = 220 * 7 + 50 = **1590 worked hours**

Doing 7hrs30 a day thus gaining 15 days of RTT: 205 * 7.5 + 50 = **1587.5**

Until 2010, holidays & RTT were not reported separately, the latter being estimated (when needed) as follows: RTT = reported holidays & RTT - legal holidays[1]. Since 2011, they have been reported separately but their reliability is not good enough.

This is the general case, but there are subtleties in specific cases.

Specific cases:

The annual working days system

The main specific case concerns employees working with annual working days contracts. This concerns around 10% of employees. In this case, there is usually no administrative data available on hours. The contract limits the number of days but not the number of daily hours. As a consequence, we rely on the Labour Force Survey (LFS) data. We use the average daily working time as reported by these employees in the LFS. While in 2008, we used the global average in all cases, in 2012 we used averages in 6 strata (and the overall average for employees we were unable to include in those strata) to improve accuracy:

Table 1 : average hours worked per day

Type of occupation	*NACE*	*2008*	*2012*
Managers & intellectual	BE	8,7	9.4
	F		9.8
	GS		9.6
Intermediate			8.5
Employees	BS		7.7
Workers			8
All			9

Source: LFS 2012

[1] *According to employment period*: it is 25 days for a usual fulltime employee, 20 days for a 80% part-time employee working 4 days a week, 12.5 days for one working full-time 6 months, etc.

Then, worked hours are obtained as: **hours actually worked = (days actually worked x reported usual daily hours) + overtime paid hours**

With **days actually worked = number of weeks * usual reported weekly days of work – (holidays & RTT + public holidays + absences)**

Example 2012
218 working days, industry manager, 8 days of absence for sickness.

⇨ Hours worked = (218 - 8) x 9.4 = 1974 hours

The "other absences"
This variable needs particular attention because it includes some unpaid absences (like strikes) and compensatory rest ("repos compensateur"), which compensates for overtime and thus is not to be subtracted from the number of days worked. The separation between paid and unpaid "other absences" is not required for computing the number of worked hours, but it is for computing paid hours (see below why paid hours are also computed). In these cases, we use the available information to impute a number of days, leading to consistent results on aggregates such as Nace sections.

Comparisons

In order to set up the method and validate the results, we compute paid hours in a similar way; and compare them with the reported paid ones. We obtain those computed paid hours as

Hours paid = (number of paid days * usual daily hours of work) + overtime paid hours

With **number of paid days = bdb – unpaid absences – RTT**

We can conclude that the method provides accurate results globally, and/or locally, if the computed paid hours are close enough to those reported in the survey. We rely on the reported paid hours as this variable is scrutinised through the LCS process, especially by the Labour Ministry's statistical office (DARES). This is then our reference variable in several ways. It was used to decide (in 2008) on the current global method. In cases of inconsistencies between this variable and others, reported paid hours are considered the true variable. Last but not least, computed paid hours are compared to reported ones in order to validate the process in intermediate steps and in the final results. As an example, we rely on it to identify special cases needing special consideration, such as part-time workers and D section (in which employees of two big firms benefit from agreements allowing work time reduction without wage loss), and to determine the minimal adjustment allowing consistency between computed and reported paid hours.

Table 2 : annual paid hours

A21	Declared	Computed	Gap
BN	**1 441**	**1 439**	**-0.1%**
B	1 657	1 671	0.9%
C	1 644	1 634	-0.6%
D	1 634	1 604	-1.9%
E	1 557	1 551	-0.4%
F	1 487	1 541	3.7%
G	1 381	1 382	0.1%
H	1 535	1 527	-0.5%
I	1 030	1 040	1.0%
J	1 590	1 560	-1.9%
K	1 645	1 625	-1.2%
L	1 422	1 403	-1.4%
M	1 509	1 506	-0.2%
N	1 017	1 018	0.1%

Source: LCS 2012

Paid hours in the F section are likely to be underestimated as some indirect remunerations go through special institutions.

Main improvements between LCS 2008 & LCS 2012

Differentiated imputation of indistinctly reported variables of interest

As presented before, compensatory rest days and RTT days are not directly reported or directly reliable. In 2008, for both types of compensatory schemes all employee responses were determined and imputed with the same methodology, chosen because it is consistent on large aggregates. This method was improved in SES 2009-2010. It appeared that previously the computed RTT days or other compensatory rest days were often locally inconsistent: in particular, compensatory rest days were not adjusted for part-time work in LCS2008, which now is the case. This new imputation method is more accurate and provides reliable results on thinner aggregates.

Mistakes between flows and stocks in reported time savings accounts (CET)

Time savings accounts ("compte épargne temps", CET) enable an employee to trade overtime for additional holidays (*the difference with RTT is that CET is one-off while RTT is generally on a regular basis*). An employee using this account for more than a year accumulates a stock of CET days. The LCS questionnaire asks respondents to report the flow of days but there was some confusion and some employers reported the stock. In the LCS2012, reported stocks instead of flows were corrected.

Extensive use of coherence tests

Missing data

Missing variables that can be reconstructed from other (non-missing) variables were imputed, always taking paid hours as the reference variable.

Corrections

Both local and global inconsistencies were corrected. If the information in some variables is contradictory (example: an employee with 35 weekly hours and only two weekly days of work), we retain the information minimizing the gap between reported and computed paid hours, and correct the other variables.

When no local inconsistency appears while the reported/computed hours gap is large, we adjust the less reliable variables (firstly any imputed or computed ones) to obtain better global consistency of the information.

Specific adjustments

Finally, some adjustments of the global method for computing worked hours were set up for aggregates (Nace sections, types of occupations…), in which large reported/computed hour gaps revealed inconsistencies. As an example, employees in the health sector are allowed to have more days of compensatory rest (CET) than others. Hence, this has been accounted for in the correction step of flows and stocks of CET days. Another important adjustment has concerned weekly un-worked paid hours of employees in D section (typically, working 32hrs but being paid 35hrs as a typical fulltime).

Table 3 : LCS 2008-2012 variations

	2008		2012		Variation 2012 / 2008		Variation 2012 / 2008		Paid/worked hrs variation gap	
	Worked hrs		Worked hrs		Worked hrs	Paid hrs	Worked hrs	Paid hrs		
	Full time	FTU	Full time	FTU	Full time		FTU		FT	FTU
BE	**1 575**	**1 574**	**1 566**	**1 560**	**-0.6%**	**0.1%**	**-0.9%**	**-0.1%**	**-0.7%**	**-0.8%**
B	1 574	1 574	1 606	1 606	2.0%	-1.3%	2.0%	-1.3%	3.3%	3.3%
C	1 576	1 574	1 575	1 568	-0.1%	0.4%	-0.4%	0.3%	-0.5%	-0.7%
D	1 673	1 657	1 448	1 445	-13.4%	-8.3%	-12.8%	-7.6%	-5.1%	-5.2%
E	1 530	1 530	1 541	1 538	0.7%	-0.1%	0.5%	-0.5%	0.8%	1.0%
F	**1 607**	**1 605**	**1 590**	**1 585**	**-1.1%**	**-1.0%**	**-1.2%**	**-1.3%**	**-0.1%**	**0.1%**
GN	**1 614**	**1 606**	**1 590**	**1 576**	**-1.5%**	**-1.6%**	**-1.9%**	**-1.9%**	**0.1%**	**0.0%**
G	1 620	1 612	1 608	1 586	-0.7%	-0.3%	-1.6%	-0.9%	-0.4%	-0.7%
H	1 587	1 586	1 569	1 563	-1.1%	-3.0%	-1.5%	-3.2%	1.9%	1.7%
I	1 658	1 637	1 625	1 595	-2.0%	-5.3%	-2.6%	-5.4%	3.3%	2.8%
J	1 636	1 627	1 632	1 628	-0.2%	0.2%	0.1%	0.4%	-0.4%	-0.3%
K	1 633	1 614	1 579	1 565	-3.3%	-3.9%	-3.0%	-3.4%	0.6%	0.4%
L	1 582	1 575	1 496	1 490	-5.4%	-4.6%	-5.4%	-4.5%	-0.8%	-0.9%
M	1 650	1 635	1 644	1 632	-0.4%	-0.2%	-0.2%	0.0%	-0.2%	-0.2%
N	1 554	1 557	1 490	1 492	-4.1%	-1.3%	-4.2%	-2.0%	-2.8%	-2.2%
QS	**1 486**	**1 496**	**1 433**	**1 439**	**-3.6%**	**-1.8%**	**-3.8%**	**-1.9%**	**-1.8%**	**-1.9%**
Q	1 471	1 484	1 423	1 431	-3.3%	-1.6%	-3.6%	-1.8%	-1.7%	-1.8%
R	1 570	1 573	1 496	1 507	-4.7%	-2.6%	-4.2%	-2.4%	-2.1%	-1.8%
S	1 550	1 553	1 500	1 496	-3.2%	-1.9%	-3.7%	-2.4%	-1.3%	-1.3%
BN	**1 601**	**1 596**	**1 583**	**1 572**	**-1.1%**	**-1.0%**	**-1.5%**	**-1.3%**	**-0.1%**	**-0.2%**

Source: LCS 2008 & 2012.

Globally, the variation in computed worked hours between 2008 and 2012 is consistent with the variation in reported paid hours. The non-stability of results in section B is due to the small size of this sector in France. Between 2008 and 2012, worked hours decrease more than paid hours in section D. But worked hours are not comparable between LCS2008 and LCS2012 for this section due to the improvement in the method for computing worked hours. Concerning section I, reported paid hours decrease sharply. Computed paid hours decrease too, but by less than 50% of the fall in paid hours. This can be explained by the improvements in the method (section I employs a lot of seasonal workers, a group that is very specific in terms of holidays, RTT, job spell duration, *see below*) but also by some tax reductions in this sector.

Table 4 : number of days

A21	Absences	Holidays	RTT only	Excluding RTT	Days worked (median)
B	3.2	25.4	2.8	22.6	360
C	4.5	27.7	5.6	22.0	360
D	**13.0**	**30.7**	**11.9**	**18.8**	360
E	4.5	26.8	4.2	22.6	360
F	4.4	24.4	3.7	20.6	360
G	6.7	22.4	2.8	19.6	360
H	5.5	28.2	6.1	22.1	360
I	**7.4**	**16.1**	**1.8**	**14.3**	**271.5**
J	5.0	28.6	8.7	19.9	360
K	7.1	31.9	10.1	21.8	360
L	4.4	27.1	6.5	20.6	360
M	4.6	25.8	6.4	19.4	360
N	7.1	18.8	2.3	16.5	341
O	3.0	31.4	7.2	24.1	360
P	2.5	22.8	3.8	19.0	360
Q	7.2	26.3	5.5	20.8	360
R	7.2	20.4	2.5	17.9	360
S	5.1	23.6	4.4	19.2	360
BS	**5,7**	**24,3**	**5,3**	**19,0**	**360**

Source: LCS 2012

While the global method was implemented in an efficient way for full-time workers in LCS2008, its improvements in LCS2012 allow us to better take into account part-time or seasonal employees. As a consequence, the worked hours were probably underestimated in section I in 2008.

Validation with other sources

Comparisons with other sources are necessary but difficult because other sources usually refer to different coverage. Hence, level differences cannot be compared. Variations can be compared more safely.

Table 5 : consistency with other sources (annual variations on average)

	LCI wages	DADS LCS	National accounts	LCS wages / worked hours
BE	**2.4%**	**2.2%**	**3.0%**	**2.2%**
B	2.7%	2.2%	2.4%	-0.2%
C	2.4%	2.2%	3.2%	1.9%
D	1.8%	2.8%	1.5%	4.1%
E	1.8%	1.7%	0.0%	0.2%
F	**2.1%**	**2.2%**	**2.0%**	**2.1%**
GN	**2.2%**	**1.9%**	**2.1%**	**2.0%**
G	1.9%	2.1%	1.4%	2.1%
H	1.9%	2.1%	1.4%	2.1%
I	2.3%	1.9%	2.3%	0.8%
J	2.2%	1.9%	2.3%	0.9%
K	1.9%	1.4%	2.1%	1.2%
L	2.6%	0.9%	1.7%	3.3%
M	1.7%	1.5%	2.9%	2.9%
N	3.3%	2.5%	2.0%	2.9%
O	1.9%	1.3%	-	-
P	1.3%	-0.5%	-	-
QS	**-**	**1.4%**	**1.9%**	**1.5%**
Q	2.2%	1.5%	2.1%	1.5%
R	3.1%	0.6%	1.9%	4.0%
S	1.9%	1.7%	1.3%	1.8%
BN	**2.3%**	**2.0%**	**2.3%**	**2.0%**

Sources: LCS 2008 & 2012, National accounts, DADS 2008-2012.

As shown in the above table, variations in labour costs on BN are consistent between the sources. However, there are significant gaps in some sections: In section B, this is probably related to the small size of the section. Improvements in the method may have particularly affected the section D, I and R variations.