Women's earnings/ men's earnings

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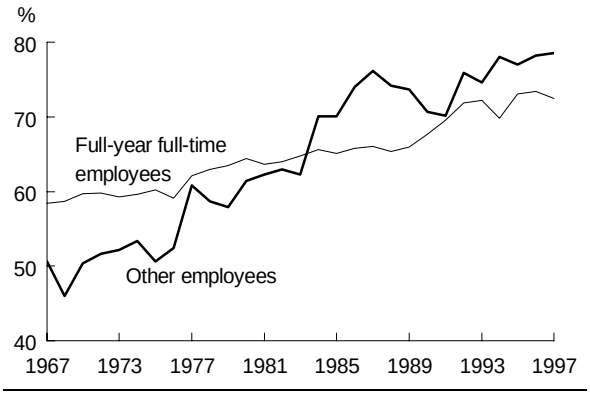
Since women began making their presence felt in the labour market and in institutes of higher learning, their earnings have been compared with men's. For this reason, Statistics Canada publishes considerable data on the subject. The Survey of Consumer Finances (SCF), which estimates the annual income of individuals and families, is the source most often used to measure the female-to-male earnings differential (see *Data sources*). Since 1997, the Labour Force Survey (LFS) has also been used to compare the incomes of women and men, on a monthly basis.

This article aims to familiarize readers with this new LFS-based measure of relative earnings, and to compare it with the one produced by the SCF. It also explains the reasons for the sizable gap between the two measures. In 1997, the female-to-male earnings ratio produced by the SCF was 72.5%; that of the LFS was 82.3%. (See Appendix 1 for a discussion of data quality.)

Chart: Female-to-male earnings ratios have increased steadily for 30 years.



Source: Survey of Consumer Finances
Note: The years between 1967 and 1973 are 1969, 1971 and 1972.

Ratios derived from the SCF

Since 1951, the SCF has been collecting information on the annual incomes of individuals and families by source. Since 1967, these data have been published by sex, making it possible to compare the earnings of men and women. Earnings comprise wages and salaries and net income from self-employment. Two main earnings ratios produced by the SCF are commonly used; one covers all persons earning employment income (whatever their work pattern), and the other, those working full time for the whole year.

The first ratio covers persons who worked for pay from as little as one to as many as 52 weeks a year, for at least one hour a week. Annual earnings can, therefore, vary greatly from one worker to another, mainly because of differences in work volume.

In order to take into account these differences, the SCF also provides an earnings ratio that covers only *persons working full year full time* (that is, those working 49 to 52 weeks during the year, "mostly"[1] 30 hours or more per week). Individuals in this group are more homogeneous since they are less likely to vary their work schedule during the year.

A ratio for "other" workers[2] (full- or part-time for part of the year or part-time for the full year) is also available, though, as is the case with the first ratio, the annual amount of work performed varies greatly from one person to the next. It may also vary for the same person over the year. The comparison of earnings for this group, then, refers to a wide range of work schedules and annual hours of work.[3] Consequently, the ratio for this group tends to zigzag over time (Chart).

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This last ratio, then, provides little information on the earnings differential between women and men, since it does not take into account work volume. The same is true for the ratio for all workers, since it includes "other" workers.

The most meaningful ratio, then, is that concerning full-year full-time workers. This increased from 58.4% in 1967 to 72.5% in 1997.

The LFS ratio

Since 1997, the LFS has included questions on the usual wages and salaries of employees in their main job.[4] This does not include overtime pay or wages received for one or more secondary jobs, paid or self-employed.[5] This new information is used to calculate female-to-male wage ratios on a monthly or annual basis. In this article, ratios from the LFS are based on *hourly* wages. The 1997 female-to-male ratio for average hourly wages of all employees stood at 82.3%. This was ten percentage points greater than the SCF ratio for full-year full-time workers, a sizable gap.

Ratios differ according to source

Several factors may explain such a gap. First, the populations covered are different. The SCF ratio refers to both employees and self-employed workers, while the LFS ratio considers only employees.

The definition of earnings is broader in the SCF. In addition to wages from the main paid job, the SCF includes earnings from one or more secondary jobs (paid or self-employed), paid overtime, and increases provided for in the contract of employment.[6] The LFS includes only wages and salaries from the main paid job.

Furthermore, the two surveys calculate earnings on a different basis. The SCF produces ratios based on annual earnings, while the LFS uses hourly earnings.

As noted earlier, in order to take into account the volume of work, the most-used ratio from the SCF is that for full-year full-time workers only. It therefore excludes from the comparison other workers. By contrast, the LFS measure covers all employees, whatever their work pattern (see *Effect of part-time workers*). This ratio is therefore fully adjusted for hours of work.[7]

In the following exercise, a reconciliation of the two rates is attempted by means of two adjustments to the SCF ratio. First, it will exclude self-employed workers from the SCF universe; then it will convert annual earnings to hourly wages.[8]

Adjustments

Comparable populations

The exclusion[9] of self-employed workers from the SCF has a marginal effect on the 1997 ratio, which drops from 72.5% to 72.2% when only full-year full-time workers are considered (Table 1).

Table 1: Reconciliation of SCF and LFS female-to-male earnings ratios

	Ratio
	%
SCF ratios (1997 earnings)	
Published ratio	72.5
Adjusted for covered populations	72.2
Adjusted for work volume (full-year full-time workers)	78.8
Adjusted for work volume (all workers)	79.3
1997 LFS ratio	
Hourly earnings of all employees (full- and part-time)	82.3

Sources: *Survey of Consumer Finances* and *Labour Force Survey*

Adjustment for amount of work

The most important adjustment to consider in comparing earnings is the one related to volume of work. However, because the SCF does not collect information on weekly or monthly hours, it cannot determine precisely a person's annual hours.

For this reason, the usual practice is to consider only full-year full-time workers. However, this adjustment is only partial, since, on average, women working full time work fewer hours than men (39.5 hours versus men's 43.8 in 1997). Over the course of a year, this difference can amount to as much as six weeks of work.

A more precise adjustment would be the conversion of annual earnings in the SCF to hourly wages.[10] The SCF collects information on the number of *usual* weekly hours worked at the time of the survey.[11] For the sake of argument, this is assumed to correspond to the *average* weekly hours worked over a year. It is also assumed that persons working "mostly" 30 hours or more per week do so throughout the 49 to 52

Data sources

A number of data sources can be used to calculate the female-to-male earnings ratio. That most often used is the Survey of Consumer Finances (SCF). Comparable ratios are also available from the census and from Revenue Canada taxation data. But the census data are produced only every five years, while the Revenue Canada data provide no information concerning the amount of work.

The ratio produced by the Labour Force Survey has the advantage of being fully adjusted for the amount of work and of being available on a monthly basis, 21 days after the reference week for the survey.

The SCF was conducted for the last time in 1998, collecting data covering the 1997 reference year. As of the 1998 reference year, the Survey of Labour and Income Dynamics (SLID) now gathers those data, along with longitudinal data on labour and income. SLID can produce an even more precise measure of volume of work, since work hours are known for a maximum of six jobs. Thus, it will be possible to produce not only the usual SCF ratios, but also ratios adjusted for the amount of work.

Data sources for calculating the female-to-male earnings ratio

Source	Frequency	Time lag	Adjustment for amount of work	Lastest year	Ratio for 1997
					%
SCF	Annual	20 months	Partial	1997	72.5*
LFS	Monthly	21 days	Total	1999	82.3**
SLID	Annual	15 months	Total	1997	81.0†
Census	Quinquennial	29 months	Partial	1995	70.9*
Revenue Canada	Annual	18 months	None	1997	62.3††

* *Ratio for employment income of persons working full year full time.*
** *Ratio for employees' hourly wages.*
† *Ratio for average hourly earnings for all jobs and all employees.*
†† *Ratio for median employment income of all persons reporting earnings.*

Effect of part-time workers

The LFS ratio shows that among part-time workers, women exceed wage parity with men (109.9%). The ratio for full-time employees is 83.2%. In light of this, why should including part-time workers lower the overall ratio (from 83.2% to 82.3%)?

In fact, when part-time employees are added to the overall ratio, the numerator decreases in relation to the numerator for the full-time ratio, because hourly earnings of women working part time are less than those of women working full time ($12.14 versus $14.73, and $14.34 for all women). The denominator also decreases, since hourly earnings of men working part time are lower than those of men working full time ($11.04 versus $17.70, and $17.43 for all men). But since a greater proportion of women than men hold part-time jobs (13.3% and 5.8% of all employees, respectively), the relative decrease in the numerator is greater than that in the denominator.

Average hourly earnings

	Hourly earnings	Proportion	Ratio
	$	%	
All employees	**16.10**	**100.0**	**82.3**
Men	17.43	54.9	
Women	14.34	45.1	
Full-time	**16.51**	**81.0**	**83.2**
Men	17.70	49.1	
Women	14.73	31.9	
Part-time	**11.84**	**19.0**	**109.9**
Men	11.04	5.8	
Women	12.14	13.3	

Source : Labour Force Survey, 1997

Table 2: Female-to-male income ratios, SCF and LFS

	SCF			LFS
		Wages and salaries*		Hourly earnings
	Annual income**	Full-year full-time employees	All employees	All employees
		%		
All employees	**72.5**	**78.8**	**79.3**	**82.3**
Age				
15 to 24	80.8	88.9	95.3	89.8
25 to 34	76.3	83.4	85.0	88.4
35 to 44	73.4	79.8	79.2	82.0
45 to 54	69.8	75.6	74.6	76.5
55 and over	66.4	71.8	73.0	75.6
Marital status				
Single (never married)	91.8	99.0	99.9	93.7
Married or common-law	67.5	73.8	73.6	78.3
Other	80.3	85.7	85.0	82.4
Education				
Less than Grade 9	69.6	73.4	78.1	70.3
Some high school	64.6	69.8	71.8	74.5
High school graduation	73.0	79.6	79.8	81.3
Some postsecondary	75.0	78.2	80.0	82.6
Postsecondary certificate or diploma	70.6	77.3	78.6	80.9
University degree	73.6	80.4	80.1	84.0
Occupation				
Management and administration	65.5	72.2	71.8	77.5
Professional	73.0	80.9	81.5	85.2
Clerical	80.7	85.8	86.7	89.4
Sales	73.1	78.3	76.9	74.8
Service	64.8	70.0	74.9	72.2
Primary industry	60.8	64.2	64.7	67.9
Occupations unique to production	65.2	68.2	67.7	67.2
Construction	--	--	--	86.0
Transportation equipment operators	78.8	89.9	88.6	84.7
Labourers and other	61.0	62.1	65.0	71.0

Sources: Survey of Consumer Finances and *Labour Force Survey, 1997*

* *Does not include self-employment income of paid workers who had a second job in which they were self-employed.*

** *Calculated for persons working full year full time.*

weeks (and not only for 26 weeks, the minimum for full-year full-time workers) (see note 2).

By dividing SCF annual wages and salaries by the number of weeks and weekly hours usually worked, one can convert annual earnings to an hourly wage. The SCF ratio for full-year full-time employees then stands at 78.8% (Table 1).

In order to make the SCF ratio conceptually comparable with the LFS ratio, "other employees"—namely, those working part time part of the year, part time all year or full time part of the year — must be added, so as to cover all employees.[12] The same adjustments can be made for this group of employees and a ratio calculated for all employees. The final ratio is therefore 79.3%, much closer to the LFS ratio. This similarity also holds for a number of socio-demographic characteristics (Table 2). (A detailed set of female-to-male earnings ratios for the 1998 LFS is provided in Appendix 3.)

Conclusion

This article has compared the new Labour Force Survey (LFS) measure of the female-to-male earnings differential with the widely used measure produced by the Survey of Consumer Finances (SCF). It has also explained the reasons for the sizable, ten percentage-point gap observed between those two ratios.

Several conceptual differences set the two measures apart. The SCF ratio covers all workers, both employees and the self-employed. The LFS measure covers only employees. The definition of earned income is broader in the SCF, since it includes not only earnings from one or more paid or self-employed jobs, but also paid overtime, and contractual wage increases. In the LFS, only the wages and salary of the main job are taken into account.

Even more important, the base used in the calculation of earned income is different: the SCF collects earnings on an annual basis, while the LFS provides hourly wages. The LFS ratios are therefore fully adjusted for volume of work, while the SCF ratios are only partially adjusted.

In this article, the SCF ratio was adjusted to make it conceptually comparable with the LFS ratio. Making the opposite adjustment would have been practically impossible, since the LFS does not collect information on the number of weeks worked. The adjusted SCF ratio therefore covers only the wages and salaries of employees. A further adjustment converted annual incomes to hourly wages, to take volume of work into account.

Following these adjustments, the 1997 SCF ratio comes closer to that of the LFS (82.3%), changing from 72.5% to 79.3%. Of all the adjustments made, the one for volume of work has the greatest effect. The reconciliation achieved holds for a number of socio-demographic variables.

While they are apparently far apart, the ratios produced by these two sources ultimately prove similar when conceptual differences are taken into account. The remaining gap may be due to the survey methodologies.

Notes

1 "Mostly" means that a person worked 30 hours or more per week for at least 26 weeks during the year. The person could have worked less than 30 hours per week the rest of the year and still be considered full-year full-time.

2 Other workers may have worked "mostly" 29 hours or less per week for 49 to 52 weeks or less than 49 weeks during the year.

3 A variety of work schedules also exists for full-year full-time workers, since in order to be considered as such these people must have put in "mostly" 30 hours or more per week. However, this group usually has a major attachment to the labour market and a fairly stable work schedule.

4 Wages and salaries also include before-tax tips, commission and bonuses. The main job is the one at which the employee worked the greatest number of hours during the LFS reference week.

5 The LFS does not question self-employed workers on their wages and salaries, because it is impossible for them to supply such information. Conceptually, the earnings of self-employed workers should correspond to net income, that is, income minus expenses. However, the incomes and expenses of self-employed workers are not necessarily linked to current hours of work (equipment, for example, will have been paid for prior to its use). Self-employed workers, may, however, report their net income for the calendar year. Since the SCF and the Census of Population are based on annual incomes, those surveys can cover both employees and self-employed workers.

6 Questions regarding wages and salaries are usually asked only in the first interview (of six). However, if the respondent changes employer or tasks, the interviewer asks these questions again. But if an employee moves to a new level, or if his or her wages rise, such increases are not immediately reflected in the data. They eventually appear with sample rotations.

7 Other factors, such as sampling and non-sampling errors, may also help to explain the sizable gap between the SCF and LFS ratios. One such factor is the SCF's smaller sample size (two-thirds of the LFS sample) and the different reference period (the SCF refers to the year preceding the survey, while the LFS refers to one week). Furthermore, the SCF asks respondents to recall their labour market activities over the past year, while the LFS refers to the past week. Recall problems may therefore be more common in the SCF.

8 The LFS ratio cannot be adjusted to make it comparable with that of the SCF because the LFS does not collect any information on the number of weeks worked.

9 This first adjustment may seem rather crude, since it does not take account of transitions from "employee" to "self-employed worker" status or vice versa during the year. Since the SCF is an annual survey, it records the respondent's status once—at the time of the survey (April 1998). This study made an additional adjustment to take these transitions into account. However, the effect is marginal, as may be seen in Appendix 2.

10 This conversion is not usually recommended. It is done here solely in an effort to reconcile conceptually the SCF and LFS ratios. If the comparison is confined to average overall measures, however, it is valid.

11 The SCF, a supplement to the April LFS, refers to the previous year. Usual work hours correspond, then, to those of April of the following year.

12 Making the same adjustments in work volume for "other" employees is riskier, owing to the diversity of work status within this group. Also, workers included in it are more likely to change their hours during the year. The assumption that average weekly work hours in 1997 are equivalent to usual hours in April 1998 is probably further from reality than is the case for full-year full-time workers. Overall, however, the final result is fairly reliable, although very detailed breakdowns should be avoided.

References

Statistics Canada. *Earnings of Men and Women, 1997*. Catalogue no. 13-217-XIB. Ottawa, 1999.

---. *Guide to the Labour Force Survey*. Catalogue no. 71-543-XPB. Ottawa, 1997.

Appendix 1—Data quality

The Labour Force Survey (LFS) and one of its supplements, the Survey of Consumer Finances (SCF), are used to produce estimates based on the data drawn from a sample survey of households. The gap between the estimates based on the sample and those derived from a complete enumeration conducted in similar conditions is called the **sampling error** of the estimates.

While the sampling error is not known, it can be estimated using the sample data. One such measure is the coefficient of variation (CV), the standard error as a percentage of the estimate. Generally, the larger the estimate, the smaller the CV. LFS-derived estimates that are less than 1,500 systematically have high CVs, and therefore are less reliable. The comparable value for the SCF is 2,250. In this article, earnings ratios derived from estimates based on at least 2,250 records (both in the numerator and in the denominator) for the SCF and 1,500 for the LFS are considered sufficiently reliable.

Errors unrelated to sampling can occur at almost any stage of a survey. Interviewers may not fully understand the instructions, respondents may make mistakes in answering questions, responses may be improperly entered on questionnaires, or errors may be introduced during the compilation or processing of the data. These errors are all examples of **non-sampling error.**

Over a great number of observations, random errors will have little effect on the survey estimates. However, errors that occur systematically will contribute to biases. Quality assurance measures were applied at each stage of the data collection and processing cycle, including the use of experienced interviewers, observation of interviewers and quality control procedures.

To obtain a more detailed description of the LFS and its objectives, coverage, sampling techniques, concepts, definitions, data quality, and so on, see the Appendix in *Historical Labour Force Statistics* (Catalogue no. 71-201-XPB).

Appendix 2—Exclusion of the self-employed

The SCF is conducted annually. Persons who were employees at the time of the survey may have been self-employed for part of the previous year and vice-versa.

To avoid including persons who changed status during the year, it is possible to consider only employees who have been in their job for at least 16 months (a period that covers the survey reference year up to the following April, when the SCF data are collected).

This adjustment has a minimal effect on the 1997 ratio, which drops to 78.5% (compared with 79.3% when duration of employment is not considered). The difference is also minor when age, marital status and education are taken into account.

	Female-to-male ratio (hourly wage)	
	All employees	In their job for at least 16 months*
	%	
All employees	**79.3**	**78.5**
Age		
15 to 24	95.3	90.0
25 to 34	85.0	83.5
35 to 44	79.2	79.9
45 to 54	74.6	74.2
55 and over	73.0	73.2
Marital status		
Single (never married)	99.9	97.2
Married or common-law	73.6	74.1
Other	85.0	83.7
Education		
Less than Grade 9	78.1	78.9
Some high school	71.8	69.6
High school graduation	79.8	78.7
Some postsecondary	80.0	76.9
Postsecondary certificate or diploma	78.6	78.4
University degree	80.1	80.1

Sources: Survey of Consumer Finances and *Labour Force Survey, 1997*

* *Does not include the self-employment income of paid workers who had a second job in which they were self-employed.*

Appendix 3—1998 LFS female-to-male hourly earnings ratios

Highlights

The female-to-male wage gap generally increases with age. In 1998, the ratio ranged from 90% for employees aged 15 to 24 to 75% for those aged 55 and over.

The wage ratio for part-time employees exceeded wage parity, reaching 114%, compared with 83% for full-time employees.

The wage gap tends to diminish as education increases. The ratio for employees with less than high school was 73%, in contrast to 85% for employees with a university degree.

Single employees experienced a higher ratio (92%) than married employees (78%).

Among industries, the wage gap was smallest for employees in agriculture and in services, whose ratios were 90% and 87%, respectively. This contrasts with a ratio of 68.5% for finance industries.

Women working in primary occupations faced a relatively large wage gap, with a ratio of about 67%. In contrast, the ratio for clerical and transport equipment operating workers was around 90%.

Unionized women earned 90 cents for every dollar earned by their male counterparts. These earnings compare favourably with those of non-unionized women, who earned just 78 cents for every dollar earned by non-unionized men.

	All ages	15-24	25-34	35-44	45-54	55 and over
All employees	**82.1**	**89.7**	**87.9**	**81.6**	**77.3**	**75.0**
Full-time	82.9	89.9	88.3	82.4	78.4	75.6
Part-time	113.8	101.6	104.1	94.2	81.4	92.9
Education						
Less than high school	72.8	84.3	74.6	71.0	68.4	71.1
High school graduation	80.8	82.7	81.5	78.4	74.3	76.5
Some postsecondary	82.6	90.2	88.4	78.5	76.7	69.2
Postsecondary certificate or diploma	80.4	87.3	85.2	80.8	77.4	79.1
University degree	85.1	90.6	89.4	88.9	84.9	81.2
Marital status						
Single (never married)	92.3	89.6	92.0	95.4	97.4	99.4
Married or common-law	78.3	84.4	85.6	79.3	75.3	73.3
Other	81.2	81.4	83.3	83.1	80.0	77.3
Job tenure						
<1 year	81.8	92.0	86.3	75.6	73.1	69.8
1-5 years	81.3	87.6	87.0	76.6	72.4	73.4
6-10 years	84.9	89.2	89.1	83.2	79.7	78.7
11-20 years	82.6	75.6	89.0	86.3	76.3	73.8
>20 years	83.8	-	--	85.9	85.6	77.1
Industry						
Agriculture	89.6	96.2	99.1	79.3	84.0	76.0
Other primary	81.2	78.5	86.9	84.3	74.4	82.2
Manufacturing	73.5	85.1	81.8	73.1	65.4	63.3
Construction	75.5	80.6	79.2	75.5	63.5	75.1
Transportation	86.9	86.3	98.6	86.3	86.4	69.9
Communication & other utilities	84.7	93.4	92.6	87.4	80.3	67.7
Trade	75.2	92.4	82.3	71.0	66.9	70.0
Finance	68.5	91.9	79.9	62.8	59.8	63.1
Insurance	74.8	112.6	78.6	74.1	73.1	58.2
Real estate	85.9	100.0	85.5	83.9	74.4	97.1
Service	87.2	97.1	90.7	85.8	79.8	77.8
Public administration	81.8	96.4	89.0	85.3	77.4	77.5
Occupation						
Managerial & other professional	81.4	92.4	89.3	82.1	77.9	73.4
Clerical	88.5	95.0	91.2	85.8	83.1	79.9
Sales	73.2	96.1	79.1	70.5	65.6	66.4
Service	73.1	96.6	76.0	67.8	62.6	76.6
Primary occupations	67.0	78.2	68.7	68.4	60.5	59.5
Processing, machining & fabricating	67.3	80.1	71.4	64.2	61.5	63.0
Construction	80.7	90.1	82.7	87.8	--	--
Transport equipment operating	89.0	80.4	95.8	89.1	88.1	89.5
Material handling & other crafts	69.9	86.9	74.4	67.2	56.2	66.4
Size of workplace						
<20 employees	81.0	88.6	85.4	78.0	75.4	76.5
20-99 employees	84.5	92.4	88.8	82.4	81.4	79.3
100-500 employees	80.8	90.4	86.9	81.2	76.2	73.1
>500 employees	86.7	90.3	93.2	90.0	81.9	77.6
Union status						
Union coverage	89.8	94.9	95.6	89.3	87.7	83.5
Member	90.1	94.8	96.2	89.6	88.1	83.9
Collective agreement	84.8	93.9	88.0	83.9	82.0	76.7
Non-unionized	78.1	89.5	84.6	77.0	69.1	69.4

Source: Labour Force Survey