Comparing benefit costs for full- and part-time workers

Health insurance appears to be the only benefit representing a true "quasi-fixed cost" to employers, meaning that the cost per hour worked is greater for part-time employees than it is for full-time employees

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Employers' costs for total benefits grew roughly 50 percent faster than employee wages over the 1980–96 period, according to the Bureau of Labor Statistics Employment Cost Index (ECI). By March 1996, nonwage compensation represented 28 percent of total compensation for U.S. private workers. Given these figures, it is not surprising that there is great interest among economists and other analysts in the role that benefits play in labor markets.

Simple labor market theory suggests that employers mainly are concerned about the level of *total* worker compensation (wages, salaries, and benefits), and that, apart from tax considerations, they consider the division between cash wages and other compensation of little economic consequence. However, this simple approach ignores potentially important differences between wages and benefits. It is commonly asserted that benefits represent quasi-fixed costs, meaning that they vary with the number of workers rather than with the number of hours worked.[1] To the extent that this is true, the structure of employee compensation packages may influence employers' demand for full- and part-time workers, as well as their decisions on the use of overtime.

The assumption that benefits represent quasi-fixed costs is common in studies of the effect of benefits on decisions of employers and employees.[2] The basis for this assumption, however, is somewhat tenuous. For many benefits—such as defined contribution pension plans and certain types of paid leave—costs are a direct function of cash earnings and thus are proportional to the number of hours worked. And while this generally is not the case for benefits such as health insurance, employers can at least use employee contributions to vary the costs of such benefits by employee hours.

By comparing the costs to employers of providing various benefits to full- and part-time workers, this article directly tests the hypothesis that benefits represent quasi-fixed costs. It also examines the extent to which these costs vary across different types of benefits. The results suggest that, because it is the only benefit for which the average per-hour cost is greater for part-time workers than for full-time workers, health insurance is the only benefit representing a true quasi-fixed cost to employers.

The data

This article analyzes data from two establishment surveys conducted by the Bureau of Labor Statistics—the Employee Benefits Survey (EBS) and the Employment Cost Index (ECI) survey. These data provide rich detail on the costs and provisions of various benefit plans offered by employers. Also, the data usually are collected for mul-

tiple jobs from each establishment surveyed. Thus, although benefit plans in part-time jobs are relatively rare, where they do exist, they nearly always can be compared with a benefit plan offered to full-time workers from the same establishment.

The ECI survey, conducted quarterly by BLS, collects data on total compensation per hour for a sample of jobs. The microdata from the ECI report the average cost per hour among workers who hold the sampled job. The EBS, on the other hand, is an annual study of the incidence and detailed characteristics of employer-provided benefit plans; the EBS also provides information on employee participation in such plans. The EBS covers medium- and large-size establishments in odd-numbered years, and small establishments in even-numbered years.[3]

The ECI data used here are from March 1994. For the EBS, data from the 1993 and 1994 surveys were combined in order to obtain a representative sample of small-, medium-, and large-size establishments. Both the ECI and EBS samples are restricted to private establishments. Also, for both surveys, the data usually are collected for four, six, or eight jobs for each establishment in the sample.

Following the practice of the ECI and EBS, jobs are defined in this study as full or part time based on how the establishment classifies the job. The ECI also provides information on each job's scheduled annual hours. In general, the establishments' designation of full time and part time coincides with a definition based on scheduled hours. For example, the median scheduled annual hours among jobs designated as full time is 2,080, while the comparable median for part-time jobs is 1,040. Moreover, 90 percent of the jobs designated as full time report scheduled annual hours of at least 1,820 (35 hours per week times 52 weeks per year), while 95 percent of those designated as part time have scheduled annual hours of not more than 1,820. Among part-time jobs, those with benefit plans tend to have a longer work schedule. For example,

among part-time jobs with a health insurance plan, the median for scheduled annual hours is 1,342.

Comparing benefit costs

Based on microdata from the ECI, table 1 presents summary statistics on benefit plan coverage and costs for full- and part-time jobs. The top portion of the table shows the proportion of jobs that have a positive cost for the benefit. For all benefits except those that are legally required, full-time jobs are substantially more likely to be covered by benefit plans than are part-time jobs. In addition, the difference in coverage rates between full- and part-time jobs varies considerably, ranging from about 19 percentage points for savings plans to 63 percentage points for health insurance benefits.

The lower portion of the table shows statistics for the cost of benefit plans among jobs that offer such plans, excluding jobs for which the costs of benefits are imputed. A comparison of average costs for full- and part-time jobs provides information on the degree to which the different benefits are effectively prorated by employee hours. For benefits that represent quasi-fixed costs, the hourly cost will be higher for part-time jobs. Costs are "purely quasi-fixed" when the annual cost is the same for both full- and part-time jobs. Prorating benefits by the number of hours worked will lower the relative cost of providing benefits to part-time employees. If benefits are "perfectly prorated" by hours—meaning that the benefit accrues at the same rate per hour worked for full- and part-time workers—the cost per hour will be the same for both groups of workers.

The figures in table 1 provide little evidence to suggest that benefits represent quasi-fixed costs. Indeed, all benefits appear to be more than perfectly prorated, in the sense that their costs accrue more slowly with hours worked for part-timers than for full-timers among covered workers. One po-

Table 1.	Benefit provision and costs for full- and part-time workers, March 1994						
Characteristic	Vacation	Holiday	Sick leave	Health insurance	Pension	Savings	Legally required
Percent of jobs covered							
Part time	44.9	43.3	25.7	23.5	26.0	16.3	100.0
Full time	89.1	89.3	63.0	86.4	52.4	34.9	100.0
Average cost per hour							
Part time	$0.26	$0.24	$0.18	$1.56	$0.47	$0.11	$1.02
Full time	.73	.51	.29	1.61	1.09	.44	1.77
Average annual cost							
Part time	$300	$261	$215	$1,844	$547	$139	$1,016
Full time	1,377	968	522	3,078	2,079	821	3,404
Number of covered jobs							
Part time	937	939	457	469	560	251	1,792
Full time	11,908	13,024	7,609	11,619	6,915	4,819	12,252
SOURCE: Microdata from the March 1994 Employment Cost Index.							

tential difficulty with interpreting these statistics is that they may result from differences between full- and part-time jobs and the firms that employ them that are unrelated to the issue of prorating. For example, the mean comparisons do not control for wages, which is important because the cost of some benefits are defined as a technical function of cash earnings, and it is well established that part-time jobs tend to have lower cash wages than do full-time jobs.[4]

In addition, the mean comparisons may be confounded by differences in the types of establishments that employ full- and part-time workers. To mitigate these problems, the difference in annual costs and cost per hour worked between full- and part-time jobs is estimated in a regression framework.[5] The regressions include as controls the natural logarithm of the job's wage rate and zero-one indicator variables for whether the job is unionized, the occupation of the job, and an indicator variable for each job's establishment.[6]

With the exception of health care benefits and legally required benefits, the regression analysis yeilds qualitatively similar results to the mean tabulations shown in table 1—they suggest that most benefits are more than perfectly prorated by employee hours and hence are not quasi-fixed costs. For health insurance, the regression estimates suggest that the cost per hour worked is 18 percent higher for part-time jobs than for full-time jobs, while the annual cost is 31 percent *lower* for part-time jobs. These results suggest that health insurance costs are only partially prorated. For legally required benefits, the cost per hour worked is slightly higher for part-time jobs, at about 2 percent.

Prorating health insurance costs

The extent to which employers prorate health insurance costs by employee hours and the means by which prorating is achieved are explored next. The focus is on health insurance for three reasons. First, health insurance is arguably the most important benefit, as indicated by its share of total compensation and the importance of employer-provided health insurance in the U.S. health care system. Second, both prior expectations and the results above suggest that health insurance is unique among employee benefits in terms of the relationship between employer costs and employee hours. Third, this relationship has potentially important policy implications. In recent years, for example, numerous legislative and other policy proposals would have mandated that employers provide health insurance to certain employees. The cost and impact of such mandates will depend on the extent to which they allow for prorating, as well as the ability of employers to achieve prorating.

To investigate how employers prorate the cost of health insurance benefits, a sample of 253 establishments in which there is at least one part-time job and one full-time job—both

Table 2.	Differences in annual health insurance costs between full- and part-time jobs, March 1994		
Characteristic	Part time	Full time	Difference
Number of jobs	424	787	—
Number of establishments ...	253	253	—
Mean	$2,052	$2,715	$664
Standard deviation	1,275	1,395	1,279
25th percentile	1,115	1,834	0
Median	1,834	2,393	0
75th percentile	2,715	3,408	1,209

SOURCE: Microdata from the March 1994 Employment Cost Index. Sample restricted to establishments reporting data for both full- and part-time jobs.

with health insurance—was examined. Such firms contribute 424 part-time and 787 full-time jobs to the ECI sample. Table 2 presents three cost measures for which the unit of observation is the establishment: (a) the average cost of health benefits provided to part-time jobs; (b) the average cost of health benefits provided to full-time jobs; and (c) the within-establishment difference between (a) and (b). In addition to the mean of each variable, we also report the 25th, 50th, and 75th percentiles.

The difference in the mean annual costs for health insurance plans between full- and part-time jobs is about 24 percent, which, as expected, is quite close to the differential implied by the regression results discussed earlier. The difference in median costs is of roughly the same magnitude, at 23 percent. Again, this suggests that employers who offer health insurance to part-time workers structure employee cost sharing, benefits, or other plan provisions in such a way as to partially prorate the cost by employee hours.

But a closer examination of the distribution of cost differentials within the same establishment reveals a more complex story. Both the 25th percentile and the median of intrafirm difference are zero. In contrast, the 75th percentile difference is quite large at $1,209. In other words, for a substantial proportion of the establishments, the cost of health insurance does represent a purely quasi-fixed cost. The difference in mean costs is driven by large cost differentials within a minority of establishments.

Comparing health insurance plans

In this section, several possible explanations for the differences in annual costs for providing benefits to full- and part-time workers are examined. First, they may arise indirectly from the fact that part-time employees are less likely to participate in available benefit plans—either because they are less likely to meet tenure-related eligibility requirements, or because they are more likely to decline coverage.[7] Also, prorating may result from specific employer policies—for example,

employers may require higher premium contributions from part-time employees. Finally, in the extreme, employers may offer their part-time employees different plans than those offered to their full-time employees; such plans may be less costly to employers and provide fewer overall benefits to employees.

The first explanation explored is whether the lower average cost for part-time jobs arises from lower participation rates among part-time workers. Tabulations from the full sample of combined EBS data from the 1993 and 1994 surveys reveal significant differences in health plan participation rates between full- and part-time employees among jobs in which at least one employee participates in a health plan. When only medical plans are considered, the average participation rate for part-time jobs is 76 percent, compared with 92 percent for full-time jobs. When dental and vision plans also are considered, the full- and part-time average participation rates are about 94 percent and 79 percent, respectively.[8]

Thus, the average participation rate among part-time jobs is 84 percent of the average participation rate among full-time jobs. If full- and part-time plans otherwise were the same, the average annual cost for health insurance would be 16 percent lower in part-time jobs than in full-time jobs. The results in table 1 suggest that the average annual cost for health insurance in part-time jobs is 40 percent lower than in full-time jobs. Therefore, participation rates appear to provide only a partial explanation for the lower average cost for part-time jobs.

As noted above, the difference in the average annual cost for health insurance between full- and part-time jobs is smaller when jobs from the same establishment are compared, either using the regression framework or as reported in table 2. However, when the same regression framework is used to compare participation rates among jobs from the same establishment, the resulting average participation rate in part-time jobs is about 11 percentage points lower than in full-time jobs. Thus, lower participation rates in part-time jobs again appear to provide only part of the explanation.

The EBS data do not provide information on the exact reason for this difference in participation. Figures presented below indicate that it is at least partly due to the tendency of some employers to impose longer length-of-service requirements on part-time workers. The result is that, among workers with low job tenure, part-time workers will have lower rates of benefit eligibility. Higher rates of job turnover among part-time workers will magnify the effect of differences in length-of-service requirements. In addition, even when they are eligible, part-timers may be less likely to participate in certain benefits plans, such as health insurance, often obtaining such benefits through the plans of their spouses or other family members.[9]

Next, the extent to which employers vary the terms and conditions of health insurance coverage between full- and part-time employees is explored, and whether these differences effectively prorate the cost of health insurance by employee hours. For each establishment in its sample, the EBS provides data on plan provisions and employee participation for all plans in which at least one worker participates. If any plan provisions—such as covered benefits, eligibility periods, or contribution requirements—differ across sampled jobs, workers in different jobs are considered to be in separate plans.

The EBS also provides information on the rate at which workers in each sampled job participate in each available plan. Therefore, in establishments in which health insurance represents a purely quasi-fixed cost, workers in full- and part-time jobs will be observed with similar participation rates in a common set of plans. Such establishments are defined as *integrated*. In contrast, where employers have modified plan provisions in order to reduce the hourly cost of health benefits provided to part-time workers, full-time workers participate in one set of plans, while their part-time counterparts participate in a distinctly different set of plans. These establishments are defined as *segregated*.[10] Differences in plan provisions within segregated establishments provide some insight into how employer policies affect the cost of health benefits provided to full- and part-time employees.

Table 3 shows average plan provisions by whether the establishments are classified as integrated or segregated. Plans with imputed provisions are excluded. Of the 264 establishments with at least one full-time job with a health insurance plan and one part-time job with a health insurance plan, 192 are classified as integrated and 72 are classified as segregated. Applying the EBS sample weights, the 72 segregated establishments represent more than one-fourth (28 percent) of the 264 establishments.

The estimates in table 3 suggest that there are three ways in which segregated establishments lower the cost of providing health benefits to part-time workers. The first is to require greater monthly premium contributions for part-time workers. In 73 percent of the plans offered by segregated establishments to full-time employees, the entire monthly premium for single coverage is paid by the establishment; by contrast, employers pay the entire premium in only 48 percent of the plans offered to part-time employees.

When limited to plans requiring workers to make some contribution, however, the differences between full- and part-time employees are small. For single coverage, the average contribution required of full-time employees is $40.19, compared with an average of $45.86 for part-time workers. For family coverage, the difference is even smaller and is not statistically significant.

A second way that plans offered to part-time workers differ from those offered to their full-time counterparts is that the former are more likely to have a restriction on preexisting con-

| Table 3. | Proportion of full- and part-time jobs covered by various medical plan provisions by type of establishment (integrated or segregated), 1993–94 |

[In percent, except where noted]

Characteristic	Integrated establishments		Segregated establishments	
	Part-time jobs	Full-time jobs	Part-time jobs	Full-time jobs
Fee arrangement:				
Fee-for-service	54.6	54.5	59.5	32.8
PPO	18.2	18.4	26.9	53.2
HMO	27.2	27.1	13.6	14.0
Other	0.1	0.1	0.0	0.0
Self-insured	42.9	45.4	31.0	17.2
Employee contribution for single coverage:				
None	46.1	44.5	48.1	72.8
Flat amount	31.0	26.1	44.7	16.6
Average. monthly contribution (in dollars)	$48.33	$48.58	$45.86	$40.19
Other	22.8	29.3	7.2	10.6
No information	0.1	0.1	0.0	0.0
Employee contribution for family coverage:				
None	8.9	8.9	41.5	44.6
Flat amount	31.4	30.9	28.2	25.0
Average monthly contribution (in dollars)	$156.00	$148.99	$185.96	$186.59
Other	59.2	59.8	30.3	30.4
No information	0.4	0.4	0.0	0.0
Preexisting restriction	63.9	64.5	68.0	43.7
Eligibility requirement:				
Yes	18.3	19.7	29.6	60.1
Number of months:				
1	19.4	19.3	36.7	25.3
2	4.1	4.1	2.5	16.4
3	50.1	51.6	16.3	55.9
4	4.5	4.6	0.0	1.9
5	0.4	5.3	0.0	0.0
6	14.2	9.5	41.2	0.6
7	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0
12	1.0	1.0	3.3	0.0
14	0.0	0.0	0.0	0.0
36	6.3	4.6	0.0	0.0
No	40.4	39.5	2.5	3.7
No information	41.2	40.8	67.9	36.2
Number of plans	480	1,007	226	429
Number of establishments	192	192	72	72

NOTE: Sample restricted to establishments reporting data for both full- and part-time jobs.

SOURCE: Microdata from 1993 and 1994 Employee Benefits Survey.

plans that have such a probationary period, 45 percent have periods of 6 months or longer. In contrast, in 98 percent of the plans in which full-time employees are required to complete a probationary period, that period is 3 months or less. An important caveat concerning these figures is that, for a large fraction of plans—particularly those offered to part-time employees—no information is available on the existence or length of a probationary period.

Nonetheless, when this information is available, the data suggest that the difference in probationary periods may partly explain the differences in plan participation. Moreover, participation rates in segregated versus integrated establishments provide supportive evidence. As noted above, the within-establishment regressions suggest that the average participation rate is about 11 percentage points lower in part-time jobs than in full-time jobs. When similar regressions are estimated separately for integrated and segregated establishments, the average rate is lower by about 19 percentage points for segregated establishments, compared with about 10 percentage points for integrated establishments.

THIS ARTICLE PRESENTS EVIDENCE on the cost to employers of providing benefits to full- and part-time workers. The evidence corroborates the well-documented difference in benefit coverage between these two groups of workers. Additionally, however, this analysis finds significant differences in the *value* of benefits received by full-

ditions. The explanation for this difference probably has more to do with insurer concerns about adverse selection—the situation in which individuals take insurance coverage because they anticipate large medical expenses—than the desire of employers to prorate costs. Nonetheless, the differential treatment of preexisting conditions may partially explain why the cost of health benefits is lower for part-time employees in some establishments.[11]

The third important way that the plans available to part-time employees differ from those offered to full-timers is the length-of-service eligibility requirement. Among part-time

and part-time workers.

Previous studies have suggested that the low rate of benefit coverage among part-time workers may be explained by the fact that nonwage compensation is a quasi-fixed cost, making it more costly, on a per-hour basis, to provide benefits to part-time workers. However, the results presented in this article challenge that argument, showing that most voluntary benefits—such as pensions and paid leave—are not quasi-fixed costs. The cost of employer-provided health insurance, on the other hand, does have an important quasi-fixed component.

Mean regressions suggest that health benefit costs often are partially prorated, although a closer examination reveals that in a substantial number of establishments in which part-time workers are eligible for health insurance, the costs associated with these benefits are not prorated by hours at all. The mean results appear to be driven by a minority of establishments in which there are large differences between the cost of health benefits provided to full- and part-time employees.

The data show that, when it does occur, prorating is accomplished by several means. Part of the cost differential arises from lower plan participation rates for part-time employees. This difference probably is due in part to employers setting different eligibility requirements for full- and part-time workers. Also, part-time workers are somewhat more likely to decline certain benefits (particularly health insurance), often obtaining them through their spouses or other family members. Finally, a relatively small proportion of employers require that part-time workers make greater premium contributions to their plans, some offer less generous coverage to part-time workers, and some employ both of these methods.

Footnotes

[1] See, for example, Ronald G. Ehrenberg and Robert S. Smith, *Modern Labor Economics* (New York, HarperCollins, 1994), pp. 132–136.

[2] Selected examples include Ronald G. Ehrenberg, *Fringe Benefits and Overtime Behavior* (Lexington, MA, Lexington Books, 1971); Mark Montgomery and James Cosgrove, "The Effect of Employee Benefits on the Demand for Part-Time Workers," *Industrial and Labor Relations Review*, October 1993, pp. 87–98; and David M. Cutler and Brigitte C. Madrian, "Labor Market Responses to Rising Health Insurance Costs: Evidence on Hours Worked," *RAND Journal of Economics*, Autumn 1998, pp. 509–30.

[3] For more information on the ECI, EBS, and other BLS compensation measures, see *BLS Handbook of Methods*, Bulletin 2490 (Bureau of Labor Statistics, April 1997), pp. 57–66

[4] See, for example, Michael K. Lettau, "Compensation in Part-Time Jobs versus Full-Time Jobs: What if the Job is the Same?" *Economics Letters*, September 1997, pp. 101–06.

[5] The actual regression estimates may be obtained from the authors upon request. E-mail: Lettau_M@BLS.GOV

[6] The regression equations are of the form

(1) $\quad \ln B_{ji} = a^A_j PT_i + b^A_j \ln W_i + g^A_j \mathcal{C} X_i + u_{ji}$
(2) $\quad \ln b_{ji} = a^H_j PT_i + b^H_j \ln W_i + g^H_j \mathcal{C} X_i + v_{ji}$,

where B_{ji} (b_{ji}) represents the annual (hourly) cost of providing benefit j to job i. The independent variable of primary interest is PT, an indicator variable that equals one for part-time jobs and zero for full-time jobs.

[7] The average cost among workers in the job for the ECI includes both nonparticipants and participants in the benefit plan.

[8] The sample generating these figures includes some observations for which plan participation is imputed. Regardless of how imputations are treated, however, the average participation rate for full-time workers is roughly 15 percentage points higher than that for part-time workers. Also note that the median participation rate equals one for both full- and part-time jobs. The lower average rate for part-time jobs is due entirely to a lower rates in the bottom third of the distribution.

[9] Data from the Current Population Survey suggest that part-time and low-wage workers are less likely than their full-time or high-wage counterparts to participate in health insurance plans offered by their employers. See Stephen H. Long and M. Susan Marquis, "Gaps in Employment-Based Health Insurance: Lack of Supply Or Lack of Demand?" *Health Benefits and The Workforce* (U.S. Department of Labor, 1992), pp. 37–42; and Henry S. Farber and Helen Levy, "Recent Trends in Employer-Sponsored Health Insurance Coverage: Are Bad Jobs Getting Worse?" NBER Working Paper No. 6709, 1998.

[10] The classification of integrated versus segregated establishments is based on a segregation summary statistic calculated by comparing participation rates among full- and part-time jobs for each health plan in the establishment. The segregation statistic ranges from zero to one. At the extremes, it equals one if full- and part-time workers never participate in the same plan, and it equals zero if full- and part-time workers participate in the same plans at the same rates. An arbitrary threshold of 0.5 is used to designate whether the establishment is integrated or segregated. Only participants in health plans are considered, so nonparticipants do not affect the classification.

[11] The Health Insurance Portability and Accountability Act of 1996 limits the use of preexisting conditions exclusions. Under the new law, coverage for preexisting conditions can be denied for no more than 12 months. New employees who were insured prior to joining a group plan can apply the period of their prior coverage to the exclusionary period.