

Part-time work and industry growth

From 1983 to 1993, faster growing U.S. industries tended to employ more part-time workers; because no such relationship was evident before 1980, it is doubtful that industry growth and part-time work are intrinsically related

Bruce C. Fallick

Headlines such as “Workers Feel the Tension of Trend to Part-Time Jobs” and “Many Workers Frustrated by Lack of Full-Time Jobs”¹ reflect a common concern that a large proportion of the jobs that have been created in the United States in recent years are part-time jobs. This concern may seem misplaced, because the proportion of the U.S. workforce that is working part time has not increased appreciably since the early 1980s. However, an important part of the story is the perception that much of the hiring done by fast-growing industries, which, to many, represent the future of the U.S. economy, is for part-time positions. There is some basis for this view. The following tabulation ranks nonagricultural industry divisions, from highest to lowest, according to the growth rates of their employment shares (that is, the industry’s growth rate minus the aggregate growth rate) between 1983 and 1993 and, again, by the proportion of their workforce that worked part time, on average, over the same period:²

	<i>Proportion part time</i>
Retail trade	40.0
Services	30.5
Construction	23.2
Finance, insurance, and real estate	17.0
Transportation, communications, and public utilities	14.0
Wholesale trade	13.6
Manufacturing	11.3
Mining	10.0

Apparently, industries with a greater proportion of part-time workers had a higher overall employment growth rate from 1983 to 1993.

If rapidly growing industries are the main venue for hiring, the faster growth rate of “part-time-intensive” industries does not bode well for people seeking full-time employment or for those who see their futures in those burgeoning, cutting-edge industries that seem to dominate the headlines. Moreover, previous research indicates that this penchant for part-timers largely explains why expanding industries are more likely to hire new entrants to the labor force, presumably at the expense of experienced or displaced workers, than are their slower growing counterparts.³

Accordingly, we would like to know how much stock to put in the apparent association between employment growth and the prevalence of part-time workers in an industry. Toward that end, this article asks three basic questions: (1) How robust is the correlation between alternative measures of growth and “part-time-ness”? (2) Should we ex-

	<i>Relative growth rate</i>
Services	1.2
Transportation, communications, and public utilities4
Retail trade4
Finance, insurance, and real estate4
Construction0
Wholesale trade	-1.3
Manufacturing	-1.9
Mining	-5.2

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pect the relationship to continue? and (3) Do rapidly growing industries provide opportunities for people seeking part-time employment, or are people who prefer full-time work constrained to take part-time jobs because rapidly growing industries are where the jobs are?

Measures

We define the relative growth rate of an industry as the rate of growth of its share of total employment, and its part-time intensity as the percentage of its workforce that works part time. In this definition, the concepts of industry employment and part-time work require some clarification. The data that follow are drawn from the regular part of the March Current Population Survey (CPS), so each observation is associated with the industry of the person's main job during the reference week.⁴ The proportion of the labor force working part time is defined as the ratio of the number of persons who worked between 1 and 34 hours (at all jobs combined) during the reference week to the number of persons who worked at least 1 hour during the reference week.⁵ This definition was chosen for historical comparability, but the results presented subsequently would be at least as strong if *usual weekly hours* were used to define part-time work.⁶ Note that, while one would like a measure of full-time and part-time *jobs*, until 1994 the CPS provided only a measure of full-time and part-time *workers*. Consequently, the

CPS data cannot be used to measure the number of people who work "full time" by working at more than one part-time job.

Given the preceding definitions, chart 1 shows the association between the rate of growth of industries, defined at the two-digit level, and the incidence of part-time workers in them over the 1983–93 period.⁷ More formally, the first two rows of table 1 present the correlation coefficients between relative employment growth rates and part-time intensity, for both the two-digit industries used in chart 1 and the industry divisions in the tabulation on page 22. The third column shows the unweighted (Pearson) correlation coefficients, the fourth column indicates the correlations, weighted by the average share of employment in the industry, and the fifth column gives the Spearman rank correlations. (Significance levels appear in parentheses.)

The positive association between employment growth and part-time intensity over the 1983–93 period is clear. However, questions arise as to whether the rate of growth of total industry employment and the percentage of an industry's workforce that is working part time are the correct measures to use. If we are concerned about the preponderance of part-time jobs being created—that is, if we believe that the opportunities available to jobseekers these days consist largely of part-time positions—then we may be more interested in the relationship between the flow of new jobs and the incidence of part-time employment. This *percentage of industry accessions who work part time*

Chart 1. Employment growth rate and part-time intensity, two-digit industries, 1983–93

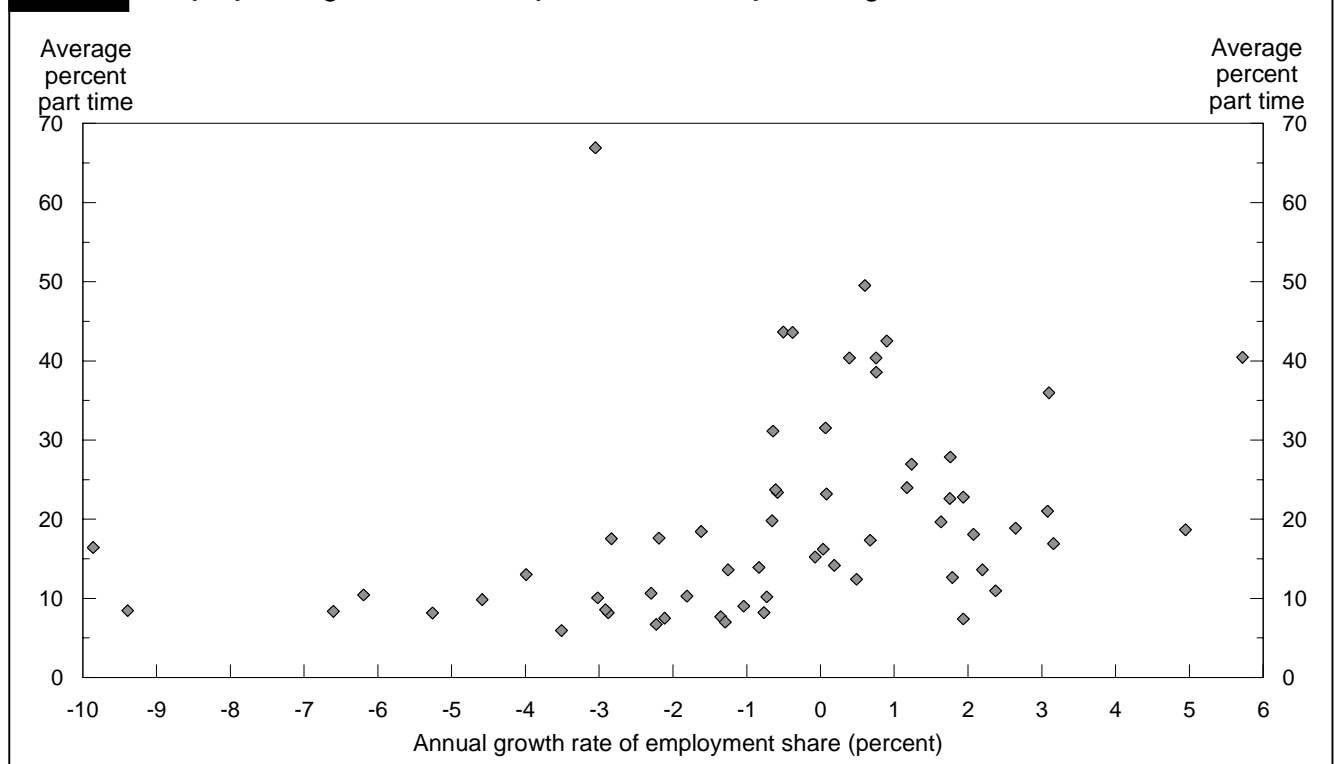


Table 1. Correlation coefficients between industry growth rates and the prevalence of part-time workers, 1983–93

Level of aggregation	N	Unweighted (Pearson)	Weighted	Spearman rank
Employment growth rate and part-time employment:				
Division	8	0.61 (0.11)	0.71 (0.05)	0.79 (0.02)
Two-digit sic	61	.32 (.01)	.36 (.00)	.50 (.00)
Accession rate and part-time accessions:				
Division	8	.39 (.35)	.51 (.20)	.52 (.18)
Two-digit sic	61	.72 (.00)	.42 (.00)	.69 (.00)
Growth rate of hours and part-time hours:				
Division	8	.61 (.11)	.70 (.05)	.88 (.00)
Two-digit sic	61	.31 (.01)	.37 (.00)	.47 (.00)
Earnings growth rate and part-time earnings:				
Division	8	.67 (.06)	.80 (.02)	.74 (.04)
Two-digit sic	61	.31 (.02)	.38 (.00)	.50 (.00)

NOTE: Level of significance is shown in parentheses.

tells us more about the prospects for jobseekers from outside of the industry. Similarly, if the heavy use of part-time workers is an intrinsic feature of industry *growth*, rather than a feature of the industry itself, then we may be more interested in the degree to which that growth is manifested in part-time labor.⁸

Let us classify an individual counted in the March CPS as an accession into an industry if the individual is employed in that industry according to the regular part of the survey and was not employed in that industry in the previous year, according to the March supplement, either because the person was not employed at all in the previous year or because he or she was employed in a different industry (on the main job) in the previous year.⁹ The second two rows of table 1 replicate the first two, but replace the fraction of an industry's employees that works part time with the fraction of accessions into the industry that works part time, and also replace the industry growth rates with industry accession rates, defined as the number of accessions into the industry in a year, divided by total employment in the industry in that year. The correlation between industry growth and part-time intensity is stronger, at the two-digit level of aggregation, when only accessions, rather than the total workforce, are considered.

For similar reasons, one may be interested in whether *entry-level* jobs in faster growing industries tend to be more heavily part time. That is, one may want to know whether people beginning their careers in one of the faster growing industries are faced with a greater chance of working part-time, compared with beginning in industries that exhibit slower job growth. Given the information that is avail-

able, a reasonable way to address this question is to examine the correlations by age group. As it happens, the correlations are quite similar across age groups. (Results are not shown, but may be obtained upon request.) Thus, the association between industry growth and part-time intensity is just as marked for older workers as for younger ones.

A second issue surrounding the measures used in table 1 and the tabulation on page 22 is that the calculation of both the growth in industry employment and an industry's part-time intensity treats part-time and full-time workers equally: each counts as one full observation. But the evident importance of part-time work as a fraction of full-time work suggests that total employment may not be the appropriate measure of industry size, as a given increase in the number of part-time workers represents a smaller increase in hours and, presumably, output than an identical increase in the number of full-time workers. In other words, might it be that part-time-intensive industries appear to grow faster simply because, by virtue of hiring more part-timers, they have to hire even more of them to increase hours by any given amount? The correlations in the fifth and sixth rows of table 1 weight each part-time (full-time) worker by the average hours per week worked by part-time (full-time) workers in that employee's industry-year cell. Thus, the growth rate of an industry is now seen as the growth rate of its hours worked, and its part-time intensity refers to the fraction of total hours that are worked by part-time workers in the industry.¹⁰ This change in measurement makes little difference to the estimates.

Moreover, because part-timers are generally paid at a lower hourly rate than full-timers, one may arguably infer that their productivity is lower, and therefore, that one hour of part-time labor should not be counted as equal to one hour of full-time labor. If the relative prices of various "grades" of labor have remained constant over the years and across industries (an admittedly strong assumption), then substituting compensation for employment or hours is one way to control for differences in productivity between part-time and full-time

Table 2. Correlations between employment growth and the prevalence of part-time workers in seven countries, various years from 1979 to 1994

Country	Years	N	Unweighted (Pearson)	Weighted	Spearman rank
Australia	1981–89	10	0.74 (0.01)	0.58 (0.08)	0.82 (0.01)
Canada	1987–94	12	.27 (.40)	.27 (.39)	.50 (.10)
Israel	1979–92	6	.40 (.43)	.36 (.49)	.43 (.40)
Netherlands	1983–91	8	.87 (.01)	.91 (.01)	.67 (.07)
Sweden	1981–92	25	.47 (.02)	.43 (.03)	.39 (.05)
Taiwan	1981–91	8	-.22 (.60)	-.22 (.60)	-.19 (.65)
United Kingdom	1979–86	28	.18 (.35)	.25 (.20)	.34 (.08)

NOTE: Level of significance is shown in parentheses.

labor. In this regard, given the limitations of the CPS data, weekly earnings, rather than total compensation, are used.¹¹ The results, shown in the last two rows of table 1, are similar to those in the fifth and sixth rows.¹²

Intrinsic or accidental?

The previous section demonstrates that the recent positive association between an industry's growth rate and the percentage of that industry's workforce who work part time stands up to alterations in the definitions and measurement of industry growth and part-time employment. What is behind the correlation? Is greater use of part-time work an intrinsic characteristic of fast growth? Or do the industries that happen to have grown relatively quickly in the 1980s and early 1990s tend, by their nature, to use more part-time work, whether or not they happen to be growing fast?

Recent rapid growth appears to have been associated with part-time work in countries other than the United States as well. Table 2 displays correlations between industry growth rates and the incidence of part-time work in data for several countries drawn from the Luxembourg Income Study.¹³ The countries, periods, and industry definitions used were determined by the availability of data.¹⁴ In all cases, agriculture and all levels of government were excluded from the analysis; in no case would their inclusion have weakened the results.

Although the results are by no means uniform, the comparison across countries indicates that there may be more to the matter than mere happenstance. In those countries that, arguably, are most like the United States (Australia, Canada, the Netherlands, Sweden, and the United Kingdom), the correlations are significantly positive in three of five cases, and the results for the other two are suggestive.

Fast growth alone can call for more use of part-time workers if, for example, it requires greater flexibility in adjusting one's workforce or involves many temporary tasks that part-timers are better suited to, or more willing to perform, than are full-timers.¹⁵ If so, then we might expect faster industry growth to have been associated with more part-time labor in past periods as well and would expect it to remain thus in the future. On the other hand, if it is only a matter of the particular industries that happen to have been growing quickly recently, then there is no obvious reason to think that this problem, if problem it be, will stay with us over the long run.

Some light may be shed on this question by examining the relationship between industry growth and part-time work in earlier periods. The earliest year in which the decennial census included data on the distribution of weekly hours worked, by industry, was 1940, so the decade of the 1940s is as far back as national household survey data allow us to go. Unfortunately, unlike more recent CPS's, the 1940 and 1950 censuses asked only for the number of hours

that a person worked the previous week, with no information requested on the number of hours usually worked. Using the number of hours worked the previous week to define part-time and full-time work likely overstates the incidence of part-time work because short weeks due, for example, to illness or temporary downturns in production are counted.

In order to facilitate comparisons with the 1940s, table 1 and the tabulation on page 22 used hours actually worked during the reference week. For the 1983–93 period, using usual hours instead of the previous week's hours would have made little difference (the results were a bit stronger using usual hours), and we can hope that using actual hours creates no problems for the 1940s either.¹⁶

The industry classification schemes differ between the two periods and are not compatible. In the analysis that follows, for the more recent period, the same two-digit coding as above is used. For the 1940 and 1950 censuses, industries were aggregated into a different "two-digit" scheme comprising 99 industries.

The following tabulation displays the correlations between industry growth rates and the fraction of employees that worked part time during the 1940–50 period, using first part-time intensities in 1940 and then part-time intensities in 1950:

	1940	1950
<i>N</i>	99	99
Unweighted (Pearson)	-0.20 (0.05)	-0.17 (0.10)
Weighted	-.17 (.10)	-.25 (.02)
Spearman rank	-.21 (.04)	-.20 (.05)

Notice that, in contrast to the correlations of the period from 1983 to 1993, those from the 1940–50 period are negative. Nor were the 1940s simply an odd time: the correlations become progressively more positive as the decade that is examined approaches the 1980s. (Results are not shown, but may be obtained upon request.) Thus, the tabulation presents no evidence to the effect that the greater use of part-time work is an intrinsic characteristic of relatively fast growth; if it were, the positive relationship of the 1983–93 period would have been seen in all decades. Remarkably, an observer in 1950 may have been tempted to conclude that the relationship was negative.

So, in recent years part-time-intensive industries tended to grow relatively quickly, while in the 1940s they tended to grow relatively slowly. Were these the same industries? Not at all: by the measures employed, different industries tended to use more part-time workers over the decades. This is illustrated in the following tabulation, which presents the rankings of the eight nonagricultural industry divisions by their growth rates and fraction of employees that worked part time in each period:

Descending order of growth rate

<p><i>1983-93 cps</i></p> <ol style="list-style-type: none"> 1. Services 2. Transportation, communications, and public utilities 3. Retail trade 4. Finance, insurance, and real estate 5. Construction 6. Wholesale trade 7. Manufacturing 8. Mining 	<p><i>1940 census-1950 census</i></p> <ol style="list-style-type: none"> 1. Construction 2. Wholesale trade 3. Manufacturing 4. Transportation, communications, and public utilities 5. Retail trade 6. Services 7. Finance, insurance, and real estate 8. Mining
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Descending order of percentage of employees working part time

1983-93 cps

1. Retail trade
2. Services
3. Construction
4. Finance, insurance, and real estate
5. Transportation, communications, and public utilities
6. Wholesale trade
7. Manufacturing
8. Mining

<p><i>1940 census</i></p> <ol style="list-style-type: none"> 1. Mining 2. Construction 3. Manufacturing 4. Services 5. Retail trade 6. Transportation, communications, and public utilities 7. Finance, insurance, and real estate 8. Wholesale trade 	<p><i>1950 census</i></p> <ol style="list-style-type: none"> 1. Mining 2. Construction 3. Services 4. Retail trade 5. Manufacturing 6. Finance, insurance, and real estate 7. Wholesale trade 8. Transportation, communications, and public utilities
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Mining is the most striking case: the slowest growing sector in both sets of data, it was the least part-time intensive in the 1983-93 period, yet the most part-time intensive in 1940 and 1950.¹⁷ Wholesale trade also did not fit into any pattern, while manufacturing became less part-time intensive and slower growing.

To push the investigation back another decade, one must turn to other sources of data on the fraction of an industry's employees that works part time. The National Income and Product Accounts report both total employment and a measure of full-time-equivalent employment going back to 1929.¹⁸ Using these data, we can define $z = 1 - (\text{full-time-equivalent employment}/\text{employment})$. If we let p denote the true fraction of part-time workers in an industry and a the ratio of part-time to full-time average hours in the industry, then $z = (1 - ap)$. So if a is fairly constant across industries, then z is a

reasonable proxy for the *relative* fraction of employees that works part time in an industry at any given time.

Table 3 displays the correlations between $1 - (\text{full-time-equivalent employment}/\text{employment})$ and the industry growth rate for various periods.¹⁹ The data from the National Income and Product Accounts are reported at a somewhat more aggregated level than the "two-digit" scheme used for the 1940 Census data. The greater aggregation results in 59 industry categories for the years between 1929 and 1947 and 60 categories for later years.

The Spearman rank correlations are significantly positive throughout the postwar period, but the ordinary correlations vary substantially, and a clearly positive association emerges only in the 1980s.²⁰ In contrast to the census data, the rank correlations in table 3 may encourage the suspicion that fast growth and intensive use of part-time labor do go together in general, at least in the U.S. postwar economy, but the evidence is not compelling.

Voluntary and involuntary part time

One would be concerned about the relative prevalence of part-time jobs in fast-growing industries only if many of the people who fill these jobs would rather work full time. In the economy as a whole, the proportion of the labor force that is working part time has not increased since about 1983 (following a period of rapid increase in the 1960s and 1970s). Nor has the proportion of those working part time who are doing so because they could not find full-time work increased since about the same time (again following a period of marked increase). But is this true for people taking jobs in the relatively fast-growing industries?

To answer this question, we classify all people who report that they usually work full time as full-time workers. Then we define a person as an involuntary part-time worker if the person usually works part time because he or she cannot find full-time work, and as a voluntary part-time worker if the person usually works part time for other reasons.²¹ Then, in place of the one question, we have the two questions, Do

Table 3. Correlations between the employment growth rate and the quantity $1 - (\text{full-time-equivalent employment}/\text{employment})$, various years from 1929 to 1991

Years	N	Unweighted (Pearson)	Weighted	Spearman rank
1929-38	59	-0.03 (0.84)	0.07 (0.60)	-0.01 (0.96)
1939-47	59	.20 (.13)	.43 (.01)	.17 (.20)
1948-58	60	.14 (.28)	.18 (.17)	.27 (.04)
1959-69	60	.06 (.64)	-.10 (.44)	.31 (.02)
1970-80	60	.01 (.95)	.11 (.40)	.34 (.01)
1981-91	60	.27 (.04)	.31 (.02)	.55 (.01)

NOTE: Level of significance is shown in parentheses.

relatively fast-growing industries employ and hire a greater proportion of involuntarily part-time workers? and, if so, Have these proportions changed over the period under study?

Chart 2 addresses these questions by showing the ratio of involuntarily part-time workers to all usually part-time workers in those two-digit nonagricultural industries in each quartile of industry growth rates. There is no indication, either in the chart or in the more formal correlations shown in the first two rows of table 4, that a higher proportion of faster growing industries' part-timers are involuntarily part-time workers or that the proportion of involuntarily part-timers increased in faster growing industries.

More of a case can be made that involuntarily part-time work may be related to relatively rapid employment growth at the entry level. The third and fourth rows of table 4 use the industries' accession rates instead of employment growth rates. The remaining rows use employment growth rates, but confine the sample to younger workers. The correlations indicate that industries with higher accession rates have tended to hire a greater proportion of involuntarily part-timers among those that they hire to work part time and that industries with higher growth rates in an age group likely to be associated with entry-level career-track jobs have tended to employ a greater proportion of involuntarily part-timers among the part-timers in that age group. However, these correlations have proven to be sufficiently sensitive to changes in the defi-

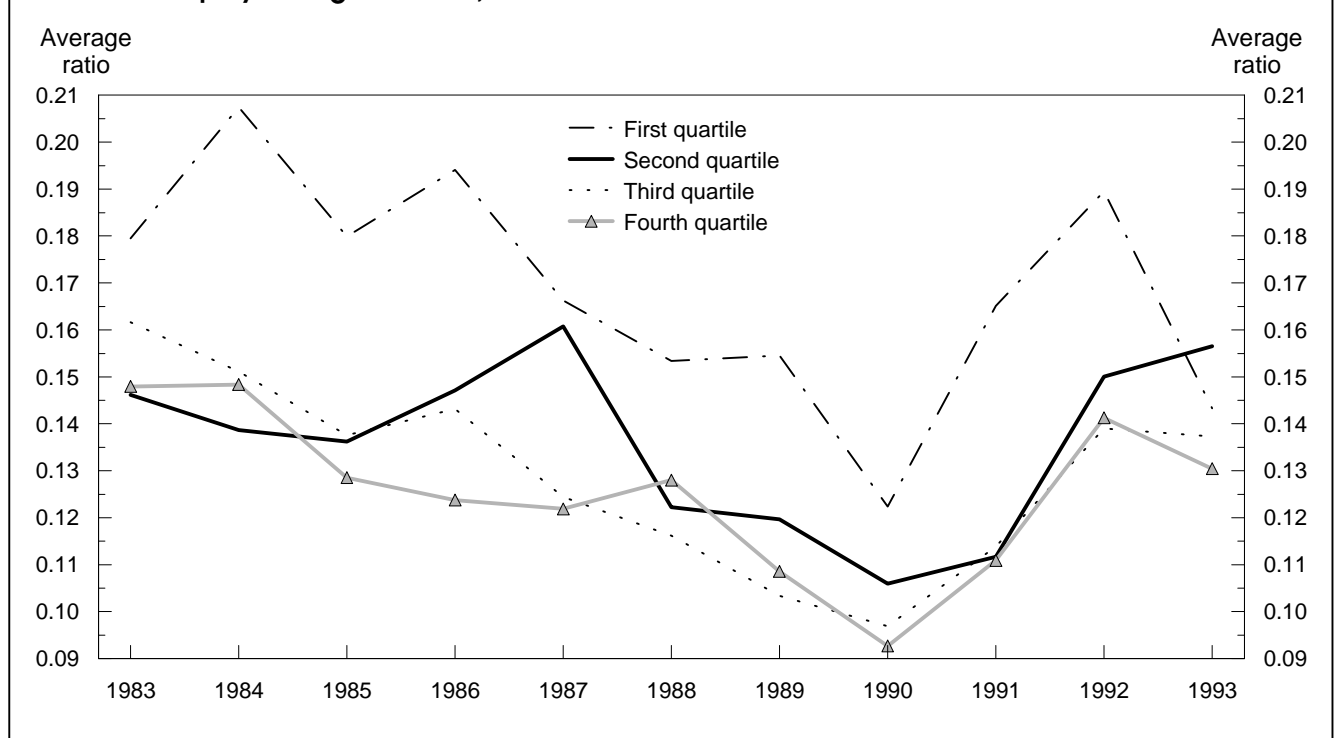
Table 4. Employment growth rates and ratio of involuntary part-time workers to total part-time workers, two-digit industry level, 1983-93

Rate	Age of sample	Variable	Unweighted (Pearson)	Weighted	Spearman rank
Employment growth rate	16 years and older	Ratio	0.01 (0.93)	0.00 (0.97)	0.02 (0.88)
Employment growth rate	16 years and older	Change in ratio	.09 (.47)	-.06 (.64)	-.04 (.77)
New-hire rate	16 years and older	Ratio	.22 (.08)	.22 (.09)	.25 (.05)
New-hire rate	16 years and older	Change in ratio	.00 (.98)	.04 (.76)	.15 (.29)
Employment growth rate	20-24 years	Ratio	.10 (.46)	.17 (.18)	.17 (.20)
Employment growth rate	20-24 years	Change in ratio	-.16 (.27)	-.26 (.07)	-.20 (.16)
Employment growth rate	25-34 years	Ratio	.26 (.04)	.27 (.04)	.28 (.03)
Employment growth rate	25-34 years	Change in ratio	-.05 (.74)	-.21 (.13)	-.08 (.55)

NOTE: Level of significance is shown in parentheses.

inition of the sample, that one hesitates to draw strong inferences from them.

Chart 2. Ratio of involuntary to total part-time workers, two-digit industries, by quartile of employment growth rate, 1983-93



POPULAR OBSERVERS LOOK TO VISIBLY FAST-GROWING INDUSTRIES—transportation, business services, recreation, health care, and the like—to gauge the opportunities available to people looking for jobs. Seeing how much those industries make use of part-time workers, many observers have become concerned that full-time jobs are increasingly harder to come by—despite the fact that the percentage of the labor force that works part time has not changed appreciably since the late 1970s. While available measures of the number of part-time workers may, of course, miss something that is going on with part-time jobs, the impression of an ever-more part-time economy is probably largely driven by the fact that, over the past couple of decades, employment growth has, indeed, been concentrated in industries in which part-time work is relatively common.

This article has documented the positive association between the growth rate of an industry and the proportion of its workforce that works part time for a period between the early 1980s and the early 1990s. The analysis has been shown to hold up to questions about the way in which industry growth and part-time intensity are measured and has investigated

two aspects of the nature of that relationship.

In the latter regard, first, one may conjecture that part-time workers are particularly well suited to the changing demands of rapidly growing industries. However, the positive association between industry growth and part-time intensity does not emerge clearly in the data until the 1980s. Moreover, both the relative growth rates and the relative part-time intensities of industries have changed markedly over the post-war period. Accordingly, one should be cautious in assuming that fast-growing industries will continue to use part-time labor intensively or that part-time-intensive industries will continue to grow quickly.

Second, there is no indication that the part-time workers at fast-growing industries are more likely to be working part time because they could not find full-time work. While some rather weak evidence suggests that new or younger workers are more constrained in this fashion, the percentage of involuntary part-timers among all part-timers in faster growing industries is not systematically different from that in slower growing industries, nor does there appear to be any trend in that direction. •

Footnotes

¹ Both headlines appeared in Peter Behr and Judith Evans, “Workers Feel the Tensions of Trend to Part-Time Jobs,” *The Washington Post*, Aug. 7, 1997, p. E1.

² See the next section for definitions. The data are drawn from March Current Population Surveys (CPS’s). The redesign of the CPS in 1994 makes 1993 a natural stopping point for the analysis in this article, but none of its conclusions appear to be contradicted by experience since 1993. The year 1983 was chosen as a beginning point because it is similar to 1993 in terms of the cyclical behavior of the unemployment rate and because the “modern” period in which the proportion of the workforce working part time was no longer increasing dramatically had clearly begun by then.

³ Bruce C. Fallick, “The Hiring of New Labor by Expanding Industries,” *Labour Economics*, March 1996, pp. 25–42.

⁴ Observations were weighted by CPS person-weights in calculating growth rates and part-time intensities. Only observations employed during the reference week were used in the calculations of growth rates.

⁵ Note that the CPS data include persons who worked less than 35 hours a week for noneconomic reasons, such as illness or being on holiday or vacation. Note also that sometime between the years 1983 and 1993 marking the period under study in this article, the BLS definitions of “part time” and “full time” changed, a change that is not reflected herein.

⁶ Over the 1983–93 period, 25 percent of observations were of employees who worked part time the previous week, compared with 19 percent who reported that they *usually* worked part time. However, the correlation between the two (at the two-digit industry level) is 0.99.

⁷ Three-digit industry codes from the CPS were mapped into two-digit 1987 SIC codes. Government, agriculture, forestry, and fisheries were excluded from the analysis.

⁸ On the other hand, accession rates may confuse industry *growth* with industry *turnover*.

⁹ There is significant room for misclassification of a person’s industry in the

CPS, as well as for misclassification of a worker as a new hire. (See Fallick, “The Hiring of New Labor.”)

¹⁰ Of course, this statement is not strictly true, because, as noted above, the weekly hours measure refers to the hours worked by a person *at all jobs*.

¹¹ The mean weekly earnings for the outgoing rotation group in each industry-year-part-time/full-time cell were applied to the full sample in that cell.

¹² In a related vein, only a small part of the correlation between part-time work and industry growth can be accounted for by the age, gender, race, and educational distribution of the workforce. That is to say, while it is true that faster growing industries tend to employ and to hire more young, old, and highly educated workers, this tendency does not explain their heavy use of part-time labor.

¹³ The Luxembourg Income Study is a cooperative research project that draws together microdata from household surveys from numerous countries. Information on the project can be found on the Internet at <http://lissy.ceps.lu/index.htm>.

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¹⁴ The table reports correlations for every country participating in the Luxembourg Income Study for which sufficient person-level data were available, with the exception of Germany. Because of that country’s recent reunification, consistent data for Germany do not span a sufficiently long period to provide comparability with the data of the other countries that contributed to the study.

¹⁵ See Jane Friesen, “The Dynamic Demand for Part-time and Full-time Labour,” *Economica*, August 1997, pp. 495–507. One consideration is that there may not be as much room to adjust the hours of full-time employees upward as downward, whereas part-time employees may be more equally flexible

in both directions. However, one must be careful not to confuse part-time with contingent work.

¹⁶ Note also that the results (for either period) are not sensitive to whether one uses the standard definition of part time as less than 35 hours per week or another conventional cutoff time, such as 40 hours per week.

¹⁷ By the 1960 census, mining had fallen to the middle of the pack; by the 1970 census, it was the least part-time intensive of the eight sectors.

¹⁸ Full-time-equivalent employment was calculated by dividing total hours from establishment survey data by estimates of full-time hours. Unfortunately, the source data are lost to posterity.

¹⁹ Computing growth rates by using full-time-equivalent employment instead of total employment would be analogous to weighting employment by

hours. Total employment growth rates and full-time-equivalent employment growth rates are highly similar (with correlations of greater than 0.99), so either growth measure would give the same results.

²⁰ Note that the correlations between the growth rate based upon total employment, which is used in this analysis, and the rate based upon full-time-equivalent employment are not as high for the decades 1929–38 and 1939–47 (approximately 0.94) as they are for the later years (all approximately 0.99). The results for 1939–47 would be weaker if the full-time-equivalent employment growth rates were used instead.

²¹ Note that this definition differs from the BLS classifications of involuntary part time (really, part time for economic reasons) and voluntary part time (really, part time for noneconomic reasons), both of which include many people who usually work full time, but worked fewer than 35 hours during the reference week.

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