



The rise in involuntary part-time employment in Israel[☆]

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Abstract

The number of involuntary part-time workers in Israel's labor force increased by over 700% during the years 1979–1999, while the number of full-time workers (and the size of the labor force) increased by less than 100% during this period. The paper aims at understanding this rise. Our analyses, using Labor Force Surveys for 1979, 1989 and 1999 as well as annual published labor force statistics, suggest that the increase in unemployment during the period is responsible for part of the rise in the proportion of involuntary part-time workers, but it cannot explain the entire rise. The growth in involuntary part-time employment is primarily due to workers' (especially women) shifting preferences from part-time to full-time work. The decrease in women's desire for part-time (versus full-time) work is observed among all groups of women 25–64 years old, and is unrelated to changes in the demographic composition of the labor force. The decline in women's propensity to take part-time jobs was exacerbated by employers offering a higher rate of part-time jobs in 1989 than in 1979. In the 1990s, when the total rate of part-time employment hardly changed, the decline in the propensity of women to work part-time voluntarily, "forced" employers to hire more involuntary part-time workers in 1999 than in 1989, in order to keep constant the total proportion of part-time workers.

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1. The rise in involuntary part-time employment in Israel

The rate of part-time employment in the Israeli labor force nearly doubled between 1955 and 1989, and since then remained at about the same rate. Popular beliefs attributed most of the rise in part-time work to the supply side, namely to preferences of women for part-time jobs. While this may have been the case in the early days of the rise in part-time employment, it is less so in the 1980s and 1990s, where 10–30% of part-time workers in

Western Europe, Australia, New Zealand and America are "involuntary" (OECD, 1995).

Israel, too, has its share of involuntary part-time workers. Since 1979 the Israeli Central Bureau of Statistics (CBS) collects data on the reasons for part-time work. During the 21-year period 1979–1999, the number of involuntary part-time workers grew by over 700% compared with a growth rate of less than a 100% in the size the labor force during that period. Surely, this is a very high growth rate.¹ The reasons for the rise in the rate of involuntary part-time employment are complex, and they are the focus of this paper. To be sure, part of the

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¹ For the years 1983–1993, comparable data for 20 countries are available (OECD, 1995). During that period, the Israeli growth rate in the use of involuntary part-timers was similar to those of Australia, New Zealand and France, the countries that experienced the highest growth rate, and where the proportions of such workers in 1993 were the highest.

rise may be due to rises in unemployment, since involuntary part-time is type of unemployment. Other processes – rising demand for part-time workers on the one hand, and declining supply of workers preferring such work pattern on the other hand – may also explain the rising trend in the rate of involuntary part-time employment.

In the following pages we focus on the possible reasons for the rise of involuntary part-time employment in Israel during the period 1979–1999, and test their empirical status. The paper is organized as follows. The first section presents the conceptual framework to be used for explaining the rise of involuntary part-time workers. It focuses on changes in employers' demand for part-timers on the one hand, and on changes in the supply of workers preferring part-time jobs over full-time jobs on the other hand. The conceptual framework leads to five possible explanations, not mutually exclusive, for the rise in the rate of part-time employment. The second section presents the data used in the analyses including the measurement of voluntary and involuntary part-time work. The third section presents the results—descriptive statistics, time series analysis, as well as shift-share analyses aimed at testing the possible explanations for the rise in the rate of involuntary part-time employment in Israel. Specifically, we will present evidence that most of the long-term growth in the involuntary part-time workforce is unrelated to rising demand, nor to rising unemployment. Rather, the lion's share of the growth is due to women changing their preferences from part-time to full-time jobs, thereby lowering the total supply of part-time workers. The final section discusses the results and their implications.

2. Possible explanations for the rise of involuntary part-time employment

2.1. The supply and demand for part-time workers

The assumption we hold throughout this paper is that employers rather than employees determine the total rate of part-time employment, and that this rate reflects employers' revealed preferences for the desired proportion of part-time jobs. Workers preferring part-time jobs, take them voluntarily, while the remaining part-time jobs are filled involuntarily, namely, by workers preferring full-time jobs who were unable to find such jobs. Consequently, the rate of involuntary part-time employment reflects a mismatch between demand (how many part-time jobs are offered) and supply (how many workers take them voluntarily). In the 1960s and 1970s the rising demand for part-time jobs was met by workers, mostly women, willing to take such jobs,

hence the rate of involuntary part-time employment was relatively low. In other words, in the past there was a good match between what workers wanted and what employers offered. In fact, there are indications that in the 1960s and 1970s rising supply of women seeking part-time jobs affected employers' willingness to offer more such jobs (Tilly, 1996). Not so in recent years, that the rate of involuntary part-time employment rises suggests that either employers have been offering more part-time jobs which have not been matched by workers' preferences for such jobs, or that workers' preferences for part-time jobs have been declining, while employers have not matched this preference shift with a corresponding shift in the mix of part-time versus full-time jobs they offer (Blossfeld, 1997; Rosenfeld & Birkelund, 1995). Surely, it is also possible that both processes occurred simultaneously.

Table 1 presents the expected effects of changes in the supply of part-time workers (i.e., how many workers take part-time jobs voluntarily) and demand (how many part-time positions are offered by employers) on the rates of total and involuntary part-time employment. For example, cell 1 describes the 1960s and 1970s which were characterized by an increasing desire by workers, especially women, for part-time jobs, a desire that was met by employers offering more such jobs. Evidently, an increase in the rate of involuntary part-time employment is most likely when workers shift their preferences to full-time employment, while at the same time employers require a higher proportion of part-time employment (cell 7). However, the rate of involuntary part-time employment may also increase in cells 4 and 8; in cell 4 the demand for part-time jobs increases while the supply for such jobs remains stable, while in cell 8 the reverse is true: demand is stable, but the supply declines. Finally, cells 1 and 9 are cases where it is possible for the rate of involuntary part-time employment to rise, if the increase in the demand for part-time jobs is greater than the increase in the supply for such jobs (cell 1), or if the declining supply is greater than the declining demand (cell 9).

Whether Israel of the 1980s and 1990s can best be characterized as being in cells 7, 4, or 8 (or perhaps by cells 1 and 9), is an empirical question to which we will later provide an answer. For now, it is important to briefly discuss the two general processes that could lead to changes in the demand and supply for part-time workers.

2.1.1. Demand

Rises in demand for part-time workers may stem from two general processes. First, it may be that for a variety

Table 1
Possible effects of changes in demand and supply for part-time work on the rates of total and involuntary part-time employment

	Demand		
	Increased	Same	Lower
Supply			
Increased	1. Total part-time: higher; Involuntary part-time: ?	2. Total part-time: same; Involuntary part-time: lower	3. Total part-time: lower; Involuntary part-time: lower
Same	4. Total part-time: higher; Involuntary part-time: higher	5. Total part-time: same; Involuntary part-time: same	6. Total part-time: lower; Involuntary part-time: lower
Lower	7. Total part-time: higher; Involuntary part-time: higher	8. Total part-time: same; Involuntary part-time: higher	9. Total part-time: lower; Involuntary part-time: ?

of reasons – technological, economic, or legal developments – employers across industries changed their organization of work, including the proportion of full-time versus part-time jobs they offer.² To the extent that this has indeed occurred, and employers shifted their preferences towards a higher rate of part-time employment, the total rate of part-time employment must rise. The second demand-driven process that may lead to a rise in part-time employment is a growth in the size of industries employing a disproportionate large number of part-time workers. Indeed, part-time intensive industries – public services, personal services, financial services and trade – expanded in many countries in the past several decades, and thus the total demand for part-time workers has increased (Blossfeld, 1997; Rosenfeld & Birkelund, 1995). Even if employers have not changed their preference for the rate of part-time workers in their firms (that is, rates of part-time employment within industries have remained constant), industrial shifts that increased the relative size of industries employing high proportion of part-time workers would necessarily lead to rising demand and hence to an increase in the total rate of part-time employment.

The two sources for rising demand for part-time workers are not mutually exclusive. In the US, for example, over one half of the growth in the part-time population during the 1970s (voluntary and involuntary) was due to the growth in services and trade, industries employing disproportionately high rate of part-timers (Larson & Ong, 1994; Tilly, 1996). The remaining growth stemmed from the growth in involuntary part-time workers within industries. In the 1980s, industrial shifts accounted for the entire growth in the part-time population in the US, as within industry rates remain unchanged (Tilly, 1991).

² See Tilly (1996) for a discussion on the possible reasons behind employers' rising preferences for part-time workers.

2.1.2. Supply

Decline in the supply of part-time workers may also stem from two, not mutually exclusive processes. First, workers within demographic groups may have changed their preferences, for a variety of reasons, from full-time to part-time work. Such a change may be because the attractiveness of part-time work (as measured, for example, by relative hourly wage) has declined over time; or it could also be driven by larger changes in attitudes toward work, especially among women in all demographic groups (McRae, 2003). The second process that could account for the lower supply of part-time workers is demographic shifts in the labor force. Specifically, it is possible that the sizes of the demographic groups whose propensity for voluntary part-time work – younger and older workers, mothers to small children, less educated workers (Blossfeld, 1997), new immigrants, and ethnic minorities – has decreased over the years and with it decreased the supply of part-time workers. To the extent that such demographic shifts had indeed occurred, the supply of voluntary part-time workers had to decline, even if preferences for part-time work within demographic groups have not appreciably changed.

2.1.3. Unemployment

The mismatch between what employers and employees want with respect to the rate of part-time employment is exacerbated at times of high unemployment, as employers cut jobs and hours, and workers that wish to work full-time are “forced” to take whatever job is offered, including part-time. Indeed, involuntary part-time employment is considered as a type of unemployment or underemployment (Alon, in press; Tilly, 1996). In many countries (but not in Israel), involuntary part-time employees are considered as “half-unemployed,” and are reported as such in various official unemployment measures. It is therefore possible that involuntary part-time employment is cyclical phenomenon, rising

at times of high unemployment, and declining in years where employment is booming.

The outstanding question is not whether or not the unemployment rate affects the rate of involuntary part-time employment (it certainly does); rather, the important question is whether changes in unemployment explain away the entire variation (or at least most of it) in the rate of involuntary part-time employment. Previous research in other countries found that it does not. While unemployment was found in virtually all studies to be strongly related to the rate of involuntary part-time employment, it was also found that it is not possible to explain away involuntary part-time employment as a cyclical phenomenon (Larson & Ong, 1994; OECD, 1995; Tilly, 1991, 1996). The effect of unemployment on involuntary part-time workers in Israel, however, is not known. Therefore, before we proceed with testing the other explanations, we need to test (and hopefully reject) the unemployment hypothesis, stating that involuntary part-time employment is merely a by-product of unemployment.

Taken together, the above discussion leads to five possible explanations, or hypotheses (not mutually exclusive) for the rise in the rate of involuntary part-time employment in Israel. Specifically, the rise could be due to: (1) rising demand for part-time workers, due to preference shifts within industries towards part-time work; (2) rising demand for part-time workers because of a disproportionate growth of part-time intensive industries (industrial shifts); (3) declining supply for part-time workers due to preference shifts within demographic groups towards full-time work; (4) declining supply for part-time workers because of disproportionate decline in the size of part-time intensive demographic groups (demographic shifts); and (5) rising unemployment rates.

While it is possible that all five processes contributed to the rise of involuntary part-time employment in Israel, the relative contribution of each factor is not known. Given that the rate of involuntary part-time employment in Israel has increased as sharply as it did in the 21-year period, we expect that both demand and supply factors were operating. In terms of Table 1, we expect that cell number 7 – suggesting rising demand and declining supply of part-time workers – best describes the Israeli experience since 1979. That the rate of involuntary part-time employment appreciably increased between 1989 and 1999, while during the same period the unemployment level remained unchanged (Israel, 2000), leads us to predict that in Israel, as in some other countries, unemployment is not the entire explanation for the long-term rise in the level of involuntary part-time employment.

Unfortunately, we are unable at this stage to hypothesize whether demand and supply changes occurred mostly due to changes within industries and demographic groups (and hence they involve preference shifts on the part of employers and/or employees), or mostly due to changes in the sizes of some industries and demographic groups (in which case no shifts in preference can be inferred). The empirical analysis will therefore focus on estimating the relative importance of the two demand side and two supply-side explanations, as well the effects of rising unemployment.

3. Data

For testing the empirical status of the hypotheses, we analyzed data drawn from labor force surveys, conducted by the Israeli CBS, for the years 1979, 1989, and 1999. The years 1989 and 1999 are particularly illuminating to compare, as they represent similar points in the business cycle with unemployment relatively high at 8.9% in both years. 1979 is the first year for which it is possible to classify part-time workers to voluntary and involuntary workers. Labor force surveys include information about hours of work, reason for part-time work, industry, occupation, and demographic characteristics of workers (but not wages).

3.1. Measurement of voluntary, involuntary and total part-time rates

Those working usually less than 35 h per week, are classified by the CBS as part-time workers and are asked for the reasons for this work pattern. The possible answers are: (1) Sought additional or full-time work but did not find; (2) the work is considered full-time job; (3) illness or infirmity; (4) retired; (5) homemaker; (6) studies; (7) not interested in full-time job; (8) other and not known. In this study we follow the conservative definition of involuntary part-time workers. Only those who sought additional or full-time work but did not find were classified as involuntary part-time workers. In the US there is convincing evidence that “involuntary” part-time workers, defined as such, are indeed involuntary (Stratton, 1996).

Those stating that the job is considered full-time work include mostly professional and semi-professional government workers (nurses, teachers, etc.). Since their full-time job requires less than 35 h of work, they should not be classified as voluntary nor involuntary part-time workers. Indeed, there is some doubt if they should at all be considered as part-time workers (Stier, 1998). We therefore exclude such workers from all analyses,

as well as self-employed, for which reasons for part-time employment is not available. Thus, in the following pages, we define voluntary part-time workers as all wage and salary employees working usually part-time and stating reasons 3–7 above; involuntary part-time workers are those working usually part-time and stating reason 1 above; total part-time employment in a given year is composed of voluntary and involuntary part-time workers (as defined above). Rates of total, voluntary and involuntary part-time employment are the percentages of these three respective groups out all employed workers 15 years and over, excluding the self-employed and part-time workers whose jobs are considered full-time.³

Employers' demand for part-time workers is thus measured by the total rate of part-time employment (in the entire wage and salary workforce or in particular industries), and the supply is measured by the rate of voluntary part-time employment (in the entire wage and salary workforce, in particular industries, or within demographic groups). Both supply and demand reflect workers and employers' preferences. In the case of workers, preferences are inferred not only from behavior, but also from an answer to a specific question regarding reasons for part-time work.

To evaluate the empirical status of the unemployment hypothesis, we estimate time series models. To this end we used information available in the Statistical Abstract of Israel (Israel, various years) for the years 1979–2000.⁴ Specifically, this source was used for obtaining annual rates of voluntary and involuntary part-time employment as well as annual unemployment rates. In addition, the time series analyses include a measure for the relative attractiveness of part-time employment in each year. To this end we analyzed all annual income survey, and for

³ Evidently, the definition adopted here (following virtually all previous research) for involuntary part-time workers is conservative, and does not include all those preferring to work more hours. For example, those working part-time "last week" but not usually, are not asked for reasons for part-time work. An unknown proportion of them are involuntary part-time workers. In addition, it is reasonable to assume that some women stating the reason for part-time work as "homemaker" would prefer to work full-time if they could find child care in reasonable prices and quality (Presser & Baldwin, 1980). It is not clear to what extent the decision of such women to work part-time is socially constructed or rather reflects their wish to spend more time as housewives. This socially constructed desire to work part-time is a well-known phenomenon in all countries, and is not unique to Israel. That our definition is conservative means that our estimates for rates of growth in involuntary part-time employment may be an underestimation of the trend.

⁴ We were able to extend the time series analysis from 1999 to 2000, thereby gaining an additional degree of freedom. The results are appreciably the same if the regressions include only the 1979–1999 period.

each year computed the wage ratio between the mean wage rate of part-time and full-time workers.⁵

To determine which cell in Table 1 best represents the dynamics of the Israeli labor market, we compare changes in the rates of total, voluntary, and involuntary part-time employment between the three time points (1979, 1989, and 1999). To test whether the observed changes in demand and supply stemmed from industrial and demographic shifts, versus preference shifts within industries and demographic groups, we conduct shift-share analyses. In analyzing demand, we compute expected rates of total part-time employment if within-industry rates of total part-time employment remain stable and the only change between years (1979, 1989, and 1999) would be in the relative sizes of industries (one-digit). Similarly, the shift-share analysis of the supply side presents expected rates of voluntary part-time employment if within-group rates of voluntary part-time employment remain unchanged over time, and the only change would be in the relative sizes of various demographic groups, defined by their age, gender, ethnicity, and educational level. If observed rates decline over time, and they are smaller than the expected rates, then preference shifts within demographic groups toward full-time employment, rather than shifts in the size of demographic groups, are responsible for the decline in the rate of voluntary part-time employment (and hence for the rise in the rate of involuntary part-time employment).

4. Results

4.1. Descriptive statistics

Before we turn to analyses aimed at testing the hypotheses, Table 2 presents a brief description of the three groups of workers: full-time, voluntary part-time, and involuntary part-time. There are no major differences in labor supply between the two groups of part-time workers. Both groups work 20–23 h per week, compared to 44–45 h among full-time workers. However, among voluntary part-time and full-time workers alike, the trend since 1979 is significantly towards fewer hours, whereas among involuntary part-time workers the trend is not statistically significant. Likewise, the age structure of involuntary part-time workers is more similar to that of full-time workers than to voluntary part-time work-

⁵ Unfortunately, income surveys do not distinguish between voluntary and involuntary part-time workers, nor between part-time as defined in our study and those whose jobs are considered as full time. Consequently, the measure from relative wages is not ideal.

Table 2
Descriptive statistics: Involuntary part-time, voluntary part-time and full-time wage and salary workers, 1979, 1989, and 1999

Variable	Involuntary part-time			Voluntary part-time			Full-time		
	1979	1989	1999	1979	1989	1999	1979	1989	1999
Mean weekly hours (S.D.)	20.78 (6.97)	21.33 (7.49)	21.42 (7.33)	22.54 (6.97)	21.74 (7.29)	20.61 (7.85)	44.77 (6.06)	43.94 (6.83)	43.97 (7.62)
Mean schooling years (S.D.)	11.99 (3.47)	12.31 (3.02)	12.78 (3.26)	11.62 (3.62)	12.43 (3.55)	13.25 (3.23)	11.27 (3.69)	12.19 (3.44)	13.29 (3.25)
Percentage with at least B.A.	15.5	13.9	23.5	14.1	19.9	28.1	14.1	17.6	29.4
Age									
Percentage of 15–24	40.9	28.0	19.2	16.7	15.8	22.8	18.5	14.1	11.8
Percentage of 25–54	49.4	64.9	70.2	61.4	63.4	60.3	68.6	74.9	79.4
Percentage of 55–64	7.6	6.7	9.4	10.3	10.8	10.8	11.0	9.8	7.9
Percentage of 65+	2.1	0.4	1.2	11.5	9.9	6.1	1.9	1.2	0.9
Ethnicity									
Percentage of Arabs	8.2	2.7	13.5	2.2	4.3	5.1	11.0	14.1	14.2
Percentage of Immig. ^a	11.3	4.9	26.6	7.5	3.3	13.7	10.0	3.4	16.6
Percentage of Mizrahi ^b	44.1	49.8	31.9	31.2	35.3	34.3	36.9	37.9	32.0
Percentage of Ashknazi ^c	36.3	42.5	28.0	59.1	57.2	47.0	42.2	44.7	37.1
Percentage of women	69.2	78.5	77.8	73.0	73.1	73.5	31.5	36.7	43.0
Percentage of in SPCS occupation ^d	63.1	75.6	73.8	68.9	70.7	69.9	44.6	47.0	46.3
Percentage of in services and sales ^e	75.1	78.6	76.7	68.3	72.5	72.9	45.0	48.5	48.5
Number of cases	195	910	1676	4992	5007	5339	27231	26594	31958

^a Workers who immigrated to Israel in the preceding 10 years.

^b Workers of Asian–African origin.

^c Workers of European–American or Israeli origins.

^d Workers in semi-professional, clerical and service occupations.

^e Workers in sales, public services and personal service branches.

Table 3
Correlation coefficients between annual change variables: Israel, 1979–2000

	Unemployment	Involuntary	Voluntary	Wage Ratio
All workers				
Unemployment	–	0.661	–0.175	–0.249
Involuntary		–	0.141	–0.421
Voluntary			–	0.177
Wage ratio				–
Women (above diagonal) and Men (below diagonal)				
Unemployment	–	0.586	–0.208	–0.070
Involuntary	0.555	–	0.098	–0.120
Voluntary	–0.102	0.082	–	0.051
Wage ration	–0.233	–0.422	–0.041	–

ers. The pattern of change in the age structure is also more similar among full-time and involuntary workers, and differs from the pattern among voluntary part-time workers. The share of young workers (below 25) among the latter group increased by nearly 50% in the past two decades, whereas their share declined sharply among the two other groups (as well as among the unemployed, data not shown). The similarity between unemployed, full-time workers, and involuntary part-time workers is not surprising, as the latter group is composed of partly unemployed persons who would like to be full-time workers.

The ethnic origins of involuntary part-time workers suggest that they are disproportionately drawn from the weaker groups in the Israeli society. In 1979 and 1989 the shares of Mizrahim (Jews of Asian or African origin) and new immigrants among involuntary part-time workers were significantly higher than their respective shares among voluntary part-time workers. By 1999, when the share of new immigrants in Israel's full-time labor force reached 16%,⁶ their share among involuntary part-time employment reached 27%, while the share of Mizrahim was not significantly higher than their share in the wage and salary workforce. Moreover, the crowding of women immigrants in involuntary part-time work is even more intense: while their share among the full-time labor force in 1999 was 8.5%, their share among involuntary part-time workers at that year was 25.3% (data not shown).

With respect to occupational and industrial structures, as well as with respect to gender composition, involuntary part-time workers are more like voluntary part-time workers than full-time workers. Specifically, there is clear pattern of gender, occupational and industrial crowding of the part-time workforce. This pattern,

however, is not new; it has been there in 1979, and has hardly changed since. Thus, unlike most individual characteristics, the occupational and industry composition of involuntary part-time workers is more similar to other part-time workers than to full-time workers. This is understandable, as employers and not employees decide in what industries and occupations part-time jobs will be available.

4.2. Unemployment

Before testing the empirical status of the various demand and supply explanations, we need to rule out the possibility that unemployment is the sole factor responsible for the long-term rise in the rate of involuntary part-time employment. Testing the effect of unemployment on the rate of involuntary part-time employment requires time series analysis. However, the correlations between the proportion of involuntary part-time workers and other variables, with the exception of relative wage, are very high, around 0.85. The correlations between the independent variables themselves are also high, and make it difficult to conduct multivariate analysis of time series of only 22 years. Moreover, all variables are strongly correlated with "year", suggesting a strong time trend that needs to be controlled (see Appendix A for correlations).

To surmount some of these difficulties, we estimated change regressions where the dependent variable is the annual change in the rate of involuntary part-time employment, and the independent variables are the annual changes in unemployment rate, voluntary part-time rate, and relative wages (Levenson, 2000). The correlations between the change variables are smaller (Table 3).

While the usefulness of the regressions for rigorous hypothesis testing is obviously limited, they shed light on the relations between the variables, and espe-

⁶ As a result of the mass migration from the former Soviet union that brought to Israel nearly 1.0 million immigrants during 1989–1999.

Table 4
Regressions of the annual change in the rate of involuntary part-time, Israel 1979–2000

	All		Women		Men	
	1	2	3	4	5	6
Unemployment rate	0.216 (4.1)	0.194 (3.8)	0.300 (3.3)	0.297 (3.2)	0.097 (2.8)	0.085 (2.5)
Voluntary part-time rate	0.165 (1.5)	0.192 (1.9)	0.140 (1.2)	0.142 (1.2)	0.075 (.7)	0.065 (0.6)
Wage ratio (part-time/full-time)		−0.039 (−1.9)		−0.012 (−0.4)		−0.013 (−1.5)
C	0.001 (1.6)	0.001 (2.0)	0.002 (1.7)	0.002 (1.7)	0.001 (.8)	0.001 (0.9)
D.W.	1.68	1.60	1.90	1.98	2.30	2.27
Adjusted R^2	0.447	0.522	0.323	0.290	0.248	0.303

t-values in parentheses.

460 cially on the effect of unemployment on involuntary
461 part-time employment. Indeed, in all models – among
462 men, women, and all workers – the coefficient for the
463 unemployment rate is positive and statistically signif-
464 icant. While the size of the unemployment coefficient
465 depends on the specification, it is robust, and is always
466 significantly greater among women than among men
467 (Table 4).⁷

468 The effect of the two other variables is less clear.
469 Changes in relative wages affect changes in the rate of
470 involuntary part-time employment in the expected direc-
471 tion, but the coefficient is statistically significant only
472 among men. The effect of annual change in the rate of
473 voluntary part-time employment is in the expected direc-
474 tion among all workers, but not in columns 3–6 where
475 the models are estimated separately for men and women.

476 Consequently, all we can conclude from the regres-
477 sions is that an annual change of 1% in the unemploy-
478 ment rate raises the annual average rate of involuntary
479 part-time workers by about one-fifth of a percent among
480 all workers, by about one-third of a percent among
481 women, and by less than one-tenth of percent among
482 men. Thus, while the rise in unemployment no doubt
483 contributes to the rise of involuntary part-time workers,
484 especially among women, it is far from explaining the
485 entire rise. We turn now to evaluate the empirical status
486 of the supply and demand explanations.

487 4.3. The effects of supply and demand

488 Fig. 1 presents the rates of voluntary, involuntary, and
489 total part-time employment in the three points in time,

⁷ We have also estimated OLS regressions where the dependent variables is the yearly rate of involuntary part-time work, and the regressors include annual rates of the dependent variables (Appendix B). In addition, we estimated regressions with various lag structure, a time trend, and corrections for auto correlations (data not shown). The results of these regressions are similar to those presented in Table 4 and Appendix B.

490 for all workers, and by gender. During the entire period
491 total part-time employment increased by 2.0 percent-
492 age points; the rate of voluntary part-time employment
493 decreased by 1.7 points, and the rate of involuntary
494 part-time employment increased by 3.7 points. Thus,
495 as expected, the rising involuntary part-time rate from
496 0.6% of wage and salaried workers in 1979 to 4.3% in
497 1999 has been the result of rising demand for part-time
498 jobs, and declining supply of workers willing to take
499 such jobs (cell number 7 in Table 1). The entire rise in
500 demand, however, has been in the first decade, while the
501 entire decline in supply has been in the second decade.
502 Specifically, between 1979 and 1989 total rate of part-
503 time employment increased by 2.2 percentage points,
504 while the changes between 1989 and 1999 were minor
505 (a decline of 0.2 point). By contrast, the supply of part-
506 time workers (measured by the voluntary part-time rate)
507 has remained constant during the first decade (15.4%),
508 and decreased in the second period to 13.7% of wage
509 and salary workers. Consequently, the rate of involuntary
510 part-time employment has increased in both periods. In
511 the first period it increased due to rising demand which
512 has not been matched by rising supply (cell number 4),
513 and in the second period it increased due to declining
514 supply which has not been matched by declining demand

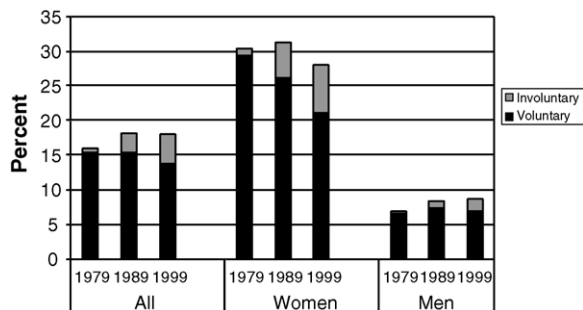


Fig. 1. Voluntary, involuntary, and total part-time employment as a percentage of all wage and salary workers by gender, 1979, 1989, and 1999.

(cell number 8). Recall that in 1989 and 1999 the unemployment rate has been at the same level (8.9%), while the rate of involuntary part-time employment went up from 2.8% in 1989 to 4.3% of the labor force in 1999. This is another indication that the long-term growth in the rate of involuntary part-time employment is independent of unemployment.

The results regarding supply of part-time workers also differ by gender. Among women, the decline in supply is evident in both periods, while among men the decline is small and limited to the second period. The sharp decline (8.3 percentage points over the entire period) in the supply of women willing to work part-time was filled by an increasing supply of men who did it voluntarily, and by men and especially women who preferred full-time jobs but were “forced” to take part-time jobs involuntarily. In sum, most of the decline in supply can be attributed to women. The outstanding questions are whether the demand and supply changes were driven by preference shifts within industries and demographic groups, or by shifts in the sizes of industries and demographic groups.

4.4. Shift-share analyses

4.4.1. Demand

Table 5 presents the trends of voluntary and involuntary part-time employment by industry, for both men and women in 1979, 1989, and 1999. The bottom rows of each panel of Table 5 present the expected proportion of total part-time workers if within-industry rates would have remained unchanged, and the only change would be in the relative sizes of industries. Thus, in 1979 16% of the salaried workforce was working part-time, and if within-industry rates had remained unchanged, this proportion would have increased to 16.8%. That it actually increased to 18.2% suggests that only about one-third of the growth in the total part-time employment between 1979 and 1989 (0.8/2.2 points) is due to changes in the size of industries. Nearly two thirds of the rise is due to an increase in the proportion of part-time workers *within* industries. In the second period, between 1989 and 1999, the proportion in total part-time employment decreased slightly by 0.2 points. However, had the within-industry rates remained the same as they were in 1989, and the only changes between 1989 and 1999 were in the sizes of the different economic branches, the proportion would have remained constant.

In sum, industrial shifts explain only about one third of the growth in the part-time workforce during the 1980s, and none during the 1990s. Consequently, 2/3 of the rise in the rate of part-time workers, especially in the 1980s, is due to rises within some industries, as employ-

ers changed their preferences towards a higher rate of part-time jobs. Specifically, two industries that employ over 40% of the workforce (over 50% among women) – public services and personal services – are the only industries where the rate of total part-time employment rose between 1979 and 1999. Here there are gender differences. Among women the (modest) rise in the rate of total part-time employment is observed only in public services, whereas among men the rate of part-time workers appreciably increased in several industries.

4.4.2. Supply

As in the demand changes, the decline in supply may stem from demographic shifts or from preference shifts within demographic groups. The demographic shift hypothesis maintains that the sizes of the demographic groups whose propensity for part-time work – younger and older workers, mothers to small children, new immigrants, ethnic minorities, and less educated workers – has decreased over the years and with it decreased the supply of part-time workers. Table 6 presents evidence that this hypothesis can be safely rejected. If within-group rates of part-time employment were held at their 1979 levels, and the only changes were in the relative sizes of the age-sex groups (top panel), ethnicity-migration groups (middle panel) or gender-education groups (bottom panel), the rate of voluntary part-time employment should have increased from 15.4% in 1979 to 17.1, 16.5, and 17.2% in 1999, respectively, rather than declined to 13.7%, as it actually did. Evidently, shifts in preferences and not in the sizes of demographic groups are responsible for the declining supply of part-time workers. But there are major gender differences with respect to the preference shift.

Among women the share of young workers in the labor force declined slightly between 1979 and 1999, but the share of women aged 25 to 44 – the group supplying most part-time workers – increased significantly during this period. The share of mothers to school age children in the labor force increased from 15% in 1979 to 18% in 1999. The share of women in the same ages with no children also increased from 5 to 8% of the labor force. However, among all groups of women 25–64 years old, we observe a decline in the proportion of voluntary part-time workers. The decline is steepest among mothers, 25–44 years old, whose rate of voluntary part-time employment dropped from 38% in 1979 to 20% in 1999. With the exception of Arab women (whose rate of participation in the labor force is very small) the declining preferences for part-time jobs are also evident among women regardless of their ethnicity and migration status (middle panel) and educational levels (bottom panel).

Table 5

Percent of employed (emp.), voluntary (vol.), involuntary (invol.) and total part-time wage and salary workers by economic branch 1979–1999

	Year											
	1979				1989				1999			
	1	2	3	4	5	6	7	8	9	10	11	12
	Emp.	Vol.	Inv.	Total	Emp.	Vol.	Inv.	Total	Emp.	Vol.	Inv.	Total
All workers												
Agriculture ^a	1.9	14.0	0.3	14.3	1.7	9.2	2.1	11.3	1.3	9.0	3.2	12.2
Manufacturing ^a	26.3	7.9	0.2	8.1	23.1	6.7	0.8	7.5	18.8	4.9	1.3	6.2
Electricity ^a	1.2	6.2	0.3	6.5	1.2	2.7	0.2	2.9	1.1	3.6	0.2	3.8
Construction ^a	6.4	6.0	0.4	6.4	4.7	3.2	1.1	4.3	5.2	3.7	3.1	6.8
Trade ^a	8.3	20.1	0.6	20.7	12.2	16.8	3.4	20.2	16.1	14.7	4.2	18.9
Transportation ^a	6.2	8.3	0.3	8.6	5.8	10.0	1.7	11.7	5.9	8.9	2.0	10.9
Financial services ^a	8.2	16.5	0.4	16.9	9.8	16.0	2.1	18.1	13.7	12.8	3.0	15.8
Public services ^a	35.9	20.5	0.8	21.3	35.0	20.5	3.8	24.3	32.7	19.3	6.6	25.9
Private services ^a	4.5	32.3	1.5	33.8	6.0	33.2	7.9	41.1	4.1	31.7	10.8	42.5
Unknown ^a	1.1	18.6	0.5	19.1	0.6	34.4	2.8	37.2	1.0	17.8	1.4	19.2
Total	100	15.4	0.6	16.0	100	15.4	2.8	18.2	100	13.7	4.3	18.0
Holding within-industry rates at their 1979 levels								<u>16.8</u>				<u>16.8</u>
Holding within-industry rates at their 1989 levels												<u>18.2</u>
Women workers												
Agriculture ^a	1.0	26.4	0	26.4	0.8	22.7	3.9	26.6	0.8	11.4	14.4	25.8
Manufacturing ^a	16.9	16.8	0.3	17.1	14.3	13.0	2.2	15.2	11.1	8.9	2.6	11.5
Electricity ^a	0.5	19.9	1.7	21.6	0.3	6.7	0	6.7	0.4	9.3	1.2	10.5
Construction ^a	1.2	33.3	0	33.3	0.7	25.9	3.0	28.9	0.9	17.8	1.7	19.5
Trade ^a	8.0	39.2	0.8	40.0	11.8	29.4	6.5	35.9	15.0	22.9	7.4	30.3
Transportation ^a	2.9	24.9	0.3	25.2	3.5	18.4	2.5	20.9	3.9	14.0	2.6	16.6
Financial services ^a	11.3	25.5	0.7	26.2	12.0	23.2	2.9	26.1	14.5	15.8	4.2	20.0
Public services ^a	51.7	30.3	1.3	31.6	49.1	27.3	5.6	32.9	46.7	23.8	8.6	32.4
Private services ^a	5.5	57.3	2.3	59.6	7.0	50.5	12.1	62.6	6.0	38.1	13.0	51.1
Unknown ^a	1.1	26.9	1.4	28.3	0.4	30.5	8.1	38.6	0.7	26.1	2.5	28.6
Total	100	29.4	1.0	30.4	100	26.2	5.2	31.4	100	21.1	7.0	28.1
Holding within-industry rates at their 1979 levels								<u>31.5</u>				<u>31.8</u>
Holding within-industry rates at their 1989 levels												<u>31.6</u>
Men workers												
Agriculture ^a	2.4	10.9	0.4	11.3	2.3	5.8	1.7	7.5	1.9	8.1	2.7	10.8
Industry ^a	32.0	5.0	0.1	5.1	29.6	4.4	0.4	4.8	25.9	3.4	0.8	4.2
Electricity ^a	1.6	3.6	0	3.6	1.9	2.2	0.3	2.5	1.7	2.4	0	2.4
Construction ^a	9.6	3.9	0.4	4.3	7.6	1.6	1.0	2.6	9.2	2.4	3.2	5.6
Trade ^a	8.4	8.8	0.5	9.2	12.5	7.9	1.2	9.1	17.2	8.2	1.7	9.9
Transportation ^a	8.3	4.8	0.3	5.1	7.4	7.0	1.5	8.5	7.8	6.6	1.7	8.3
Financial services ^a	6.4	6.8	0.2	7.0	8.2	8.0	1.1	9.1	12.9	9.7	1.7	11.4
Public services ^a	26.2	8.6	0.3	8.9	24.4	10.3	1.2	11.5	19.9	9.8	2.3	12.1
Private services ^a	4.0	11.3	0.8	12.1	5.2	16.0	3.7	19.7	2.4	17.0	5.8	22.8
Unknown ^a	1.1	13.4	0	13.4	0.8	36.0	0.7	36.7	1.3	13.4	0.9	14.3
Total	100	6.7	0.3	7.0	100	7.4	1.1	8.5	100	7.0	1.8	8.8
Holding within-industry rates at their 1979 levels								<u>7.2</u>				<u>7.1</u>
Holding within-industry rates at their 1989 levels												<u>8.3</u>

^a Branch.

Table 6

Percent of voluntary part-time wage and salary workers by age–gender groups, ethnicity–gender groups, age–education–gender groups 1979–1999

	Year					
	1979		1989		1999	
	Percentage of employed	Percentage of voluntary part-time	Percentage of employed	Percentage of voluntary part-time	Percentage of employed	Percentage of voluntary part-time
Age–gender groups						
Women aged 15–24	9.2	18.3	7.0	20.7	6.9	29.6
Women aged 25–44 with children	14.8	37.5	18.6	28.4	17.5	19.6
Women aged 25–44 without children	5.1	15.4	6.4	14.7	7.1	13.1
Women aged 45–64	8.5	34.1	10.1	31.1	14.8	21.5
Women aged 65+	0.5	64.8	0.5	73.6	0.4	67.2
Men aged 15–24	9.2	9.8	7.6	12.9	6.7	16.3
Men aged 25–44	31.1	2.9	32.0	4.0	28.2	5.0
Men aged 45–64	18.6	4.6	15.6	4.9	16.3	3.9
Men aged 65+	2.9	50.6	2.1	57.1	1.2	45.5
Total	100	15.4	100	15.4	100	13.7
Holding within-group rates at their 1979 levels				<u>16.6</u>		<u>17.1</u>
Holding within-group rates at their 1989 levels						<u>15.8</u>
Ethnic–gender groups						
Ashkenazi women	18.4	35.9	21.9	29.2	19.6	23.6
Mizrahi women	13.8	26.1	16.9	24.9	16.1	22.1
Immigrant women	4.3	19.9	1.6	22.0	8.5	16.8
Arab women	1.6	9.8	2.2	10.5	3.5	13.3
Ashkenazi men	26.4	9.5	24.6	9.9	18.2	10.3
Mizrahi men	22.2	5.3	20.9	5.9	16.0	5.9
Immigrant men	5.3	5.7	1.8	8.2	8.1	6.4
Arab men	8.0	2.3	10.0	4.4	9.9	3.0
Total	100	15.4	100	15.4	100	13.7
Holding within-group rates at their 1979 levels				<u>16.5</u>		<u>16.5</u>
Holding within-group rates at their 1989 levels						<u>15.8</u>
Gender–age–years of schooling						
Women, 25–64, 13+ years	11.2	28.0	16.0	26.1	23.7	18.0
Women, 25–64, 0–12 years	15.9	35.0	18.6	26.8	16.6	20.8
Men, 25–64, 13+ years	14.2	4.5	16.8	6.2	21.7	6.1
Men, 25–64, 0–12 years	33.9	3.0	30.1	3.2	22.7	3.1
Men and women aged 25–64 with unknown years of schooling	3.1	20.5	1.2	25.2	0	0
Men and women aged 15–24 and 65+						
All educational levels	21.8	20.1	17.2	23.1	15.2	26.1
Total	100	15.4	100	15.4	100	13.7
Holding within-group rates at their 1979 levels				<u>16.3</u>		<u>17.2</u>
Holding within-group rates at their 1989 levels						<u>16.2</u>

Immigrant: arrived in Israel in the 10-year period before the survey year. Ashkenazi: born in Europe–America or Israeli-born to father who was born in Europe–America or in Israel. Mizrahi: born in Asia–Africa or Israeli-born to father who was born in Asia–Africa¹ Until 1985, 14–24.

616 Among men, whose share of the labor force declined,
 617 the shifts in preferences are less clear. Unlike women,
 618 among men there is a difference between the first decade
 619 (1979–1989) and the second decade (1989–1999). In

the first decade rates of voluntary part-time employment
 slightly increased among all groups of men, regardless
 of age, ethnicity, educational level and migration status.
 Therefore, it is possible to conclude that in the 1980 men

620
 621
 622
 623

624 underwent a slight preference shift toward part-time jobs.
 625 In the second decade (between 1989 and 1999) the rate
 626 of voluntary part-time employment slightly declined in
 627 some groups, and slightly increased in others. Thus, no
 628 appreciable change in preferences can be concluded for
 629 the 1990s. Taken together, the changes in men's prefer-
 630 ences and behavior were too minor to offset the major
 631 preferences shift among women.

632 In sum, demographic shifts fail to explain the decline
 633 in the rate of voluntary part-time employment. Rather,
 634 virtually the entire decline in the rate of voluntary
 635 part-time employment is due to preference shift among
 636 women 25–64 years old. In 1999 a lower proportion of
 637 such women, regardless of their ethnicity, educational
 638 level, and number of children worked part-time “vol-
 639 untarily” than in 1979. Apparently, during this 21-year
 640 period women's preference for full-time versus part-time
 641 jobs has increased dramatically, while among men the
 642 changes were relatively small.

643 4.5. Discussion and conclusions

644 The conceptual framework used in this paper assumes
 645 that involuntary part-time employment reflects a mis-
 646 match between employers and workers preferences
 647 regarding the desired mix of part-time and full-time jobs.
 648 At time of unemployment, the mismatch is widened, as
 649 employers have less work to offer, while many work-
 650 ers seek to work more hours. The findings suggest
 651 that indeed the rise in unemployment in Israel during
 652 the past two decades brought about a rise in the pro-
 653 portion of involuntary part-time workers, but it is far
 654 from explaining the entire long-term rise. Thus, as in
 655 most other countries, the rise in involuntary part-time
 656 employment cannot be explained away as a cycle phe-
 657 nomenon. Other factors contributed to the widening mis-
 658 match between what employers and employees want.
 659 It appears that in Israel the rise in the rate of involun-
 660 tary part-time employment was due to an increase in
 661 the demand for part-time jobs (in the 1980s), and espe-
 662 cially due to a decline in the supply of workers (mostly
 663 women) seeking such jobs (during the entire 21-year
 664 period).

665 Both the small rise in the demand for part-time work-
 666 ers, and the large decline in their supply are observed
 667 mostly within industries and demographic groups. This
 668 being the case, the results lead us to conclude that the
 669 main process responsible for the long-term rise in the
 670 rate of involuntary part-time employment is women's
 671 increasing preferences for full-time versus part-time
 672 work. Specifically, over the years women's preferences
 673 for part-time work declined and this decline is not

674 related to demographic shifts. Rather, the decline in the
 675 expressed desire for part-time jobs is observed among
 676 all women groups 25–64 years old, regardless of marital
 677 status, number of children, educational level, immigrant
 678 status, and ethnicity. Women's changing preferences
 679 towards full-time jobs “forced” employers to hire more
 680 involuntary part-time workers, just to keep the total pro-
 681 portion of part-time workers constant.

682 Identifying the reasons for this preference shift among
 683 women is not an easy task, nor is it the central focus of
 684 this paper. Yet it seems reasonable that women's pref-
 685 erence shift toward full-time jobs resulted from broader
 686 processes that have been taking place in many devel-
 687 oped countries, including Israel, in the past two or three
 688 decades. Rising households' standard of living on the
 689 one hand and the decline of the welfare state on the
 690 other hand, are two plausible processes that may have
 691 “pushed” women to look for full-time work in order
 692 to increase households' income. At the same time, the
 693 opportunity cost of part-time work increased for women,
 694 as better full-time job opportunities were opened up
 695 for them and changed their orientation toward full-time
 696 employment (Cohen & Bianchi, 1999; Stier, 1998).

697 While we are unable to test these and other possi-
 698 bilities for the shift in preference, we wish to stress
 699 that the finding itself – that Israeli women have been
 700 changing their preference from part-time to full-time
 701 jobs – is important, and is inconsistent with some previ-
 702 ous research in other countries, maintaining that overall,
 703 women's preference for part-time employment has been
 704 stable during the 1980s and early 1990s (Hakim, 1997).
 705 Evidently, this is not the case in Israel, where women's
 706 preferences shifted away from part-time to full-time
 707 work. To be sure, it is possible that an increasing pro-
 708 portion of full-time women prefer to work part-time in
 709 1999 than in 1979. But since full-time workers are not
 710 asked for their reasons for this work pattern, our data
 711 do not enable us to test this possibility. Other surveys,
 712 however, found that in Israel (and in most other coun-
 713 tries with the exception of Scandinavian countries), both
 714 women and men prefer to work longer hours (Stier &
 715 Lewin-Epstein, 2003, pp. 314–315).

716 Finally, in the more local level, the general patterns
 717 of the results suggest that the feminization of the Israeli
 718 workforce is continuing, but in a somewhat different way
 719 than in the past (Kraus, 2002). During the 1960s and
 720 1970s the increase in women's labor force was accompa-
 721 nished by the concomitant increase in the part-time work-
 722 force (Ben Porath & Gronau, 1985). Many of the new
 723 entrants to the labor force turned, at least at the begin-
 724 ning, to part-time work. Since the 1980s the increase
 725 in women's labor force participation continued, but the

rise in the part-time labor force has stopped.⁸ With time, women's preference for full-time work has increased. However, there have been fewer such jobs in the past two decades, and with time, an increasing proportion of women (and men) who seek full-time jobs, could not get more than part-time job. While men, too, suffered from this trend, most of the burden was taken by women who comprise three-quarters of all part-time workers.

That the vast majority of involuntary part-time workers are women is not a trivial matter. Indeed, in Israel,

unlike other OECD countries (OECD, 1999) the share of involuntary part-time employment in total part-time employment is greater among women than among men. It implies that employers prefer to offer full-time jobs to men, and part-time jobs to women. Discrimination of all sorts may play a role in such offers. Surely, the results presented above do not "prove" such discrimination, but they do suggest that gender-based discrimination may affect not only hiring, promotions, and wages, but also work hours (Alon, in press).

Appendix A. Correlation coefficients: Israel, 1979–2000

Variable	Year	Unemployment	Involuntary	Ivn-lag	Voluntary	Wage
All workers						
Year	–	0.699	0.914	0.905	–0.848	0.572
Unemployment		–	0.856	0.665	–0.849	0.277
Involuntary			–	0.928	–0.868	0.392
Inv-lag				–	–0.840	0.465
Voluntary					–	–0.527
Wage ratio						
Women (above diagonal) and Men (below diagonal)						
Year	–	0.606	0.881	0.881	–0.943	–0.433
Unemployment	0.735	–	0.838	0.642	–0.743	–0.267
Involuntary	0.846	0.841	–	0.929	–0.891	–0.465
Inv-lag	0.822	0.630	0.816	–	–0.882	–0.436
Voluntary	–0.477	–0.671	–0.491	–0.472	–	0.359
Wage ratio	0.467	0.182	0.116	0.341	–0.377	–

Appendix B. Regressions for the rate of involuntary part-time, Israel 1979–2000

	All		Women		Men	
	1	2	3	4	5	6
Unemployment rate	0.217 (5.2)	0.201 (4.4)	0.336 (5.1)	0.331 (4.8)	0.091 (3.5)	0.066 (2.5)
Year ^a	0.047 (2.8)	0.053 (2.9)	0.160 (2.9)	0.152 (2.6)	0.008 (.9)	0.020 (2.1)
Involuntary-lag rate	0.510 (4.3)	0.482 (3.9)	0.441 (4.0)	0.427 (3.7)	0.449 (2.4)	0.361 (2.1)
Voluntary rate	0.248 (2.1)	0.204 (1.6)	0.245 (2.1)	0.227 (1.8)	0.171 (1.6)	0.055 (.5)
Wage ratio (part-time/full-time)		–0.014 (–0.9)		–0.013 (–0.6)		–0.016 (–2.2)
C	–0.972 (–2.8)	–1.064 (–3.0)	–3.236 (–2.9)	–3.060 (–2.6)	–0.176 (–1.0)	–0.381 (–2.1)
D.W.	1.88	1.85	2.10	2.15	2.03	2.19
Adjusted R ²	0.951	0.950	0.948	0.946	0.812	0.849

t-values in parentheses.

^a Coefficient was multiplied by 100.

⁸ The pattern of increasing labor force participation among women that is followed by an increase in the rate of part-time employment is observed in most developed countries. Maier (1994) shows that when women's labor force participation reaches a certain threshold – around 50–60% in most countries – the rate of part-time workers either drops or stop growing. Israel is unique in that the rate of part-time employment among women peaked when their rate of participation was below 40%.

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