What is Happening in the Youth Labour Market in Canada?

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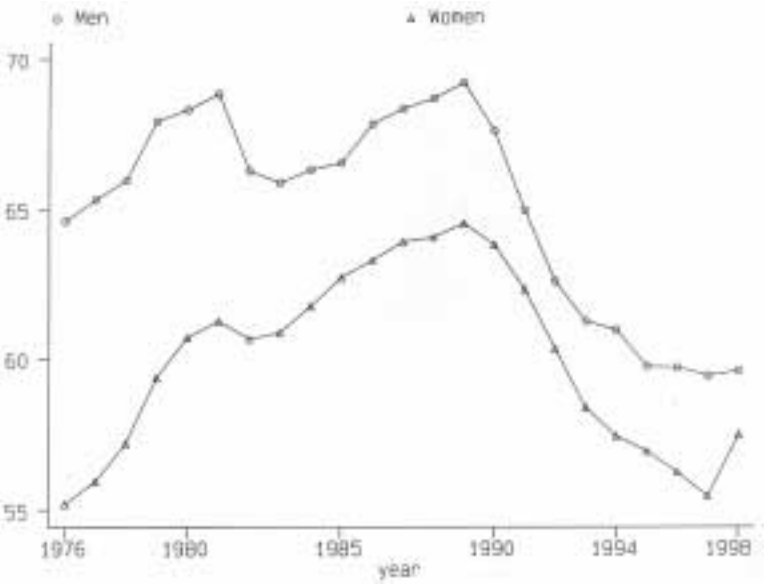
Cet article analyse l'évolution du taux de participation dans le marché du travail chez les hommes et les femmes âgés de 15 à 24 ans durant la période allant de 1976 à 1998. La question abordée est l'explication de la chute rapide du taux de participation chez les jeunes durant les années 90. Cette baisse est étudiée sous deux angles: les changements dans le pourcentage de jeunes qui participent dans le marché du travail mais qui ne sont pas aux études (le taux de participation chez les non-étudiants) ainsi que les changements dans le taux d'emplois chez les étudiants. Nous trouvons que la chute dans le taux de participation chez les non-étudiants est causée par deux facteurs: (I) le mauvais état généralisé du marché du travail au Canada durant les années 90 et (II) la grande augmentation du taux d'inscriptions dans les écoles causée par des facteurs autres que l'état du marché du travail. Un résultat important est que le changement démographique (le baby boom ainsi que la chute des naissances qui a suivit) explique en grande partie l'augmentation rapide du taux d'inscription durant les années 80 et 90. La seule partie des résultats pour les jeunes durant les années 90 que nous ne pouvons pas expliquer raisonablement est la baisse du taux d'emplois chez les étudiants âgés de 15 à 19 ans.

This paper analyzes the evolution of the labour market participation rate of men and women age 15 to 24 from 1976 to 1998. The main question being asked is why youth participation rates fell precipitously during the 1990s? We look at two dimensions of this decline: changes in the fraction of youth who participate in the labour market but do not attend school (non-student participation rate) and changes in the employment rate among students. We find that the decline in the non-student participation rate is a consequence of two factors: (i) the overall bad state of the labour market in Canada during the 1990s and (ii) the large increase in school enrolment rates induced by factors other than the state of the labour market. One important finding is that demographic change (baby boom versus baby bust) is a key explanation behind the steep increase in enrolment rates during the 1980s and 1990s. The only component of youth outcomes in the 1990s which we are unable to reasonably explain is the fall in the employment rate of students age 15 to 19.

INTRODUCTION

Since the late 1980s, the labour market participation rate of young men and women has been in heavy decline. Figure 1 shows that, from 1989 to 1998, the participation rate of men age 15 to 24 declined by ten percentage points. The participation rate for women has also declined by close to ten percentage points from 1989 to 1997 before it started recovering in 1998. Such observations suggest that

FIGURE 1
Youth Participation Rates



the labour market for young people in Canada may be in serious difficulty and that certain policies may be warranted to help this segment of the market.

The object of this paper is to understand the declining participation rates of youth.[1] Our aim is to identify the causes of this decline and to evaluate the importance of this decline in relationship to the overall (poor) performance of the Canadian labour market in the 1990s. In particular, we want to ask whether these observations on youth participation should be interpreted as evidence that the youth labour market is functioning especially poorly in comparison to the labour market of other demographic groups or, for example, whether the decline in youth participation may reflect in large part the fact that staying in school is more attractive (high perceived returns to education) than participating in the labour market.

The paper is structured as follows. In the next section we begin by illustrating why it is relevant to single out the declining participation rate of young Canadians as an issue deserving attention in and of itself. In the following section we examine the extent to which the observed decline in youth participation can be attributed to perceived increased returns to education as opposed to declining labour market opportunities. In particular, in the second part of that section we focus on the determinants of the school enrolment rates. In Section four we examine changes in employment patterns for full-time students. Finally, the fifth section offers an overview of our findings and a discussion of some policy implications.

Is Searching to Explain the Declining Participation Rate of Youth the Right Issue?

Figures 2.a to 2.d plot the participation rates and employment rates of youth broken down by gender and two age groups. Note that the data used for these graphs and for all the other graphs and tables of the paper come from the Labour Force Survey (LFS).[2] Note also that all the statistics pertaining to youth (participation rates, etc.) are computed averages for January to April and September to December. We do not analyze the May to August data since the dynamics of participation and schooling are very different during the summer months because of summer jobs.[3]

The age groups correspond to individuals age 15 to 19 and those age 20 to 24. In each of the four figures, it is easy to notice the large decline in participation rates from 1989 to 1997. In all cases, the employment rates show a very similar trend. The most drastic declines are among youth age 15 to 19. For both men and women in this younger age group, the decline is over ten percentage points. In an interesting recent development, however, participation and employment rates of women recovered strongly between 1997 and 1998.

A first question that naturally arises when looking at these figures is whether such drastic declines have also arisen for more mature workers. In particular, if labour market participation has declined similarly for more mature workers, it would be preferable to examine participation movements more globally as opposed to focusing only on youth. In order to answer this question, Figures 3.a and 3.b plot the participation rates of youth (15-24) relative to (as a fraction of) the participation rates of individuals of the same gender age 25 to 44. Figure 3.a and 3.b show the relative participation rates for men and women, respectively. In each case, two relative participation rates are plotted. The top lines use participation rates as conventionally measured, that is, the fraction of the population either employed or searching for work (unemployed). Since for youth there is a large fraction of individuals who are simultaneously full-time students and in the labour market, it is useful to consider a more restrictive definition of participation that excludes full-time students. We therefore define as the non-student participation rate the fraction of the population that is in the labour market but is not a full-time student. Note that what we call the non-student participation rate is different from the participation rate of non-students (i.e., fraction of non-students participating) since we include the whole population in the denominator (as opposed to the number of youth not going to school). The lower lines on Figures 3.a and 3.b represent the non-student participation rates for individuals age 15 to 24 relative to the participation rates of individuals age 25 to 44 of the same gender.[4]

As can be seen from Figures 3.a and 3.b, in the 1990s the participation rate of young people has been declining relative to the participation rate of more mature workers; therefore, it appears that the decline in youth participation in the 1990s cannot simply be viewed as a general trend affecting all segments of the labour market equally. There seems to be something special going on in the youth market. One important element which can be seen in Figures 3.a and 3.b is that, in relative terms, the decline in youth participation started much earlier than 1989. In particular, the relative participation rate of young women appears to have been on the decline for the last 20 years. Similarly, when considering the relative performance of the non-student participation rate for men, one can also detect that the decline starts much earlier than 1989, most likely around 1980.

Since participation is an incomplete measure of labour market performance, it appears useful to also examine how youth have been doing in terms of unemployment. In particular, it is of interest to know whether the relative unemployment rate of young

FIGURE 2
Participation Rates and Employment Rates

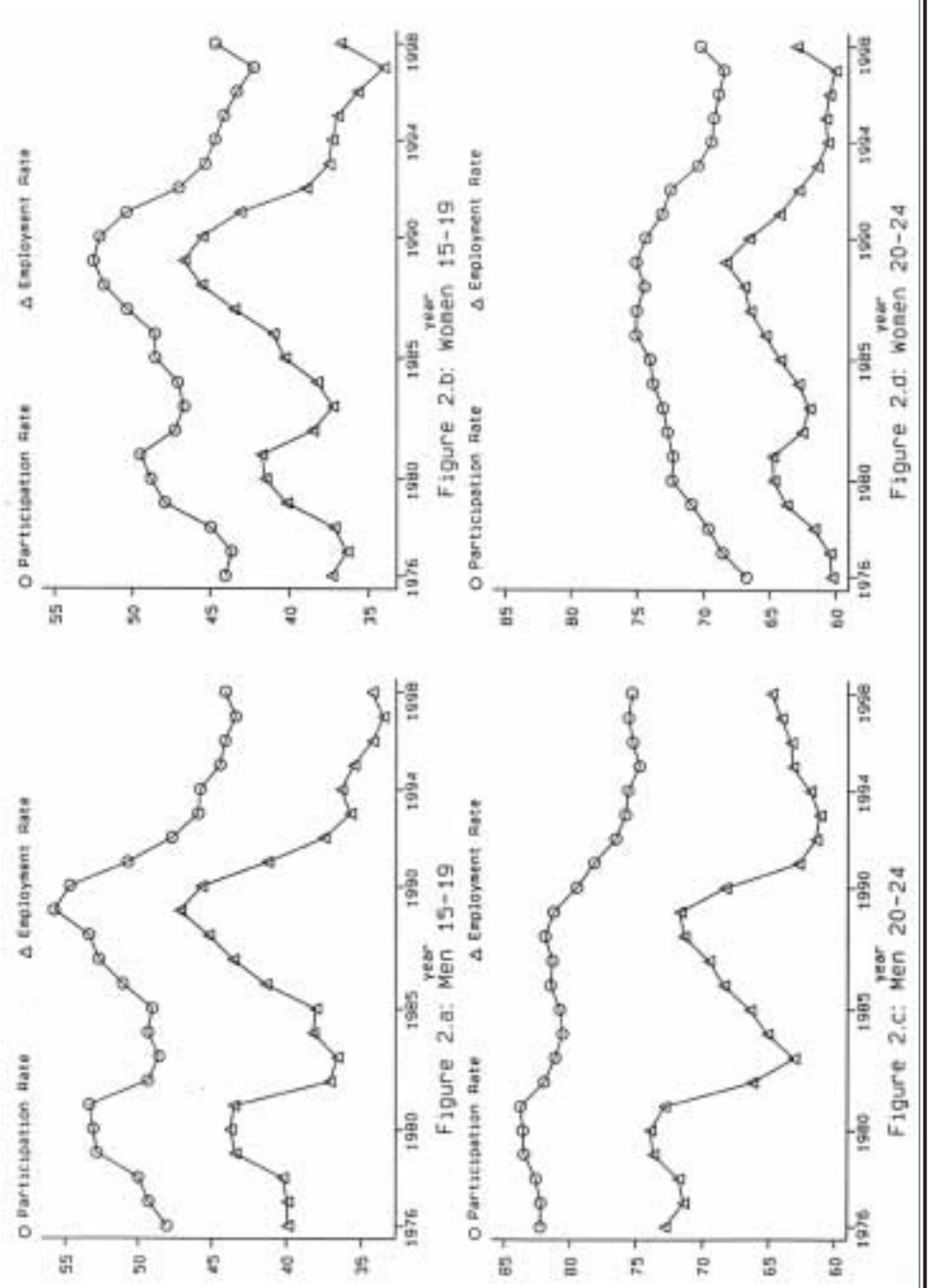
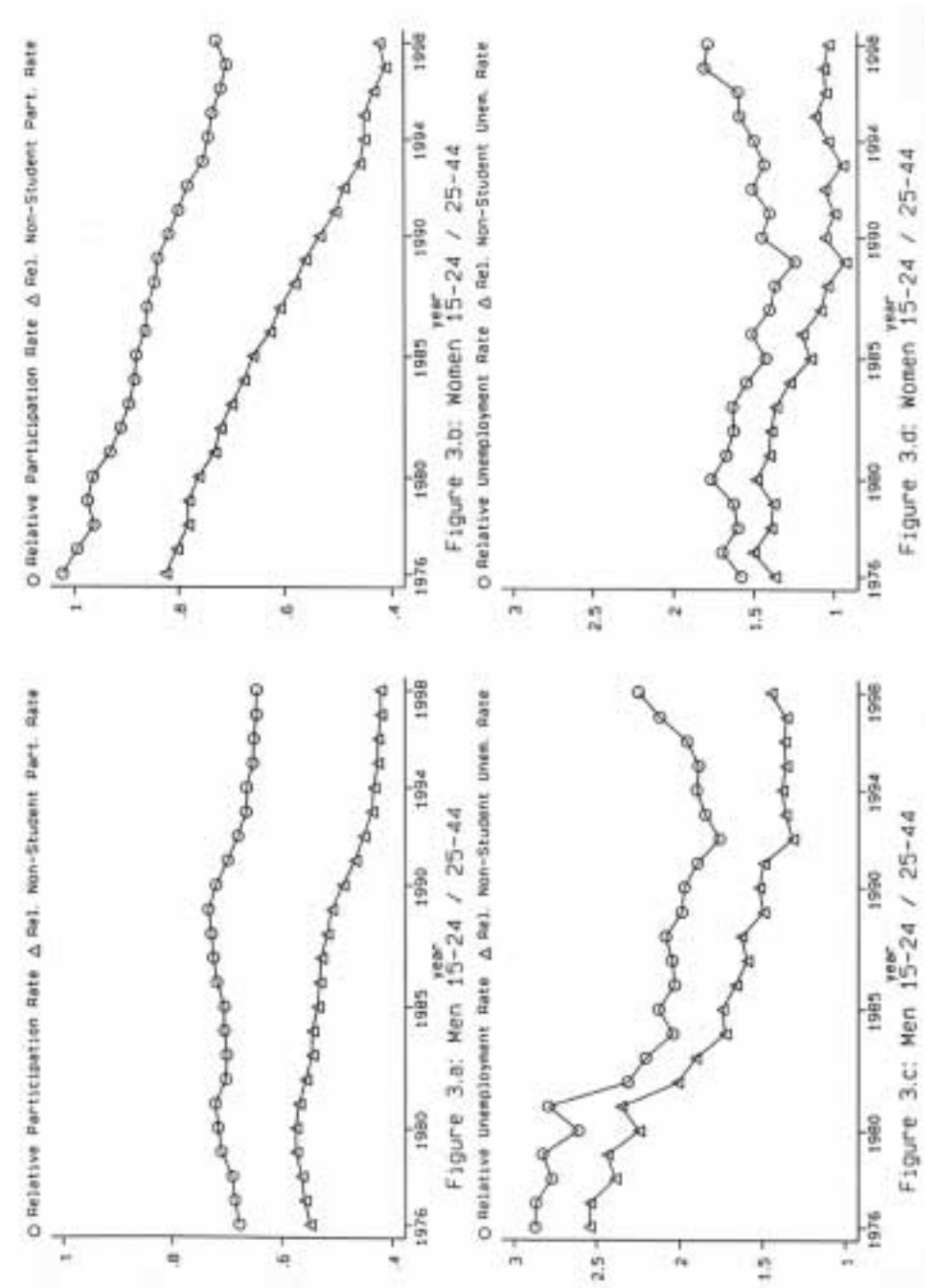


FIGURE 3
Relative Participation and Unemployment Rates

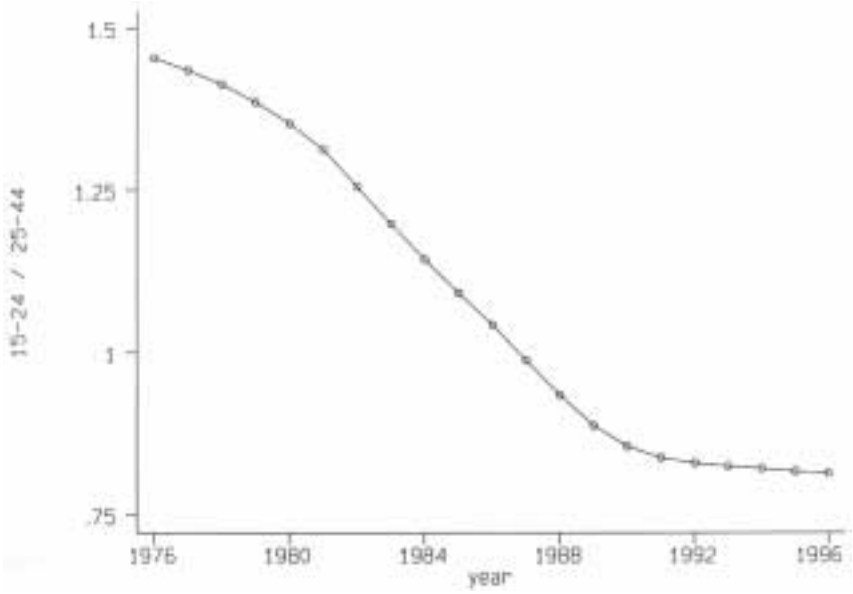


people has been increasing as the relative participation rate of young people was declining. If so, such a pattern would indicate that the poor performance of the youth labour market is likely due to unavailable opportunities for young people. Figures 3.c and 3.d plot the relative unemployment rates for individuals age 15 to 24 relative to those age 25 to 44. Again, different plots are presented for men and women as well as for conventional unemployment rates and non-student unemployment rates.[5]

Somewhat surprisingly, in both figures there is, if anything, a noticeable downward trend in the relative unemployment rates of young people. This is in dire contrast with the information derived from relative participation movements.[6] The relative unemployment rate figures indicate an improving or stable youth labour market over much of the sample period. In particular, if we focus on the relative non-student unemployment rate of young males (which is a group with the largest fall in participation rates), we see an improvement from the mid-1970s to the mid-1980s and a stable pattern later on. The pattern is very similar for women, with the possible caveat of a worsening over the last few years.

There are two remarks to make about the movements in relative unemployment rates. First, even though there has been a general improvement in the relative unemployment for youth over the last 20 years, the unemployment rate of young people remains twice as high as the unemployment rate for more mature workers. This in itself may be discomforting. Second, the decline in the relative unemployment rate of youth should not be much of a surprise given the known changes in the relative cohort sizes; it is actually the movements in participation that should be surprising. To see this, Figure 4 plots the population ratio of those age 15 to 24 relative to those age 25 to 44.[7] As can be seen in this

FIGURE 4
Relative Cohort Size



figure, the relative size of the youth cohort declined from the mid-1970s to the mid-1980s and since then has been relatively constant. This mirrors quite well the movements in relative unemployment rates.

The above set of observations suggest that it is appropriate to focus on the participation rate of youth as a relevant issue in itself. When looking at labour market outcomes for young people in Canada, it is relevant to ask the following question: Why has the labour market attachment of young people been declining so heavily (both in absolute and relative terms) when, in terms of relative cohort sizes and in relative unemployment rates, we should expect improvements? We address this issue in the next section.

What Explains the Declining Labour Market Participation of Youth?

This section explores possible causes for the decline in the non-student participation rate. Recall that we define the non-student participation rate as the fraction of individuals who are in the labour market but are not full-time students. In the following section, we examine changes in labour market attachment of full-time students. We first focus on the non-student participation rate since it is conceptually easier, and is most likely to generate greater policy concern. Throughout this section we will refer to the non-student participation rate as simply the participation rate.

Our objective here is twofold. First, we want to examine how much of the decline in participation can be attributed to observable economic factors and how much is a "1990s residual" that is, how much of the 1990s decline is understandable and how much is really a puzzle (a glance at Figure 1 seems to suggest that the 1990s residual is likely large, but as we will see, this may be rather misleading). Second, if a large part of the decline can be understood by economic factors, what are these factors and what are the policy implications?

One can think of the decline in the participation rate as resulting from two types of changes. On the one hand, a decline in participation can reflect a decline in the value of current labour market opportunities. On the other hand, such a decline may reflect an increase in the value of pursuing alternatives to current employment. For example, one of the main alternatives to participation for youth is schooling and therefore a reduction in participation may simply reflect a perceived increase in the benefits of schooling (higher future income, etc.). Similarly, increased costs of schooling due to higher tuition fees or stricter admission requirements in postsecondary institutions could increase youth participation in the labour market.

Our objective here is to evaluate how much of the change in participation can be attributed to changes in the perceived net returns (benefits minus costs) of schooling and how much can be attributed to changing labour market conditions. In particular, we will argue that a substantial part of the decline in (non-student) participation among individuals age 15 to 24 reflects an increase in the perceived net returns to schooling. This is not too surprising since Figure 5 shows that school enrolment rates have increased drastically since the 1980s, while the fraction of youth who are neither active in the labour market nor enrolled in school has either decreased or not increased substantially (see Figure 6). Nonetheless, this issue is complicated by the fact that schooling cannot be taken as an exogenous explanation of changes in participation, but instead must be viewed as potentially responding to both changes in labour market conditions as well as changes in returns to education. In order to disentangle such forces, we begin by presenting a simple model of the participation decision. We will discuss how such a model can be used to decompose changes in participation into changes in labour market conditions (both global and youth-specific) and changes in returns to schooling.

FIGURE 5
Full-Time School Enrolment Rates

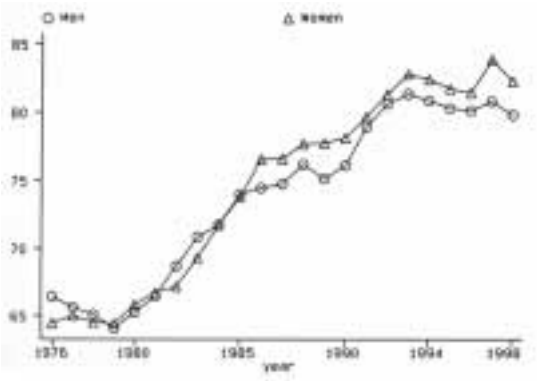


Figure 5.a: School Enrolment Rates, 15-19

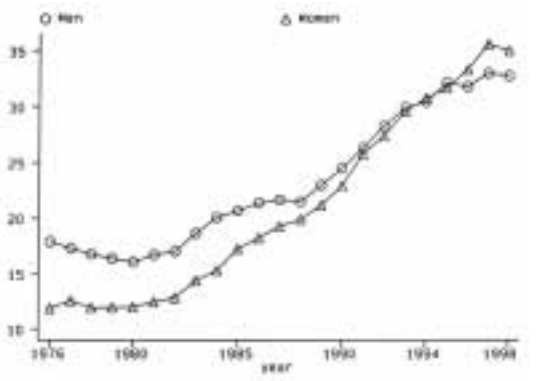
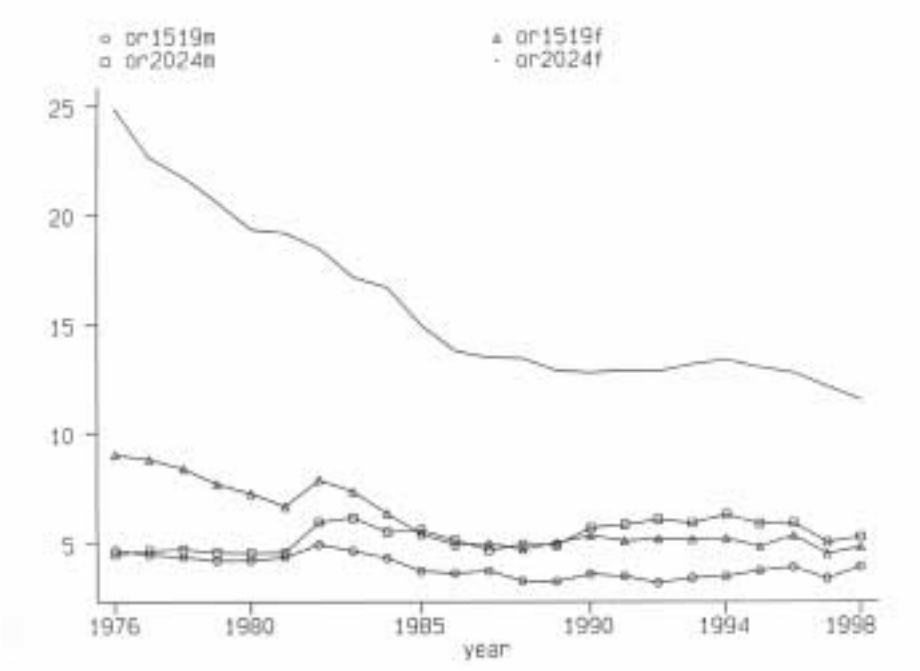


Figure 5.b: School Enrolment Rates, 20-24

FIGURE 6
Percentage Inactive and not in School



A Model of Participation Decisions of Youth

In keeping with our objective of explaining changes in non-student participation rates, we view the participation decision at the individual level as being a choice among one of three alternatives. The two alternatives to participation are full-time schooling and inactivity (the residual class). If we assume that individuals choose the alternative that maximizes their subjective utility, this problem can be stated as a probabilistic choice model. To this end, let $V_t(E)$ represent the expected discounted utility associated with being an individual with education level E, and let $M_t(E)$ represent the average (across individuals) expected value of currently participating in the labour market given a level of education E. Let also $C_t(E)$ represent the cost of acquiring an extra year of education. This cost may either reflect explicit costs like tuition fees or implicit costs. For example, more stringent admission requirements in universities implicitly raise the cost of schooling by making it more difficult for individuals to acquire an extra year of education.

Then, for a given individual with education level E, the present discounted value associated with participating in the labour market can be expressed as:

where $\varepsilon^p_{j,t}$ is j's idiosyncratic value associated with participating in the labour market and δ is the discount factor. Similarly, the value of schooling can be expressed as:

where $\varepsilon^s_{j,t}$ is now individual j's subjective value associated with attending school in period t.

Finally, the value to being inactive for a period can be expressed as:

where $\varepsilon^i_{j,t}$ is the idiosyncratic value associated with inactivity.

Under the assumption that the error terms have mean zero and are i.i.d across the population with education level E, the probability of participation can be expressed as a positive function of the current market returns, $M_t(E)$, and as a negative function of the returns to schooling net of costs, $\Delta'V_{t+1}$, where

(1)

By contrast to the probability of participation in the labour market, the probability of school enrolment can be expressed as a negative function of $M_t(E)$ and a positive function of the net returns to schooling. If one then takes a linear approximation of the resulting probability functions and integrates over the education level in the population, one can express the fraction of the population participating in the market at time t as:

(2)

where P_t is the participation rate, M_t is the average value of currently participating in the labour market and $\Delta'V_{t+1}$ is the average return (net of costs) to increasing education. Similarly, the school enrolment rate, denoted S_t, can then be expressed as:

(3)

The above two equations form the basis of our inquiry into explaining movements in participation rates, that is, explaining movements in youth participation as the result of either changes in market conditions or changes in the (perceived) net returns to schooling. In order to implement such a decomposition, we need to exploit information on the participation decisions of more mature workers. In the case of mature workers, an individual's

participation decision can be viewed as reflecting a choice solely between pursuing labour market opportunities or being inactive (since the choice along the schooling margin is *de facto* rather irrelevant). In this case, we can express the participation rate of more mature workers, denoted P_t^m, as simply a function of the market conditions for mature workers, denoted M_t^m. To a linear approximation, this relationship can be expressed as:

(4)

Furthermore, we can express the relationship between the market conditions of youth and that of more mature workers as:

(5)

where u_t is the component of labour market conditions that is by definition specific to the youth market. Equations (2) to (5) can be combined (with the appropriate normalization) to provide the following representation of decisions for youth

(6)

(7)

The above two-equation model highlights how participation is affected by three sources or variations, which are: (i) changes in labour market conditions that are common to both the youth and mature labour markets (P^m_t); (ii) changes in the perceived net returns to education $(\Delta' V_{t+1})$; and (iii) changes in labour market conditions that are specific to the youth labour market (μ_t).

The problem with confronting this model to the data is that, unlike the participation rate of mature workers P_t^m, the perceived net return to schooling $\Delta' V_{t+1}$ is not observed. Our approach is to estimate it indirectly, which is the undertaking of the next section. Then, based on our estimate of $\Delta' V_{t+1}$, we will estimate equation (6) under the assumption that μ_t and $\Delta' V_{t+1}$ were not correlated prior to 1990.

Determinants of the School Attendance Decision

The most obvious pattern in full-time enrolment rates in Canada is that they increased dramatically in the 1980s and 1990s, after a period of relative stability in late 1970s (Figure 5). A closer examination of the data indicates, however, that the timing of these large increases in enrolment rates is slightly different for youth age 15 to 19 and youth age 20 to 24. Enrolment rates for men and women age 15 to 19 increased very sharply in the early 1980s, but then remained relatively stable in the mid-1990s (Figure 5.a). By contrast, enrolment rates for men and women age 20 and 24 increased less rapidly in the early 1980s but kept increasing rapidly in the 1990s (Figure 5.b).

These differences in the timing of changes in the enrolment rate by age groups are even more apparent when we further disaggregate youth in the four age groups 15-16, 17-19, 20-21, and 22-24.[8] Figures 7.a and 7.b plot the enrolment rates for these four age groups for men and women, respectively. The enrolment rates shown in the figures have been normalized to look more comparable.[9]

A clear pattern emerges from these figures for men and, especially, for women. Looking at women first, we clearly see that women age 15 to 16 are the first group for which enrolment rates start rising sharply (in 1976). The same phenomenon happens exactly three years later for women age 17 to 19, and five years later for women age 20 to 21. This pattern strongly suggests that enrolment rates start rising with the cohort that was 15 or 16 in 1976. Three years later (in 1979), these women are in the 17 to 19 age group when enrolment rates start rising for that group. Five years later (in 1981) they are in the 20 to 21 age group when enrolment rates

FIGURE 7
Enrolment Rates by Detailed Age Groups

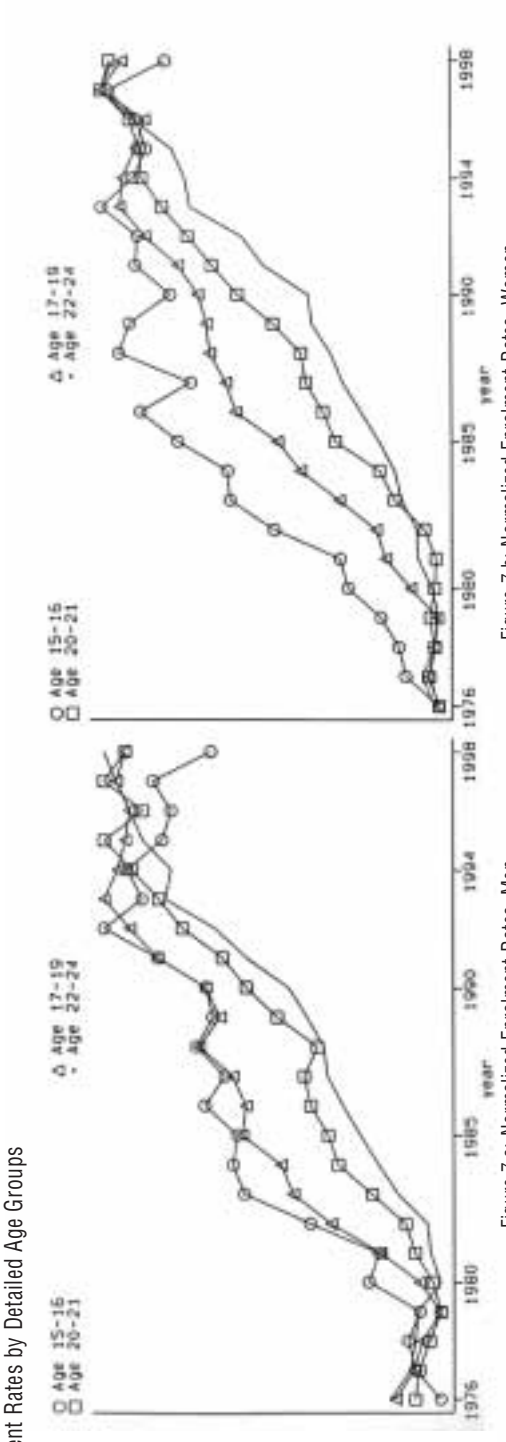


Figure 7.a: Normalized Enrolment Rates, Men

Figure 7.b: Normalized Enrolment Rates, Women

Figure 7.c: Normalized Enrolment Rates, Men

Figure 7.d: Normalized Enrolment Rates, Women

start rising. Though things are not quite as sharp for women age 22 to 24, this age group is clearly the last one for which enrolment rates started increasing sharply in the 1980s.

This suggests redrawing the enrolment of each of the four age groups as a function of the year of birth (year minus age) instead of calendar year.[10] Figures 7.c and 7.d, show these plots for men and women, respectively. Two strong patterns emerge from these graphs. First, the enrolment-rate curves for each of the four age groups look much more similar when year of birth is used on the x-axis instead of calendar year. Second, all the growth is concentrated among cohorts that were born between 1960 and the early 1970s. By contrast, enrolment rates are more or less flat among people who were born before 1960 and later in the 1970s.

Figures 7.c and 7.d also show that the timing in the rise in enrolment rates is strongly linked to the timing of the number of births in Canada, which is the fifth series plotted in these figures.[11] As a general rule, cohorts that were born during periods when the number of births (before 1960 and after 1973) were increasing later show stable enrolment rates, while cohorts born during the period when the number of births was declining (1960 to 1973) later show increasing enrolment rates. The figures also show that 1960 and 1973 are more or less the turning points in both the number of births and the enrolment rate series.

These observations suggest that two underlying factors explain relatively well the enrolment rates at age 15-16, 17-19, 20-21 or 22-24. The first factor is the size of a cohort (number of births) which has a strong negative impact on enrolment rates. The second factor is an underlying positive trend in enrolment rates which is more or less strong enough to offset the negative impact of growing cohort sizes in the periods when the number of births were indeed growing.

There is also some indication that enrolment rates are sensitive to labour market conditions. For example, Figure 7.a shows that the enrolment rate for men age 15 to 16 and 17 to 19 grew much faster during the recessions of 1982-84 and 1989-92 than during the expansion of 1984-89. However, there is not much graphical evidence of similar cyclical patterns for older young men (20 to 21 and 22 to 24) or for women.

We explore these issues more formally by estimating the following log-odds models for the determination of enrolment rates:[12]

$$\log(S_{at}/(1-S_{at})) = b_{a0} + b_{a1}t + b_{a2}Births_{t-a} + b_{a3}ur_t \quad (8)$$

where S_{at} is the enrolment rate of the age group a at time t; $Births_{t-a}$ is the number of births in year t-a (individuals of age a in year t were born in year t-a); ur_t is the unemployment rate of adults age 25 to 44 (the cyclical variable we use in these models), and $b_{a1}t$ represent an underlying secular trend in enrolment rates. Note that we are not performing a cohort analysis. Instead, our approach is to examine the link between the time pattern of school enrolment for a given age group and the time variation in the size of that group.[13]

The estimation results are reported in columns 1 and 2 of Table 1 for men, and in columns 3 and 4 for women. Column 1 shows an unrestricted specification for men where separate regression coefficients are estimated for each age group. For each of the four age groups, there is a positive and significant trend in enrolment rates while the number of births has a negative and significant effect. Furthermore, the F-tests reported at the bottom of the table indicate that the effect of these two variables are not significantly different across age groups. By contrast, the unemployment rate of men age 25 to 44 has a much larger effect for younger groups (17 to 19 and especially 15 to 16) than for older groups (20 to 21 and 22 to 24). Estimates of a more parsimonious model in which the trend and the effect of the number of births are constrained to be the same across age groups are reported in column 2.

TABLE 1
Log-Odds Models for Full-Time School Enrolment, 1976-1998

	Men		*Women*	
	(1)	*(2)*	*(3)*	*(4)*
Trend (x100)	—	2.775	—	—
		(0.239)		
Age 15-16	2.489	—	2.141	2.752
	(0.388)		(0.392)	(0.273)
Age 17-19	2.590	—	3.809	3.741
	(0.564)		(0.548)	(0.304)
Age 20-21	3.098	—	4.843	5.055
	(0.644)		(0.563)	(0.304)
Age 22-24	3.315	—	6.689	6.280
	(0.437)		(0.352)	(0.270)
Births (in millions)	—	–2.795	—	–3.741
		(0.322)		(0.303)
Age 15-16	–2.357	—	–4.976	—
	(0.697)		(0.668)	
Age 17-19	–2.918	—	–3.679	—
	(0.777)		(0.755)	
Age 20-21	–3.329	—	–4.067	—
	(0.782)		(0.749)	
Age 22-24	–2.855	—	–2.921	—
	(0.527)		(0.517)	
Unemployment Rate (25-44)	—	—	—	2.271
				(0.738)
Age 15-16	6.056	4.824	1.519	—
	(1.085)	(0.239)	(1.675)	
Age 17-19	2.873	2.693	1.244	—
	(0.972)	(0.814)	(1.521)	
Age 20-21	1.707	1.807	1.926	—
	(0.973)	(0.805)	(1.503)	
Age 22-24	0.877	1.981	2.102	—
	(1.002)	(0.826)	(1.586)	
	Tests of equality of coefficients across age groups (p-values of F-tests)			
Trend	0.5059	—	0.0000	—
Births	0.9989	—	0.1149	—
Un. Rate	0.0049	—	0.9793	—

Note: Standard errors in parentheses. Sample consists of 92 observations (23 years for four age groups).

One important difference between the results of the unconstrained models for men and women is that, for women, the trend term is systematically larger for older than younger age groups. This reflects the fact that women made the most significant gains in terms of schooling at the higher end of the schooling distribution (undergraduates and postgraduate studies in universities). A second important difference between men and women is that the enrolment rate of women is relatively insensitive to cyclical conditions (measured by the unemployment rate of women age 25 to 44). The F-tests reported at the bottom of the table indicate that neither cyclical conditions nor the number of births have a statistically different effect across age groups. These effects are, therefore, constrained to be the same in the restricted model reported in column 4.

Figures 8 and 9 show that the estimated models explain well the evolution of the enrolment rate for the different groups. Each graph compares the actual enrolment rate to the enrolment rate predicted by the restricted models of columns 2 and 4 of Table 1. The graphs also show the predicted enrolment rates when the unemployment rate is fixed at its sample average (line labelled "Predicted by trend and births"). This line represents the evolution in the enrolment rate predicted by factors other than overall, or youth-specific, labour market conditions. In terms of equation (7), it corresponds to a proxy for the net returns to schooling ($\Delta' V_{t+1}$). For example, one could think of the trend term as a secular increase in the relative demand for skilled workers that tends to increase the return to schooling. Similarly, the implicit cost of schooling may be higher for larger cohorts because of a limited number of slots in colleges and universities. The return to schooling may also be lower for larger cohorts because of larger class sizes in elementary and secondary schools.[14]

As mentioned earlier in the third section, one can never really measure individuals' "real" expected return to schooling: we must somehow approximate it. One can view predicted enrolment rates as representing the propensity to go to school, net of anything that is related to current labour market conditions. Of course, part of the change in the propensity to go to school results from taste shifts over time in favour of more education. The fact that enrolment rates have not increased in a smooth fashion over time (see Figures 7.a to d) suggests, however, that other factors are at play.

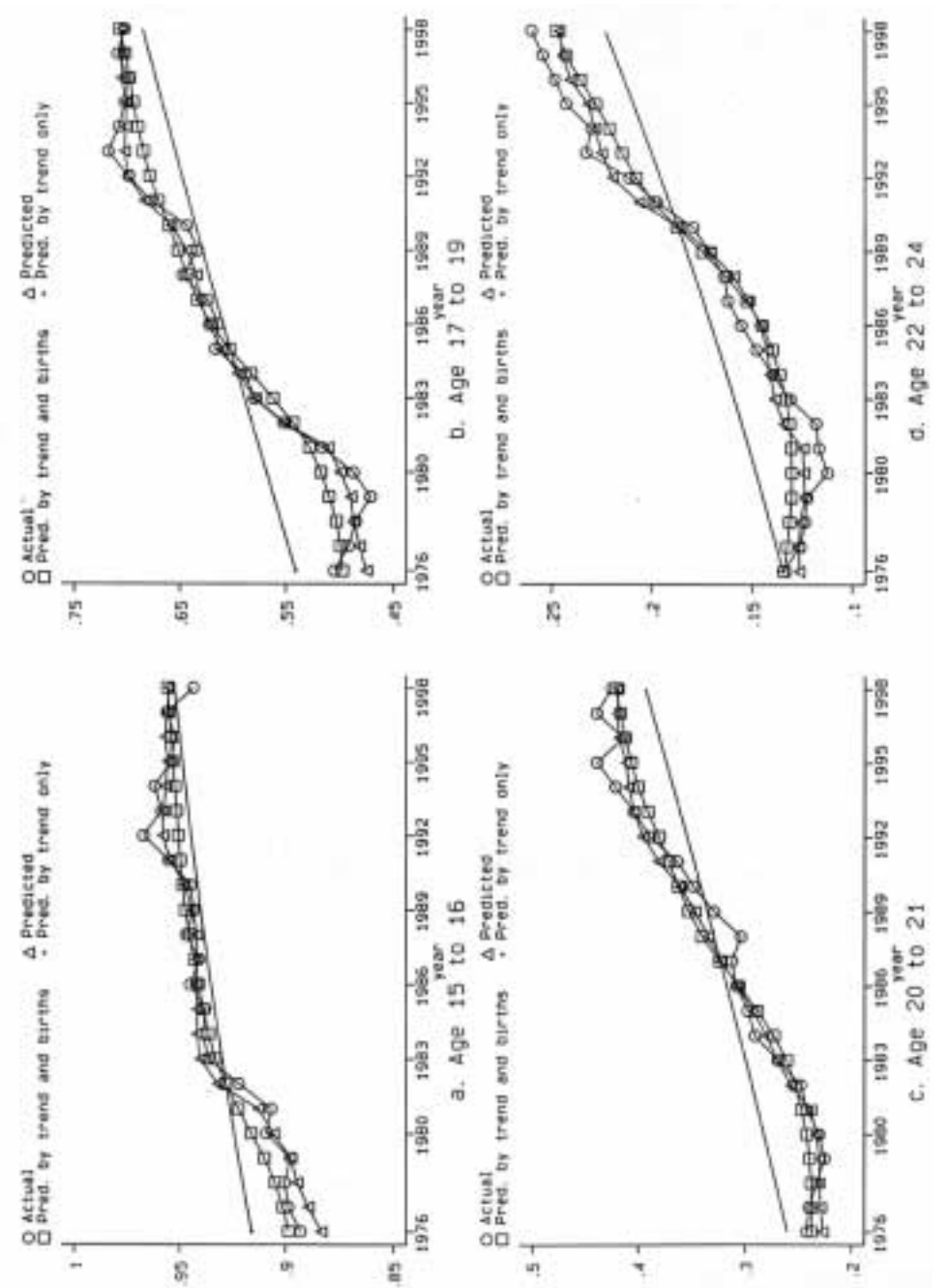
Finally, the fourth line in the graphs shows the enrolment rate predicted by the trend term only. Though some of the results of these prediction exercises differ across age groups and gender, the following patterns tend to prevail for most groups:

- Most of the variation in the actual enrolment rates is well-explained by the model.

- Variation in the number of births is the key factor behind the steep increase in enrolment rates that all groups experienced at different times during the 1980s and early 1990s. By contrast, cyclical factors explain little of the evolution in enrolment rates for most groups.

One important conclusion to be drawn from this analysis of enrolment rates is that nothing really special happened to enrolment rates in the 1980s and 1990s relative to the 1970s when these rates were much more stable. Our results suggest that enrolment rates would have grown at a relatively constant rate from 1976 to 1998 if the number of births had remained constant (or followed a constant trend) from the 1950s to the 1980s. The large swings in the number of births related to the baby boom (up to 1960), the baby bust (1960 to 1973), and the "echo of the baby boom" (after 1973) had a dramatic impact on the schooling achievement of these different generations. Once the impact of these demographic changes are accounted for, one does not need to resort to other explanations, such as an acceleration in the growth in the demand for skilled labour or poor labour market prospects, to explain why enrolment rates grew so fast in Canada during the 1980s and the early 1990s.

FIGURE 8
Predicted and Actual Enrolment Rates, Men



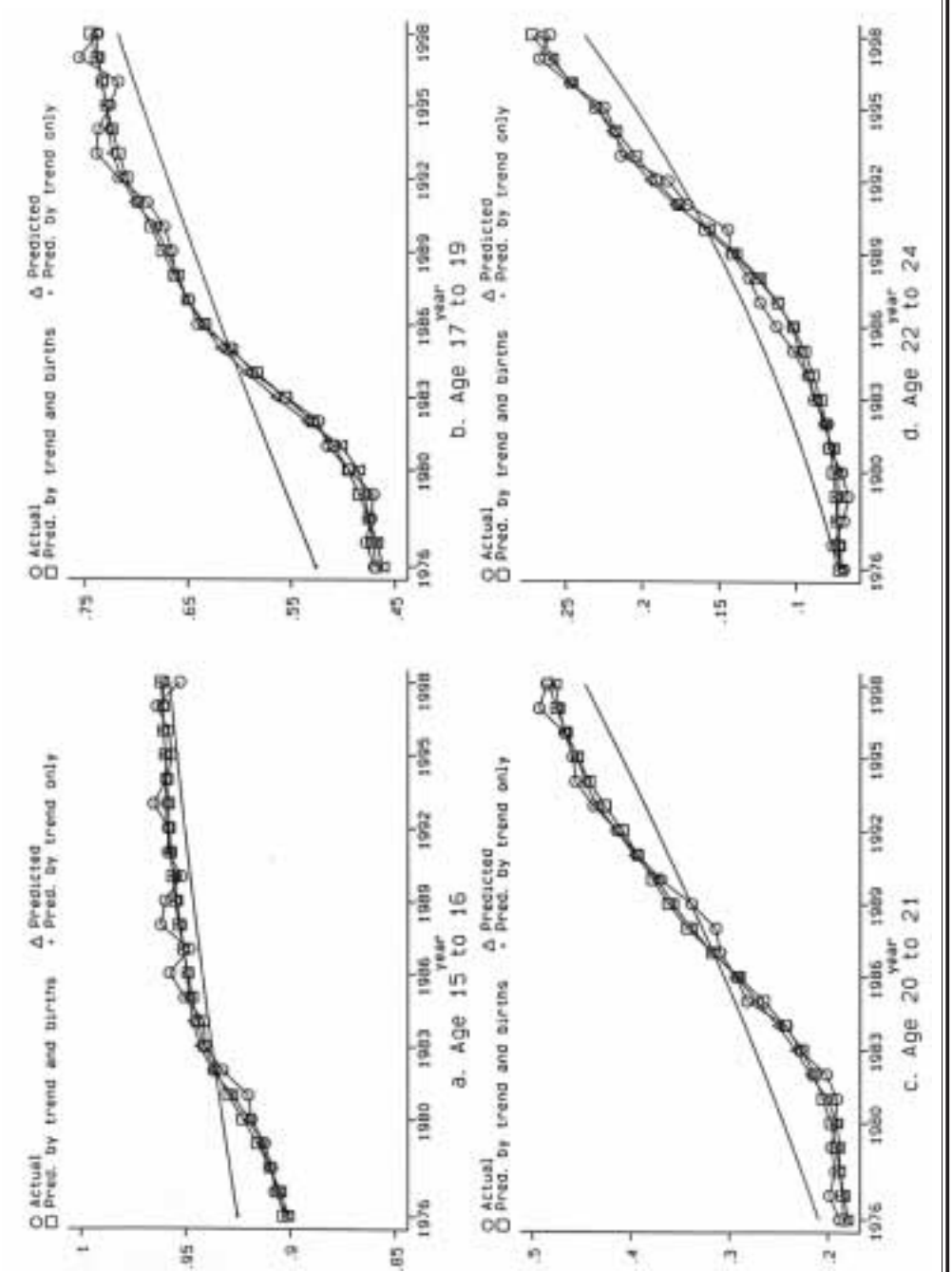


FIGURE 9
Predicted and Actual Enrolment Rates, Women

Determinants of the (Non-Student) Participation Rate

We now turn to the estimation of the (non-student) participation rate (equation 6). In order to estimate this equation and examine how each source of variation affects youth participation, we first constructed an estimate of the net return to schooling using the models estimated in the previous section. As discussed above, we use the enrolment rate predicted by variations in the number of births and by the trend as a proxy for the net return to schooling. Note that by doing so, we implicitly assume that there is no cyclical component in the net return to schooling.[15]

Since the main goal of the paper is to find out whether something unusual happened in the youth labour market in the 1990s, we estimate equation (6) over the 1976 and 1989 period and then verify whether the estimated model predicts the post-1989 period accurately. These predictions should not be accurate if there is a deterioration in the youth-specific component μ_t of labour market conditions over the post-1989 period.

If we assume that there is no time trend in μ_t, then we can estimate equation (6) using P_t^m and $\Delta'V_{t+1}$ as explanatory variables. It is also possible, however, to estimate equation 6 even when we allow for a pre-1990 trend in μ_t since $\Delta'V_{t+1}$ is still identified from the variation in the number of births. Note also that we are assuming that cohort size (number of births) has an effect on net returns to schooling, but has no direct effect on youth-specific labour market conditions (μ_t) before the nineties. Though this assumption is questionable, it will, if anything, understate the impact of the net returns to schooling on the participation rate. Since the net returns are lower for larger cohorts, the induced effect should be to increase the participation rate. If the size of a cohort also has a negative impact on labour market conditions that reduces the participation rate, this will mask the positive effect on the participation rate induced by lower returns to schooling.[16]

Table 2 reports the estimated parameters for equation (6) based on the 1976 to 1989 data. We estimate equation (6) with and without a trend for each of the four youth groups, that is, men age 15 to 19, men age 20 to 24, women age 15 to 19, and women age 20 to 24. When estimating the equations for men, we use the participation rate of men age 25 to 44 as the measure of labour market conditions for a mature market (i.e., P_t^m). When estimating the equation for women, we use the participation rate of women within the same age grouping (25 to 44) as the measure of labour market conditions for mature workers.[17] In all cases, the estimates are of the right sign, and are generally different from zero at conventional levels.

There are several observations that can be drawn from Table 2. First, notice that the trend term is not statistically significant except for men age 15 to 19. As a general rule, assuming that there is not a pre-1990 trend in youth-specific labour market conditions, this seems to be consistent with the data.

Second, the effect of the net return to schooling is always negative and significant. Note, however, that the estimated coefficient is typically smaller than one in absolute value. Since the effect of net returns on enrolment rates is normalized to one, this means that net returns have a smaller effect (in absolute value) on participation rates than on school enrolment. This means that an increase in net returns draws to school individuals who are participating in the labour market, as well as individuals who are inactive.[18] This is consistent with the model in the beginning of the third section, which predicts that an increase in net returns makes both labour market participation and inactivity less attractive relative to school attendance.

Third, the participation rate of young men is much more cyclically sensitive than the participation rate of young women. This is consistent with the results of Table 1 which show that school enrolment is also more cyclically sensitive for young men than for young women. When cyclical conditions improve,

TABLE 2
Estimates of Equation 1 (Participation Rates), 1976-1989

	Participation Rate of Adults	*Net Return to Schooling*	*Trend (x100)*
Men 15-19	3.346	–1.019	0.450
	(0.478)	(0.172)	(0.180)
Men 15-19	2.834	–0.622	—
	(0.450)	(0.070)	
Men 20-24	2.375	–0.765	0.110
	(0.500)	(0.192)	(0.131)
Men 20-24	2.087	–0.628	—
	(0.380)	(0.108)	
Women 15-19	0.295	–0.894	–0.306
	(0.292)	(0.198)	(0.694)
Women 15-19	0.171	–0.968	—
	(0.077)	(0.106)	
Women 20-24	0.791	–0.713	–0.684
	(0.384)	(0.280)	(0.856)
Women 20-24	0.487	–0.917	—
	(0.058)	(0.122)	

Note: Standard errors in parentheses. The dependent variable is the non-student participation rate.

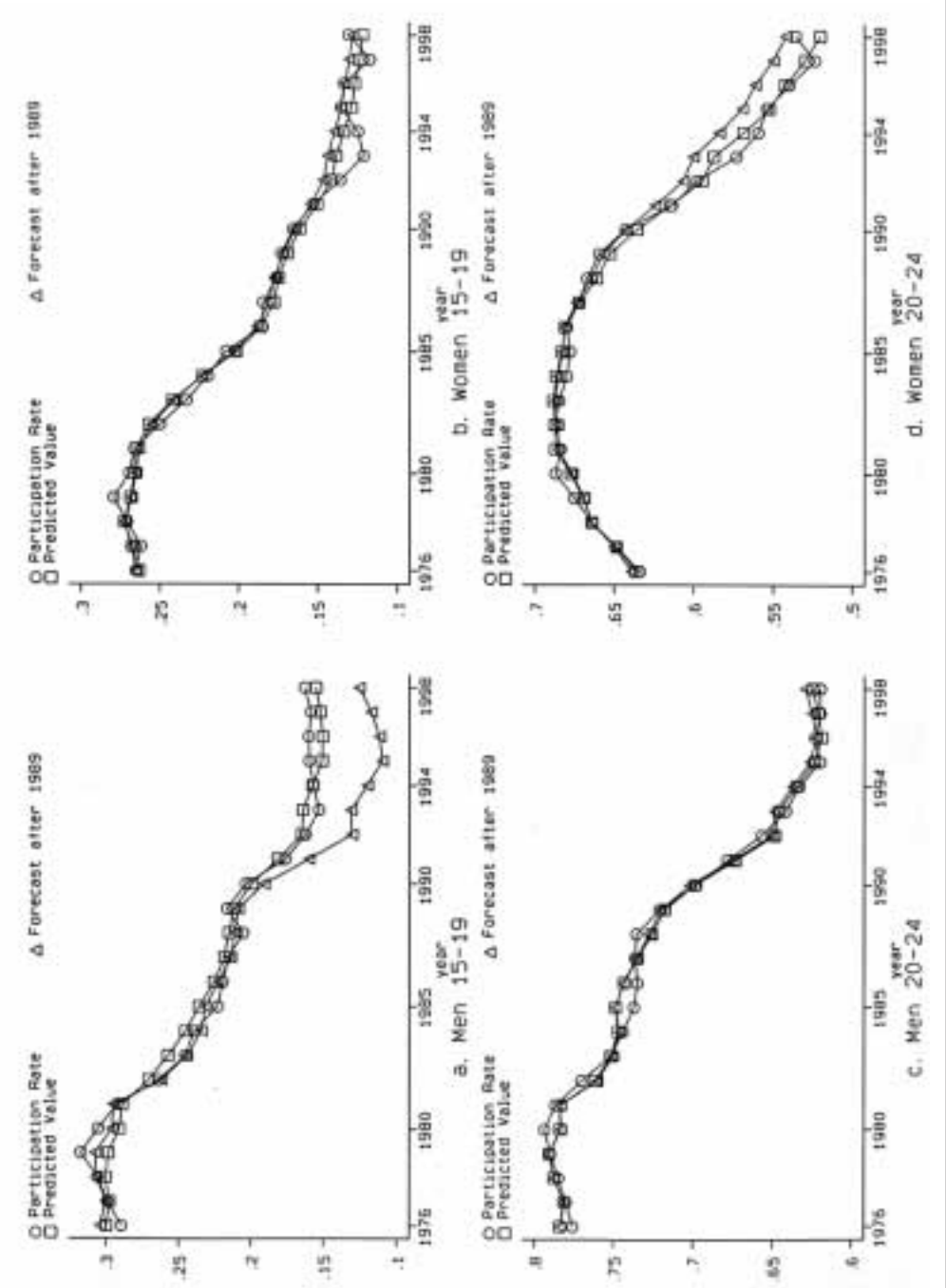
young men tend to leave school to participate in the labour market, while young women remain in school.

Decomposing the Participation Decisions of Youth

Figures 10.a through 10.d depict observed and predicted participation rates for the four youth groups. The in-sample predictions are based on estimates of equation (6) over the entire sample and are denoted as "Predicted Value." An out-of-sample prediction is also graphed under the heading of "Forecast after 1989." The out-of-sample predictions are obtained by estimating equation (6) over the period 1976 to 1989, and then forecasting over the period 1990 to 1998 using the realized values of participation rates for individuals age 25 to 44 and the estimated values of the net returns to schooling obtained from the models shown in Table 1. Our goal in presenting these graphs is to evaluate how well the model fits and in particular evaluate the role of youth-specific labour market shocks (μ_t) in explaining movements in participation. For example, if youth-specific shocks are important in explaining the 1990s fall in youth participation, we should observe a large discrepancy between observed and predicted values over the 1990s. The dominant observation we draw from Figures 10.a through 10.d is that the youth participation movements can be well explained by movements in the net returns to schooling and the participation rates of more mature workers.[19]

In fact, for all groups except men age 15 to 19, the fit is quite close for both the predicted values and the out-of-sample forecasts. This suggests that the decline in youth participation over the 1990s can (essentially) be explained without a need to invoke

FIGURE 10
Predicted and Actual Participation Rates



a deterioration in labour market conditions that is specific to youth.

For men age 15 to 19, the actual participation rates are in fact higher than the out-of-sample forecast. These men have thus done better than predicted in terms of participation rates. By contrast, the out-of-sample forecast for women age 20 to 24 tends to be slightly higher than the actual participation rate. By 1998, however, there is very little difference between that actual rate and what would have been forecasted on the basis of pre-1990 behaviour.

Given our inference (drawn for Figures 10.a to 10.d) that youth-specific changes in labour market conditions do not seem to play an important role in explaining the decline in youth participation, we now turn to decomposing the observed declines in terms of changes in perceived net returns to education and to general changes in labour market conditions.[20] To this end, Figures 11.a to 11.d plot participation rates for our four groups as well as two counter-factual scenarios. The counter-factual scenarios correspond to predicted paths for participation rates (derived using both our estimates of equation (6) and the log-odds models for schooling)[21] under the assumptions that either: (i) there were no perceived changes in the net returns to schooling over the period, or (ii) there were no changes in overall labour market conditions over the period. The first aspect to note from Figures 11.a to 11.d is that these counter-factual scenarios are quite different across the four groups indicating that a simple unified explanation is unlikely. For the youngest group of men (15-19), the explanation for the massive decline in participation over the 1990s seems almost entirely attributable to a general deterioration in labour market conditions. In effect, if we look at the counter-factual in which the labour market conditions do not change, we observe that over the 1990s the model would have predicted no major change in participation rates. This is not to say that changes in returns to education did not play a role in our entire sample. For example, the model indicates that the lack of increase in participation observed over the late 1980s was due to a perceived increase in net returns to schooling. In line with our previous discussion of Table 2, Figure 11.a suggests that the participation rate for men 15-19 should keep recovering if the economy grows quickly in the next few years.

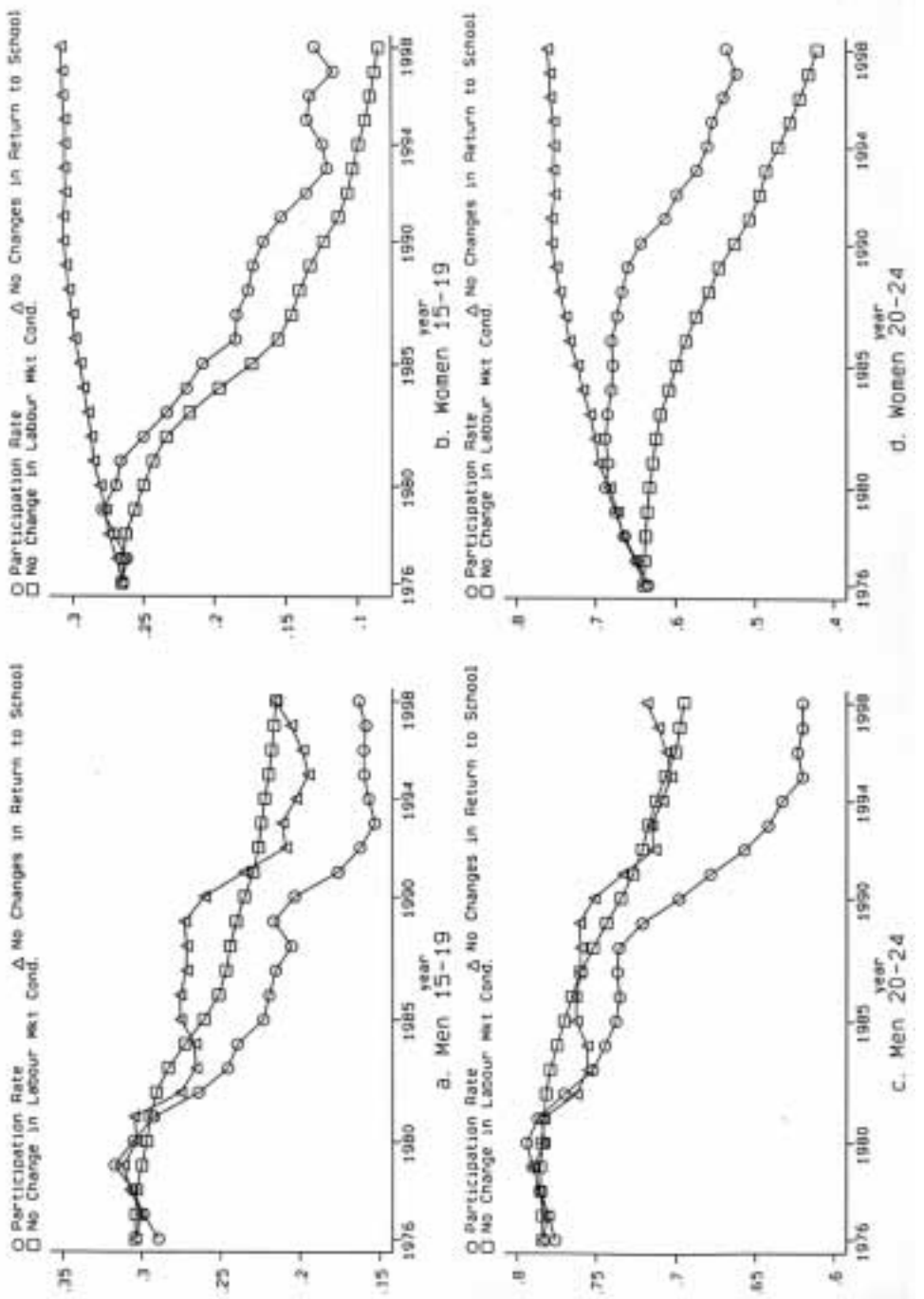
The decline in participation observed for men age 20 to 24 over the 1990s shares a common feature with that of younger men, that is, the global decline in labour market conditions seems to have played an important role. However, in the case of the 20 to 24 year olds, the decline in participation in the 1990s seems attributable about evenly to the deterioration of labour market conditions and to the increase in perceived net returns to schooling. For this group, our best prediction would be that as the economy grows faster, the participation rate is likely to only sightly rebound as increased returns to schooling maintain a downward pressure.

The explanation for the decline in participation rates for women is almost opposite to that for the youngest men. The model suggests that in the absence of increased net returns to schooling, we should have observed a stagnant participation rate over the 1990s. Therefore, the decline over the 1990s seems almost all attributable to perceived increased returns to schooling for women. Hence, the decline in young women's participation over the 1990s can be interpreted as desirable since it reflects mainly an increase in the choice set of women.

Overall, we interpret the results from this section as indicating that, in terms of explaining the recent decline in youth participation:

- A youth-specific deterioration in labour market conditions does not seem to be at play.
- Increased net returns to education have played an important role with the exception of the group composed of men 15 to 19.
- The general deterioration in labour market conditions observed in the 1990s (not youth

FIGURE 11
Sources of Change in Participation Rates



specific) has played an important role in explaining the decline in male participation rates.

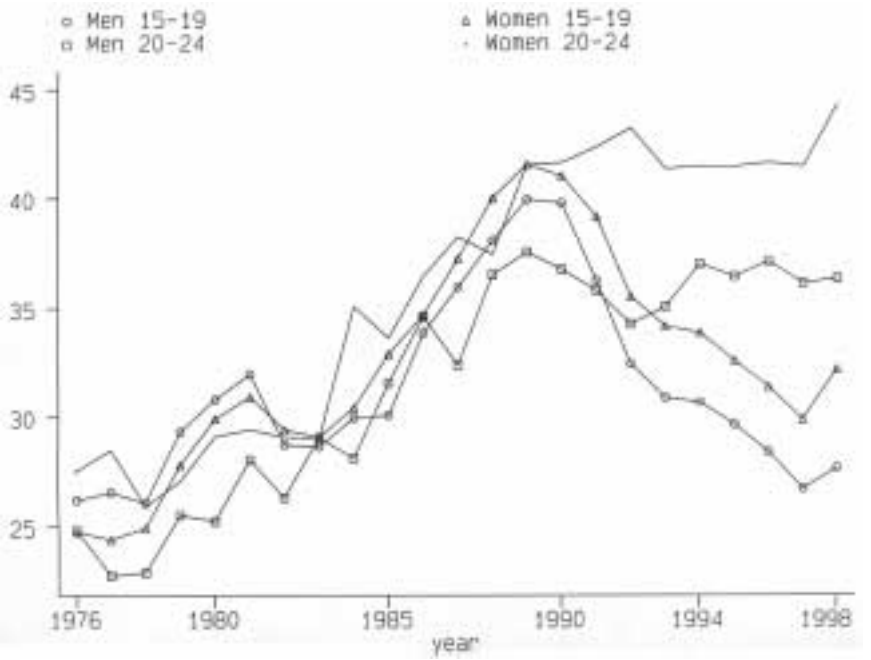
What About the Employment of Students?

The previous section focused exclusively on explaining changes in the non-student participation rate. Although we believe such a focus is appropriate, the labour attachment of students also plays a substantial role in total participation rates, and has changed considerably over the last two decades. In order to see these changes, Figure 12 plots the employment rates of full-time students. The reason we focus on employment rates for full-time students, as opposed to participation rates, is that the notion of an unemployed full-time student is rather arbitrary.[22]

There are three observations from Figure 12 that we want to highlight. First, there is a noticeable upward trend in student employment rates over much of the sample. This observation, although somewhat surprising, is consistent with the observations on relative unemployment rates which suggest that the difficulty in finding jobs for young workers has not necessarily worsened over the last 20 years (even though the value of the jobs found may have deteriorated). Second, the common upward trend appears to be in very similar proportions for all four of our youth groups. Finally, the upward trend seems to have stopped around 1989 and attained a stable rate for individuals age 20 to 24. However, it has decreased drastically for individuals age 15 to 19.

What can be learned from such observations? In terms of individuals age 20 to 24, these observations

Figure 12
Employment Rates of Students



suggest that the behaviour of students does not play much of a role in understanding the fall in official participation rates[23] and hence our inferences made in the previous section for this group seem to appropriately summarize the situation. In contrast, for individuals age 15 to 19, there seems to be a marked drop in employment rates which is not easily explained in terms of general movements in labour market conditions. There appears to have been a change in employment outcomes that is specific to young students. For men age 15 to 19, this observation adds to an already quite bleak picture: this group would like to counter the decline in labour market conditions by pursuing education but feel frustrated in school by a lack of student employment possibilities. The overall pessimism often attributed to this group may consequently be quite understandable.

Conclusion

The objective in this paper has been to explain the recent large decline in participation rates for young workers. Our approach has been to first highlight why such a question deserved attention and then to propose a simple framework which allowed us to decompose movement in participation rates in terms of (i) changes in perceived net returns to education, (ii) changes in general labour market conditions, and (iii) changes in labour market conditions specific to youth. Our main findings, which vary quite widely between gender and age groups, are the following.[24]

For men 15 to 19, the main cause of the decline in participation rates is a general deterioration in labour market conditions. A second important element is the decline in labour market opportunities for students. Changes in perceived net returns to schooling do not play an important role. In simple terms, this group has tried to make the best of a bad draw by substituting employment by education.

For women age 15 to 19, increases in perceived net returns to education have played an important role in explaining the decreased participation. Furthermore, as for young men age 15 to 19, the decrease in labour market conditions for students has also played a role in reducing labour market attachment.

For men age 20 to 24, the decreased participation is attributable in even proportions to perceived increases in net returns to schooling and to a general deterioration in labour market conditions.

For women age 20 to 24, the main driving force for the decline in participation is increased perceived net returns to education.

In terms of policy implications, we see these observations as cautioning against labour market interventions targeted to the youth population for the following reasons. First, there is no obvious sign suggesting that the youth market is performing worse than other segments of the labour market and, therefore, a youth-specific intervention is difficult to justify. Second, our estimates suggest that youth labour market policies are likely to improve participation only at the cost of reduced schooling (unless these are programs for students only).[25]

Another important finding of this paper is that demographic factors have played a major role in the evolution of school enrolment rates in Canada. We find that school enrolment started increasing sharply with the baby-bust generation before stagnating again with the "echo of the baby-boom" generation. Though we have subsumed these demographic factors through the net returns to schooling variable, there is no question that cohort size is a key factor in understanding the dynamics of youth participation and schooling over the last 25 years.

Interestingly, the large negative impact of cohort size on school enrolment may help explain an important puzzle in the labour economics literature. The puzzle is that youth participation and employment rates declined in most OECD countries during the 1980s and 1990s, despite the fact that smaller cohorts associated with the baby bust should have

improved the youth labour market through a reduction in supply (e.g., Korenman and Neumark 1999). Our results suggest that participation rates decreased because demographic changes had an even larger impact on the school enrolment decision. The main challenge for future research will be to identify the precise channels through which cohort size can influence school enrolment rates.

Notes

We would like to thank Gilles Grenier, Louis Grignon, Stephen Jones, Clément Lemelin, Graham Lowe, René Morissette, Andrew Sharpe, Timothy Sargent, and two anonymous referees for useful comments on an earlier version of this paper. We would also like to thank CIRANO for financial support.

[1]Card and Lemieux (1999) examine related issues in a comparative study of Canada and the United States. Grignon and Archambault (1999) also study the dynamics of school enrolment and participation rates in Canada.

[2]We use data from CANSIM supplemented with some direct calculations from the public-use files of the LFS for 1976 to 1998.

[3]Since it is possible that inter-temporal substitution effects which may impact upon participation decisions within a particular year, say by having young individuals decrease their participation in the winter months in favour of the summer months, we have also examined the robustness of our results to the inclusion of these months. We found our results to be robust to the choice of sample.

[4]For individuals age 25 to 44, the participation rate and the non-student participation rate are almost identical since there are very few full-time students age 25 to 44.

[5]The non-student unemployment rate is defined as the fraction of unemployed non-students among the total youth labour force.

[6]Note also that the relative unemployment rate tends to be slightly procyclical. This may explain part of the increase in the relative unemployment rate over the last few years.

[7]We have divided the 25 to 44 population by two so that the ratio would be equal to one if the age distribution of the population was uniform.

[8]These four age groups are the most disaggregated ones available in the public use files of the LFS.

[9]Since enrolment rates vary from less than 10 percent (women age 22-24 in the 1970s) to more than 95 percent (youth age 15 to 16 in the 1990s), we have normalized the series in the graphs so that they all have the same minimum and the same maximum.

[10]See Korenman and Neumark (1999) and Shimer (1999) for recent evidence on how the size of birth cohort may affect labour market outcomes for young workers.

[11]The series shown in the figures is actually a five-year moving average of the number of births in a given year.

[12]The explanatory variable in these models is log(S/(1-S)), where S is the enrolment rate. The advantage of log-odds models over standard linear models is that they constrain the predicted enrolment rates to be between zero and one. This is particularly important for youth age 15 to 16 who have enrolment rates very close to one in the 1990s.

[13]It should be noted here that although we explicitly take into account the size of the different birth cohorts in our school enrolment model, this represents a restrictive way of modeling cohort effects. Given that we are working with aggregate data, it is not clear how one could provide a richer analysis of cohort effects on enrolment patterns.

[14]See Card and Krueger (1992) for evidence that a higher pupil-to-teacher ratio reduces the measured return to schooling.

[15]This assumption can be justified on the grounds that returns to schooling should mainly reflect long-run movements.

[16]For detailed analyses of the effect of the relative sizes of cohorts, see e.g., Shimer (1999) or Korenman and Neumark (1999).

[17]We obtain similar results using alternative controls for the business cycle such as the unemployment rate of prime-age males.

[18]Since school enrolment, (non-student) participation and (non-student) inactivity are three exhaustive and mutually exclusive states, the effect of an explanatory variable on school enrolment is equal to the sum of its effect on participation and inactivity.

[19]It should be noted that the adjusted R^2 for our estimates of equation (6) is over 0.97 in all four cases.

[20]That is, changes shared with more mature workers. Note that our formulation does not impose that such changes have the same effect on youth and older groups, only that it obeys the same rules.

[21]Our counter-factual scenarios are obtained by subtracting from the observed series the component attributable to a given factor, that is, attributable to either $\Delta'V_{t+1}$ or P_t^m.

[22]In the LFS, a full-time student looking for a full-time job is not classified as unemployed, while a full-time student looking for a part-time job is classified as unemployed.

[23]Except to the extent that the trend rise in student employment was masking a trend decline in non-student participation.

[24]Broadly speaking, our results are consistent with Grignon and Archambault (1999).

[25]What appears to be the main problem is that young male workers are seeing their earnings potential fall even when they find jobs (see Beaudry and Green 2000). Actually it is not even clear that unemployment is a worsening problem, the problem appears to be wages. The question then is what can restore the earnings capacity of young men. Certainly the perverse intergenerational transfers currently going on in Canada are in the wrong direction.

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