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Factors Behind the Changes in Canada's Family Income Distribution and the Share of the Middle Class

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Résumé de l'article

Cet article vise à identifier si des changements évidents sont survenus dans les caractéristiques principales de la répartition des revenus des familles canadiennes au cours des deux dernières décennies, et plus particulièrement dans la part des revenus détenus par la classe moyenne. Après avoir passé en revue les explications possibles et les déterminants de ces changements selon les différentes hypothèses qui ressortent de la littérature sur le sujet, les auteurs se proposent de vérifier plusieurs de ces hypothèses au moyen d'un modèle d'analyse de régression.

En dépit de plusieurs similitudes entre les marchés du travail canadien et américain, les changements dans la répartition des revenus des familles canadiennes présentent certaines différences notables quand on les compare à ce qui s'est passé outre-frontière. La part des revenus familiaux de la classe moyenne au Canada a augmenté au cours des décennies 1960 et 1970 pour atteindre le sommet de 56,0 pour cent en 1977, mais, dans les dix années qui suivirent, elle a diminué de 1,8 pour cent.

Aux États-Unis, la part des revenus de la classe moyenne avait atteint son maximum dix ans plus tôt, soit en 1967, et, en 1986, celle-ci avait laissé de 2,6 pour cent. Dans aucun des deux pays, la part des revenus de cette classe n'a repris le terrain perdu depuis la récession de 1981-1982; au contraire, elle a continué de baisser.

L'ampleur des modifications survenues tant au sommet qu'à la base de la répartition des revenus au Canada reste bien inférieur, d'au plus la moitié, de ce qu'ont connu les États-Unis et la part du quintile inférieur a augmenté ces dernières années au Canada, tandis qu'elle diminuait aux États-Unis. D'une façon générale, les changements survenus dans les parts des quintiles sont moins prononcés au Canada qu'aux États-Unis, et affichent davantage de points de redressement.

Dans la littérature, on relève plusieurs hypothèses qui essaient d'expliquer ces modifications. Celles-ci comprennent l'accroissement du taux d'activité des femmes dans la population active; des changements dans la structure de la famille; la retraite plus hâtive, surtout chez les hommes; le transfert de la croissance des emplois vers le secteur de services; la variation des classes d'âge au sein de la population totale et les effets normaux du cycle de l'activité économique.

En utilisant les données de l'enquête sur les finances des consommateurs de Statistique Canada pour la période 1965-1987, les auteurs ont estimé les modèles de régression pour les parts des quintiles des revenus familiaux de manière à vérifier ces hypothèses. On y a trouvé que les taux d'activité des hommes et des femmes exercent des effets déséquilibrants non négligeables et qui se renforcent mutuellement sur toute la structure des revenus familiaux. Bien que le changement marginal dans le taux d'activité soit plus élevé chez les hommes que chez les femmes, la hausse extraordinaire des taux d'activité féminins pendant les deux dernières décennies a produit, sur la répartition des revenus, un effet cumulatif beaucoup plus grand que l'effet produit par le déclin dans les taux masculins. L'effet net de la tendance vers une plus grande égalité de la répartition des revenus, suite aux changements dans la démographie et les structures familiales, reste dominé par l'effet déstabilisant des changements dans les taux d'activité. La diminution des prestations d'assurance chômage favorise les quintiles inférieurs et supérieurs de la répartition des revenus mais, à un degré moindre que les changements dans les taux d'activité. L'inflation et les transferts d'emplois du secteur de l'industrie à celui des services n'ont eu qu'un effet limité, quoique la valeur estimée dans le dernier cas indique un léger recul dans la part de la classe moyenne.

Que signifient ces constatations en regard des diverses hypothèses testées? Les effets des taux d'activité (en hausse chez les femmes et en baisse chez les hommes) semblent très significatifs sur l'ensemble de la répartition. La part de la classe moyenne, particulièrement, serait réduite par l'effet de l'un et de l'autre. Sur l'ensemble de la période étudiée, toutefois, le premier effet l'a nettement emporté sur le deuxième en amplitude. Dans la mesure où les modifications dans les structures de la famille et les changements dans les classes d'âge sont prises en compte par la variable de tendance, ces effets indiquent une augmentation de la part des revenus de la classe moyenne. Les effets de la conjoncture économique, représentée par la variable de taux de chômage, sont présents mais ceux-ci restent plus faibles que ceux engendrés par les taux d'activité et les effets de tendance. Il est manifeste jusqu'à un certain point que l'effet des transferts d'emplois vers le secteur des services est de nature à diminuer la portion des revenus échéant à la classe moyenne.

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Factors Behind the Changes in Canada's Family Income Distribution and the Share of the Middle Class

Catherine J. McWatters
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Charles M. Beach

This paper seeks to examine whether there have been noticeable changes in the main features of the Canadian distribution of family income over the last two decades, in particular to examine what changes have occurred to the middle-class income share in Canada, and thence to identify possible determinants of these changes among a number of alternative hypotheses in the literature.

The last five years has seen a burgeoning literature regarding the so-called declining middle class in the United States. The issues concern estimating the degree to which the middle-income share in the U.S. has declined since the late 1960s and then explaining such distributional changes in terms of a number of alternative hypotheses. The debate over importance of the different hypotheses has involved such authors as Levy (1987) and Blackburn and Bloom (1987) highlighting demographic and supply-side factors, and Tilly, Bluestone, and Harrison (1987) emphasizing deindustrialization effects and demand-side explanations. Recently, a similar inquiry has begun in Canada with the work of Wolfson (1986), Leckie (1988), Rashid (1989), and Myles et al. (1988). A resolution of the issues of what changes have occurred and what factors can explain them, however, is not all clear yet. This paper seeks to examine whether there have been noticeable changes in the main features of the Canadian distribution of

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family income over the last two decades, in particular to examine what changes have occurred to the middle-class income share in Canada, and thence to identify possible determinants of these changes among a number of alternative hypotheses in the literature.

Before proceeding, it is useful to identify some basic concepts. First, the middle class is defined in this paper and in most of the literature in relative terms as the middle three quintiles or income shares (i.e., the middle 60% share) of the income distribution of *families*. The income concept used is annual total money income receipts (before taxes but including transfers) as defined by Statistics Canada. The principal data source for the study is Statistics Canada's *Size Distribution of Income in Canada* over the period 1965-1987¹.

THE CANADIAN FAMILY INCOME DISTRIBUTION, 1965-1987

Consider first the basic data. Mean and median real family income for Canada are presented in Table 1 and graphed in Figure 1 (along with income of family units²). The data show strong evidence of the 1981-82 recession. Since 1965, both indicators have trended upward until the 1981-82 recession, declined and bottomed out in 1984, and then again began increasing. Only in 1987 did mean family income finally surpass that in 1980; median income by 1987 was still below that before the recession. If we compare the Canadian median family income to that in the United States, one difference can be identified. In 1973, family median income stood at \$28,200 (1984 dollars) U.S., but by 1975 real income had declined by \$1,700 U.S. (Levy, 1987, p. 17). Canada did not experience this shock to median family income; rather growth continued until 1980. Both countries experienced a similar marked decline due to the 1981-82 recession followed by an increase in recent years. By 1986, U.S. median real family income had risen back to \$27,906, still short of its 1973 peak (though mean income in 1986 had surpassed its 1973 peak).

Quintile income shares for Canadian families are presented in Table 2. As can be seen in column 5, the middle class share has risen from 54,7 percent in 1965 to peak at 56,0 percent in 1977 and then declined steadily through the 1981-82 recession to 54,2 in 1987. This 1,8 percentage point

1 The review period begins with 1965 in order to utilize a consistently defined and broad population base for intertemporal comparisons. Previous surveys were based on generally smaller samples and a non-farm population definition.

2 Economic families are family units of size two or more members; that is, they do not include any unattached individuals.

decline compares to a 2,6 percentage point decline in the corresponding United States middle income share which peaked a decade earlier in 1967 (at 54,2), and by 1986 had fallen to 51,6 (U.S. Bureau of the Census, 1986). Within the three middle-income quintiles for Canada, the second and fourth quintiles show statistically significant trends that are downward for the second quintile and upward for the fourth. The third quintile and middle-class share as a whole show highly significant quadratic trends that peak around 1976 and then decline.

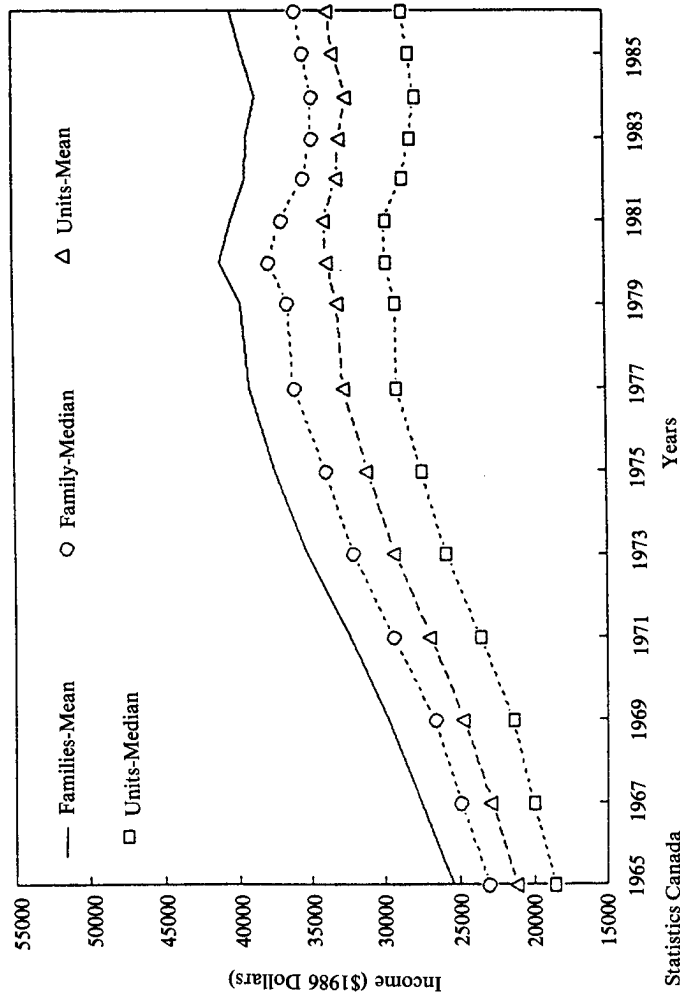
Table 1
Mean and Median Family Income (1986 Constant Dollars)

<i>Year</i>	<i>Mean</i>	<i>Median</i>
1965	25,438	23,058
1967	27,506	24,904
1969	29,704	26,664
1971	32,449	29,443
1973	35,303	32,184
1975	37,570	34,066
1977	39,201	36,213
1979	39,772	36,595
1980	41,080	37,855
1981	40,302	36,923
1982	39,411	35,420
1983	39,254	34,862
1984	38,721	34,828
1985	39,615	35,455
1986	40,356	36,042
1987	41,774	37,220

Source: Statistics Canada, *Size Distribution of Income in Canada*, Catalogue No. 13-207, 1978, 1987.

Also interesting is what has happened to the top and bottom ends of the distribution compared to the United States. The top quintile share in Table 2 has risen by 1,4 percentage points since a trough in 1977, while the bottom quintile share has also very slightly increased with a general upward trend in recent years reaching a peak in 1987. While a 0,4 percentage point rise in the bottom quintile share between 1984 and 1987 may not seem like much, this corresponds to a \$744 increase in the mean real annual income of the bottom quintile families in 1987. Over the sample period as a whole, the bottom quintile share shows a statistically significant positive trend, while

Figure 1
Mean and Median Income
For Families and Family Units



the top quintile shows no significant trend. This contrasts markedly with the United States experience where the share of the top quintile increased by 3,3 percentage points since a trough that occurred in 1967, and the share of the bottom quintile declined by about 1 percentage point since a peak in 1969 and has shown a general downward trend in recent years (U.S. Bureau of the Census, 1986). Whereas the ratio of top-to-bottom quintile shares in Canada declined slightly from 6,3 in 1965 to 6,1 in 1987 (with a range of 6,0 to 7,2), the U.S. ratio increased from 7,9 to 9,5 by 1986 (with a range of 7,2 to 9,5). Clearly, there are some rather marked differences in what has been happening to the family income distribution between the two countries, with the Canadian trends much more muted and with turning points in Canada a decade or so later than in the United States. These differences raise the question of what have been the major factors operating on the family income distribution in Canada.

Table 2
Canadian Quintile Shares of Family Income

<i>Year</i>	<i>1st</i>	<i>2nd</i>	<i>3rd</i>	<i>4th</i>	<i>MC</i>	<i>5th</i>	<i>5th/1st</i>
1965	6,2	13,1	18,0	23,6	54,7	39,0	6,29
1967	6,4	13,1	18,0	23,6	54,7	38,9	6,08
1969	6,2	12,6	17,9	23,5	54,0	39,7	6,40
1971	5,6	12,6	18,0	23,7	54,4	40,0	7,14
1973	6,1	12,9	18,1	23,9	54,9	38,9	6,34
1975	6,2	13,0	18,2	23,9	55,1	38,8	6,26
1977	5,9	13,1	18,5	24,4	56,0	38,0	6,44
1979	6,1	13,0	18,4	24,3	55,7	38,3	6,28
1980	6,2	13,0	18,4	24,1	55,5	38,4	6,19
1981	6,4	12,9	18,3	24,1	55,3	38,4	6,00
1982	6,3	12,6	18,0	24,1	54,7	38,9	6,17
1983	6,2	12,3	17,8	24,1	54,2	39,5	6,37
1984	6,1	12,3	18,0	24,1	54,4	39,5	6,48
1985	6,4	12,4	17,9	24,1	54,4	39,2	6,13
1986	6,4	12,4	17,9	24,0	54,3	39,3	6,14
1987	6,5	12,4	17,8	24,0	54,2	39,4	6,06

Source: Statistics Canada, *Size Distribution of Income in Canada*, Catalogue No. 13-207, 1978 and 1987. The figures for 1985-87 are the more recent revised figures.

Note: M.C. is defined as the sum of the three middle quintile shares.

AN OVERVIEW OF CONTRIBUTING FACTORS AND HYPOTHESES

An overview of the literature on various factors affecting the distribution of income and its changes over the last two decades can be usefully approached by grouping the factors in terms of, first, supply-side issues, and then demand-side issues.

Supply-Side Issues

The major contributing factors which have been hypothesized as affecting the income distribution are the baby-boom effect, increased women's labour force participation, changes in family structures, and retirements and pensions.

Baby-Boom Effect

This effect characterizes the large influx of labour into the market place as the baby boomers came of labour force age. A large influx of young workers with little labour market experience reduces wages of workers at an early stage of their career, widens skill differentials in wages, and increases unemployment rate differentials between young and other workers. Lawrence (1984) is one author who claims that the baby-boom effect leads to increasing inequality with the inflow of young workers with relatively low incomes. Bradbury (1986) suggests that these changes actually had an opposite effect between 1973 and 1984, from the baby-boomers more recently approaching a stage in their life-cycle where their incomes are higher, hence moving a large group of families into a middle class range.

Increased Women's Labour Force Participation

The fact that the participation rate of women has increased is not disputed. In Canada in 1966, the labour force participation rate was 35,4%; by 1987 the rate was 56,4% (Statistics Canada, *The Labour Force*, 1966, 1989). The discussion revolves around how the increase has impacted on the degree of equality of the family income distribution, and more specifically, on the middle class share. Working wives may increase the family income so that middle class status is retained rather than family income falling into the bottom quintile, or their income may have the effect that families can be boosted into an upper class level of income. A priori, the effect of such income changes on the relative middle class share is indeterminate.

Bradbury (1986) suggests that the contribution of working women with respect to middle class is greater than that for the upper class. In contrast. Blackburn and Bloom (1987) find evidence that a second worker within the family has had the effect of moving families into the upper class. There appears to be no consensus yet even empirically on the overall distributional effect on inequality among family incomes of increased women's labour market involvement.

Changing Family Structure

The incidence of divorce, single-parent families and unrelated individuals (due to later or no marriages) have all increased in the last two decades. At the same time, family size through numbers of children has declined. Through shift-share analysis, Bradbury (1986) identifies that decreased family size and increased incidence of single parents (change of family type) contributed to increased inequality, but suggests that these effects were offset by the equalizing effect of increased labour force participation of wives.

The negative impact on the middle class of the changes in family structure are also supported by Wolfson (1986) who shows empirically through a standardization analysis that the Canadian experience has been similar to the United States. Increased divorce, decreased family size, and increased numbers of single parents have led to increased income inequality in Canada (Wolfson, 1986).

Retirement and Pensions

It appears that very little work has been done on the effect of earlier retirement and increased pensions as an impact on the income distribution. In Canada, the labour force participation of males aged 65 and over has declined from 18,6% in 1972 to 10,8% by (March) 1989. For the 45-64 year old age group for the same time period, the change was from 88,2 to 80,1% (Statistics Canada, *The Labour Force*). These trends suggest the following considerations. Firstly, increased retirement could lead to a smaller middle class share, as family incomes decrease when an individual's salary is replaced by a pension, or old age transfers. Secondly, the incidence of pensions has risen, leading to the middle class share probably not declining to as great an extent or even rising relative to a situation where pensions did not exist. Thirdly, improved pensions and old age support may induce increased early retirement.

To summarize the supply-side issues, the one set of effects likely impacting negatively on the share of middle class income is changing family structures. Effects that are neutral or ambiguous are likely the baby boom cohort effect, and we will also include women's labour force participation and early retirement with pensions since there appears to be a lack of consensus on their distributional impacts in both cases (Beach, 1989).

Demand-Side Issues

Within this section there has been an ongoing debate over the causes and impact of increasing employment in the service sector accompanied by a decline in employment in the manufacturing sector. While the employment by industry figures give credence to the trend, the cause and impacts are debated. Firstly, the increase in services and decrease in manufacturing employment growth has been suggested to be a structural change, not a business cycle effect. If employment growth has indeed undergone structural change, any impacts created will be viewed as *lasting* effects instead of temporary. Also, does a shift to services where the earnings are typically more unequal and lower on average relative to manufacturing impact on middle class incomes since a large portion of their income is from labour earnings?

Structural Change vs. Business Cycle Effects

Structural change, or deindustrialization (Bluestone, Harrison, and Clayton-Matthews, 1986) as some attempt to define it, has been put forth as a major explanation for employment declines in the manufacturing sector and employment expansions in the service sector in the United States. By its very name, deindustrialization, this argument suggests that, whatever change has occurred is permanent in nature and not just a transitory cyclical effect. In Canada, from 1965 to 1987, total manufacturing employment increased by 25% whereas service producing jobs rose by 110% (*Quarterly Economic Review*, 1988; and *The Labour Force*, 1968). If services have lower, more dispersed wages relative to manufacturing (Beach, 1989), then the country's income distribution would become more unequal if the trend continues. As the weight of employment shifts from the «middle class» manufacturing sector, the experience may be one of a declining middle class income share.

On the other hand, authors such as Lawrence (1984) are proponents of a business cycle interpretation. Recessionary effects of high unemployment and sluggish GNP growth, plus increased value of the U.S. dollar causing

unfavorable effects on the trade balance, lead Lawrence to state that the reduction in U.S. manufacturing jobs since 1979 is due primarily to the 1981-82 recession.

A major component of the recessionary effect is the incidence of unemployment and involuntary part-time work. For a general review of this literature, one can consult Beach (1989). This review identifies that the effect of unemployment on each family quintile income share differs. The poorest quintile is most susceptible to unemployment trends. This susceptibility declines as one advances up to the top quintile where earnings are essentially not affected by the unemployment fluctuation. This suggests widening inequality of individual incomes during recessions and narrowing inequality during expansions.

Clearly, the Canadian and U.S. economies have undergone great amounts of change in the last two decades. It should not be surprising that these changes should have some impact on the distribution of income.

EMPIRICAL ANALYSIS WITH AN INCOME SHARE REGRESSION MODEL

The basis of our empirical analysis is an econometric framework employed by Adolf Buse (1982) in an attempt to identify the impact of business cycle fluctuations on the income distribution in Canada over the 1947-1978 period. Buse estimated regression equations for quintile shares as a function of aggregate economic indicators such as the unemployment rate, participation rate, and inflation rate. A similar investigation will be undertaken here, but with several differences. Buse used a data set based on income tax returns of individuals whereas the present study uses Survey of Consumer Finances data as reported in the *Size Distribution of Income in Canada* publications. This enables us to analyze family income distributions and the so-called middle class. Secondly, the time frame covered in the present analysis is 1965-1987, a more recent period than covered by Buse and one that includes the severe 1981-82 recession and five years of subsequent recovery³. Thirdly, the analysis will include, beside business cycle indicators, several variables not considered by Buse.

The basic regression model estimated is as follows:

$$\ln Q_{it} = \beta_0^i + \beta_1^i \ln U_t + \beta_2^i \ln PRM_t + \beta_3^i \ln PRW_t \\ + \beta_4^i \ln CP_t + \beta_5^i \ln MS_t + \beta_6^i T_t + u_{it}$$

³ Since the data employed start in 1965 on a biennial basis and then switch to an annual basis beginning in 1971, the result is a time series sample of twenty observations on the quintile share variables. 1965 is the first year that the SCF data provided full population coverage.

- where Q_{it} = quintile income share i in year t
 U_t = annual unemployment rate in year t
 PRM_t = annual participation rate for men in year t
 PRW_t = annual participation rate for women in year t
 CP_t = annual percentage change in the Consumer Price Index in year t
 MS_t = ratio of employment in manufacturing sector to that in service-producing sector in year t
 T_t = time trend, and
 u_{it} = error term for quintile share i in year t .

The unemployment rate and the percentage change in the Consumer Price Index (inflation rate) are variables which proxy the business cycle effects.

Since there are two distinct participation rate hypotheses in the literature, these are represented by separate participation rate variables for men (PRM) and women (PRW). The former represents the increased early retirement of men; the latter, the increased labour market involvement of women, particularly married women.

The manufacturing to service-producing employment ratio (MS) proxies the shift in weight of employment to services in an attempt to test the distributional impact of this change.

The time trend is expected to capture the baby-boom effect plus changes in family structure. The changes in family structure variables, including decreased family size and increased numbers of single parent families, are likely adjusting in continuous and steady fashion over the sample period and therefore could be proxied by a time trend. The model is specified in double-log form so that the rate coefficients are interpreted as elasticities and the trend coefficient as a proportional change in the dependent variable.

The basic regression results are provided in Table 3. The first five columns refer to the quintile income shares ordered from the bottom share to the top. The last column refers to the middle class income share or the sum of the middle three quintile shares. Since a common set of regressors appears in each equation, a joint cross-equation estimation procedure reduces to simple OLS regressions. As can be seen, the individual R^2 's range

between ,50 to ,87 and all but one equation are jointly significant (on the basis of standard F-tests). Figures in brackets are conventional t-ratios⁴.

Table 3
Quintile Share Regression Results for Family Income
(estimated t-ratios in brackets)

	<i>Q1</i>	<i>Q2</i>	<i>Q3</i>	<i>Q4</i>	<i>Q5</i>	<i>MC</i>
c	-11,24 (1,28)	-12.02 (3,39) *	-2,223 (0,64)	-0,7644 (0,35)	14,88 (4,85) *	-2,8329 (1,10)
LnU	-0,1158 (0,97)	0,1058 (2,19) *	0,0956 (2,01) *	0,0509 (1,71)	-0,1175 (2,82) *	0,0787 (2,26) *
LnPRM	3,8590 (1,32)	4,4960 (3,81) *	1,6569 (1,43)	1,0143 (1,39)	-3,3609 (3,30) *	2,0485 (2,40) *
LnPRW	-1,1661 (0,88)	-1,4565 (2,72) *	-0,5709 (1,09)	-0,1548 (0,47)	1,0078 (2,18) *	-0,5998 (1,55)
LnCP	0,0009 (0,05)	0,0128 (1,73)	0,0050 (0,69)	-0,0020 (0,45)	-0,0003 (0,05)	0,0036 (0,68)
LnMS	-0,4893 (1,24)	0,0922 (0,58)	0,2706 (1,74)	0,0320 (0,33)	-0,0809 (0,59)	0,1248 (1,09)
T	0,0280 (0,85)	0,0339 (2,56) *	0,0166 (1,28)	0,0044 (0,54)	-0,0239 (2,09) *	0,0154 (1,61)
R ²	0,6611	0,8705	0,5002	0,7478	0,6514	0,6172
F	4,226**	14,57**	2,168	6,426**	4,049**	3,493**
S.E. Reg.	,02547	,01026	,01009	,00633	,00860	,00741
DW	1,777	1,487	1,910	2,572	2,458	1,825

* Significant at the 10% level on a two-tailed test.

** Significant at a 95% level of confidence.

Perhaps the major finding from the results of this table is that the two individual participation rate effects are very substantial. Broadly speaking, the participation rate effects, when disaggregated by gender, turn out to be disequalizing at the bottom and top ends of the income distribution as the declining participation rate of men reduces the bottom quintile and increases the top, and the rising participation rate of women has a similar

⁴ All the regressions were also run in level form (without logs), in first differences, adjusting for potential AR1 errors, and for family units as well as families, and the major findings reported in this paper all carry through. No significant autocorrelation was detected in any equation.

reinforcing effect. The results thus support Wolfson's (1986, p. 368) finding that the increased participation rate of women has had a disequalizing impact. The declining participation rate for men is also estimated to decrease significantly the income share of the middle class. The trend effect generally raises the bottom quintile shares, has a positive (though not significant) effect on the middle class share, and significantly reduces the top income share.

The marginal participation rate effects for men are considerably larger than those for women (with estimated elasticities of -3,4 to 4,5 versus -1,5 to 1,0). But women's participation rates have changed far faster than men's over the sample period (a fall of about 2 percentage points for men versus a rise of about 24 percentage points for women). Consequently, the *incremental* participation rate effects (taking account of the full changes in rates between 1965 and 1987 — by -2 1/2 percent for men and over 50 percent for women) result in PRW changes dominating throughout the distribution. For examples, among the middle class shares, the incremental PRW effect of $(.50 \times -.5998 =) -.2999$ over the sample period clearly dominates the PRM effect of $-.0512$, and is about the same magnitude (in absolute value) as the incremental trend and PRM effects combined. By comparison, the incremental unemployment rate effect over the sample period is $+.1250$, for inflation rate changes $+.0030$, and for the decline in manufacturing-to-service sector employment $-.0502$. Thus among the primary economic variables, the increase in women's participation rates appears to have the dominant long-run impact on the observed decline in the income share of the middle class.

Over the distribution as a whole, reduced unemployment is estimated to benefit the top and bottom ends of the distribution⁵ and reduce the middle-class share, though to a lesser degree than participation rate changes. The inflation variables show no significant effects. The results thus extend Buse's (1982) findings of significant participation rate effects⁶ and insignificant inflation rate effects, but differ in finding some significant unemployment rate effects (perhaps because the present estimation sample covers the severe 1981-82 recession period).

Finally, the employment shift variable, MS, is also not significant in Table 3, though the estimates suggest that the historical decline in MS has had a slight equalizing (negative) effect at the bottom end of the distribution.

5 The negative unemployment effect on the top quintile share may be proxying business cycle impacts via capital income.

6 Buse (1982), however, included only a single aggregate participation rate regressor in his analysis, so he could not identify the two separate effects examined here.

The above analysis is limited, however, by the paucity of observations over the sample period. An obvious technique to improve efficiency of the estimation results is to estimate the above set of equations jointly and delete clearly nonsignificant regressors from the equations. Accordingly, we have followed the rule of deleting regressors in Table 3 with *t*-ratios less than one (in absolute value)⁷ and re-estimating the system of equations jointly by multivariate regression⁸. The results are presented in the appendix Table A. As can be seen, the pattern of coefficient effects is the same as discussed above, but is much sharper in terms of far smaller standard errors. Once again, participation rate effects dominate, and unemployment rate effects come through significantly. The two differences from the results in Table 3 are that now the inflation rate comes through significantly positive in the second quintile where there is some concentration of elderly persons (with public pensions and social security benefits tied to the CPI)⁹ and shifts in sectoral employment weights from manufacturing to services (MS) are seen significantly to raise the bottom quintile share and reduce the income share of the middle class.

REVIEW AND CONCLUSIONS

The purpose of this paper was to investigate the changes occurring in the income distribution in Canada, and in particular, in the income share of the middle class (defined as the middle three quintiles of families in the economy). Despite many similar experiences in the Canadian and U.S. economies — increased labour force participation of women, closely tied business cycles, a shift toward service-sector jobs, and so forth — the distributional changes among family incomes in Canada show some differences from those in the U.S. In Canada, the middle class share was growing from the sixties to the seventies until it peaked in 1977 at 56,0% of family income, but has since declined by 1,8 percentage points by 1987. In the United States, the middle class share peaked a decade earlier in 1967 and has since declined by 2,6 percentage points by 1986. Neither country has made a recovery in the middle income share since the 1981-82 recession; instead, declines have continued. Changes at the top and bottom of the distributions are only half as strong or less in Canada as in the United States, and the bottom quintile share has recently been increasing in Canada

7 Which corresponds to the frequently used criteria of model selection on the basis of improving the mean square error or reducing the regression standard error of each equation (Kmenta, 1986, p. 594).

8 KMENTA, 1986, p. 644.

9 Statistics Canada, 13-207, 1987, p. 143.

but falling in the U.S. Thus, though general trends show a similar pattern in family incomes, the changes in Canada's quintile shares are less pronounced than in the United States and show much more recent turning points.

Several hypotheses were discussed that could potentially account for these changes. These include the increased labour force participation of women, changing family structures, earlier retirement and pensions particularly for men, a shift of employment growth toward the service sector, the changing age distribution of the population, and conventional business cycle effects.

From regression results based on SCF data for Canada over the period 1965-1987, it was found that the two participation rate trends have highly significant and reinforcing disequalizing effects operating through all major portions of the distribution. While the *marginal* participation rate change for men exceeds that for women, the dramatic rise in women's participation rates over the last two decades ends up having a far greater *incremental* effect on the distribution than does the decline in men's rates. The generally equalizing net trend effect (representing changes in demographics and family structure) in the regressions is dominated by the disequalizing effect of the participation rate changes. Reduced unemployment benefits the bottom and top ends of the distribution, though to a lesser degree than participation rate changes. Inflation and shifts in employment from manufacturing to service sectors show only limited effects, though estimates of the latter effect do suggest a slight decline in the share of the middle class.

What do these results have to say about the validity of the hypotheses cited above? Both the participation rate effects (the increased female participation rate and the earlier retirement and reduced male participation rate) appear highly significant — and generally so right across the distribution. The middle-class share, in particular, is estimated to be reduced by the decline in men's participation rate and by the rise in women's participation rate. Over the sample period, however, the latter effect has clearly dominated the former in magnitude. To the extent that changing family structure and changing age distribution of the population are picked up by the time trend, these effects on net are estimated to increase the middle-class income share. Business cycle effects do show some significance through the unemployment rate, but it is weaker than participation rate and trend effects. There is some suggestive evidence in support of a distributional effect of an employment shift towards the service sector reducing the share of the middle class.

Appendix Table A

Family Income Share Regression Results: Multivariate Estimates
(estimated t-ratios in brackets)

	<i>Q1</i>	<i>Q2</i>	<i>MC</i>	<i>Q4</i>	<i>Q5</i>
c	-4,356 (1,54)	-13,90 (5,63)	-3,8120 (3,28)	—	14,55 (7,90)
LnU	-0,2074 (4,82)	0,1095 (4,09)	0,0833 (6,19)	0,0433 (12,7)	-0,1050 (5,21)
LnPRM	1,3475 (2,10)	4,7974 (5,74)	2,2100 (5,67)	0,7097 (454,)	-3,1241 (4,96)
LnPRW	—	-1,3155 (3,46)	-0,5339 (3,04)	—	0,8237 (2,86)
LnCP	—	0,0036 (2,04)	—	—	—
LnMS	-0,5984 (6,83)	—	0,0790 (4,55)	—	—
T	—	0,0289 (3,33)	0,0129 (3,18)	—	-0,0180 (2,74)
S.E. Reg.	,02120	,00909	,00624	,00531	,00732
DW	1,736	1,143	1,570	2,510	2,233

Note: Estimation is by iterative seemingly unrelated regression procedure. Estimated standard errors and t-ratios are based on zero restrictions from the OLS regressions in Table 3.

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Les facteurs qui sous-tendent les changements dans les revenus familiaux au Canada: la part de la classe moyenne

Cet article vise à identifier si des changements évidents sont survenus dans les caractéristiques principales de la répartition des revenus des familles canadiennes au cours des deux dernières décennies, et plus particulièrement dans la part des revenus détenus par la classe moyenne. Après avoir passé en revue les explications possibles et les déterminants de ces changements selon les différentes hypothèses qui ressortent de la littérature sur le sujet, les auteurs se proposent de vérifier plusieurs de ces hypothèses au moyen d'un modèle d'analyse de régression.

En dépit de plusieurs similitudes entre les marchés du travail canadien et américain, les changements dans la répartition des revenus des familles canadiennes présentent certaines différences notables quand on les compare à ce qui s'est passé outre-frontière. La part des revenus familiaux de la classe moyenne au Canada a augmenté au cours des décennies 1960 et 1970 pour atteindre le sommet de 56,0 pour cent en 1977, mais, dans les dix années qui suivirent, elle a diminué de 1,8 pour cent. Aux États-Unis, la part des revenus de la classe moyenne avait atteint son maximum dix ans plus tôt, soit en 1967, et, en 1986, celle-ci avait laissé de 2,6 pour cent. Dans aucun des deux pays, la part des revenus de cette classe n'a repris le terrain perdu depuis la récession de 1981-1982; au contraire, elle a continué de baisser.

L'ampleur des modifications survenues tant au sommet qu'à la base de la répartition des revenus au Canada reste bien inférieur, d'au plus la moitié, de ce qu'ont connu les États-Unis et la part du quintile inférieur a augmenté ces dernières années au Canada, tandis qu'elle diminuait aux États-Unis. D'une façon générale, les changements survenus dans les parts des quintiles sont moins prononcés au Canada qu'aux États-Unis, et affichent davantage de points de redressement.

Dans la littérature, on relève plusieurs hypothèses qui essaient d'expliquer ces modifications. Celles-ci comprennent l'accroissement du taux d'activité des femmes dans la population active; des changements dans la structure de la famille; la retraite plus hâtive, surtout chez les hommes; le transfert de la croissance des emplois vers le secteur de services; la variation des classes d'âge au sein de la population totale et les effets normaux du cycle de l'activité économique.

En utilisant les données de l'enquête sur les finances des consommateurs de Statistique Canada pour la période 1965-1987, les auteurs ont estimé les modèles de régression pour les parts des quintiles des revenus familiaux de manière à vérifier ces hypothèses. On y a trouvé que les taux d'activité des hommes et des femmes exercent des effets déséquilibrants non négligeables et qui se renforcent mutuellement sur toute la structure des revenus familiaux. Bien que le changement marginal dans le taux d'activité soit plus élevé chez les hommes que chez les femmes, la hausse extraordinaire des taux d'activité féminins pendant les deux dernières décennies a produit, sur la répartition des revenus, un effet cumulatif beaucoup plus grand que l'effet produit par le déclin dans les taux masculins. L'effet net de la tendance vers une plus grande égalité de la répartition des revenus, suite aux changements dans la démographie et les structures familiales, reste dominé par l'effet déstabilisant des changements dans les taux d'activité. La diminution des prestations d'assurance-chômage favorise les quintiles inférieurs et supérieurs de la répartition des revenus mais, à un degré moindre que les changements dans les taux d'activité. L'inflation et les transferts d'emplois du secteur de l'industrie à celui des services n'ont eu qu'un effet limité, quoique la valeur estimée dans le dernier cas indique un léger recul dans la part de la classe moyenne.

Que signifient ces constatations en regard des diverses hypothèses testées? Les effets des taux d'activité (en hausse chez les femmes et en baisse chez les hommes) semblent très significatifs sur l'ensemble de la répartition. La part de la classe

moyenne, particulièrement, serait réduite par l'effet de l'un et de l'autre. Sur l'ensemble de la période étudiée, toutefois, le premier effet l'a nettement emporté sur le deuxième en amplitude. Dans la mesure où les modifications dans les structures de la famille et les changements dans les classes d'âge sont prises en compte par la variable de tendance, ces effets indiquent une augmentation de la part des revenus de la classe moyenne. Les effets de la conjoncture économique, représentée par la variable de taux de chômage, sont présents mais ceux-ci restent plus faibles que ceux engendrés par les taux d'activité et les effets de tendance. Il est manifeste jusqu'à un certain point que l'effet des transferts d'emplois vers le secteur des services est de nature à diminuer la portion des revenus échéant à la classe moyenne.

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