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Working Paper No. 396

The Evolution of Wealth Inequality in Canada, 1984-1999

by

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I. INTRODUCTION

Distributional issues have attracted considerable interest over the last fifteen years in Canada and in most OECD countries. In Canada, individual earnings inequality has risen since the beginning of the 1980s, at least among male workers (Morissette, Myles and Picot, 1994; Beach and Slotsve, 1996). In contrast, inequality in family disposable income has not increased between the mid-1970s and the mid-1990s (Wolfson and Murphy, 1998). Whether wealth inequality at the family level has risen over the last fifteen years remains unknown.

The goal of this paper is to fill this gap. Using data from the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999 (Section II), we first document changes in average and median wealth between 1984 and 1999.[1] We find that both real average and median wealth rose during the period. Since older families tend to have accumulated more wealth than their younger counterparts, part of the observed increase in average wealth could simply be due to the aging of the Canadian population. Using shift-share analysis, we find that about one-third of the growth in average wealth can be attributed to the aging of family units (Section III).

In Section IV, we show that wealth inequality has increased during the period. The increase in wealth inequality did not occur in a context where all segments of the population enjoyed increases in wealth: median wealth fell in the bottom three deciles of the wealth distribution but rose 27% or more in the top three deciles. Furthermore, only families in the 10^{th} decile (and in some samples in the 9^{th} decile as well) have increased their share of total net worth during the period.

In Section V, we describe changes in the wealth structure. We show that real median wealth and real average wealth rose much more among family units whose major income recipient is a university graduate than among other family units. Furthermore, both fell among family units whose major income recipient is aged 25-34 and increased among those whose major income recipient is aged 55 and over.

In Section VI, we use re-weighting methods to examine the extent to which changes in family structure, changes in the age structure and changes in relative wealth by age and education of the major income recipient account for the growth of wealth inequality. We show that the aging of the Canadian population tended to reduce wealth inequality. Furthermore, we

implement the semi-parametric approach proposed by Dinardo, Fortin and Lemieux (1996) and answer the following question: what would wealth inequality have been in 1999 if permanent income and other attributes of family units had remained at their 1984 level *and* family units had kept the net worth observed in 1999? Our results suggest that permanent income and other family attributes—as measured with cross-sectional data—are not major factors behind the growth of wealth inequality.

In Section VII, we confirm these findings with regression-based methods. We attempt to quantify the contribution of changes in family units' permanent income and demographics to the change in wealth inequality. We acknowledge that our ability to do so is limited by the fact that we are using cross-sectional data to explain a variable—wealth—which is best understood with longitudinal microdata. Using Oaxaca-Blinder decomposition methods, we find that neither diverging changes in permanent income nor diverging changes in socio-demographic characteristics explain a substantial portion of the growing gap between low-wealth and high-wealth family units.

We examine the extent to which some specific wealth components have contributed to the growth of wealth inequality in Section VIII. We show that, in a purely accounting sense, registered retirement savings plans (RRSPs) have, of all wealth components, contributed the most to the increase in wealth inequality.

We conclude that differences—between low-wealth and high-wealth family units—in the number of years worked full-time, in the growth of inheritances, inter vivos transfers and rates of return on savings are likely to have played a major role in the growth of wealth inequality. In particular, rates of return on savings may have increased more for wealthy family units than for their poorer counterparts as a result of the booming stock market during the 1990s.

II. DATA AND CONCEPTS [2]

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[1] The 1984 survey was not actually called the Assets and Debts Survey: it was just the asset and debt information collected in the May 1984 Survey of Consumer Finances. For the purpose of this paper, we refer to it using the term Assets and Debts Survey.

[2] This section draws heavily on Appendices A and B of "The Assets and Debts of Canadians: An overview of the results of the Survey of Financial Security", Statistics Canada, Cat. No. 13-595.

We use the Assets and Debts Survey of 1984 (ADS 1984) and the Survey of Financial Security of 1999 (SFS 1999). ADS 1984 is a supplement to the May 1984 Survey of Consumer Finances. SFS 1999 is a distinct survey which was conducted from May to July 1999. In both cases, the sample used is based on the Labor Force Survey sampling frame and represents all families and individuals in Canada, except the following: residents of the Yukon and the Northwest Territories; members of households located on Indian reserves; full-time members of the Armed Forces; and inmates of institutions.[3] Data is obtained for all members of a family 15 years and over.

Some differences between the two surveys are worth noting. First, in ADS 1984, all information on components of assets (except housing) and debts were collected for each member of the family aged 15 years and over and then aggregated at the family level. In contrast, in SFS 1999, information on components of assets and debts were directly collected at the family level. Second, contrary to ADS 1984, SFS 1999 contained a "high-income" supplementary sample (consisting initially of about 2,000 households) which was included to improve the quality of wealth estimates.[4] The final sample of ADS 1984 includes 14,029 family units and that of SFS 1999 includes 15,933 units. Family units include both unattached individuals and families.

It is well-known that the quality of wealth data is viewed as being lower than the quality of income data. This is largely because records of the current value of assets and debts are not as readily available as records of income. Also, the value of real assets (such as housing and vehicles) is judged to be of higher quality than that of financial assets.

To make the concept of wealth comparable between the two surveys, we have to exclude the value of the following items from the 1999 data, as they were not included in the 1984 survey: contents of the home, collectibles and valuables, annuities and registered retirement income funds (RRIFs). We define wealth of a family unit as the difference between the value of its total asset holdings and the amount of total debts. Our concept of wealth excludes the value of work-related pension plans and/or entitlements to future social security provided by the government in the form of Canada or Quebec Pension Plan or Old Age Security Systems. It also

[3] Institutions such as penal institutions, mental hospitals, sanatoriums, orphanages and seniors' residences.

[4] Having a high-income supplement in 1999 increases the precision of wealth statistics (average, median, inequality measures, etc.), compared to ADS 1984, but leaves them unbiased (like those of ADS 1984).

excludes the family's human capital measured in terms of the value of the discounted flow of future earnings for all family members.

One particularly difficult issue with wealth data is the measurement of the upper tail of the wealth distribution. Using a variety of data sources, Davies (1993) estimates that the share of total wealth held by the top 1% of family units in 1984 may increase from 17% (using ADS 1984) to 22%-27% after making appropriate adjustments. Similarly, his estimates suggest that the share of total wealth held by the top 5% of family units in 1984 may increase from 38% to 41%-46%.

A further complication arises from the fact that, in this paper, we are comparing wealth at two points in time; the degree of truncation of the wealth distribution may change over time. More precisely, assume, for simplicity, that the true wealth distribution remains unchanged between 1984 and 1999. Extending the argument of Davies (1993:160) to the analysis of *changes* in the wealth distribution, if no Canadian family with wealth over $10 million ever consents to an interview in 1984, and if no Canadian family with wealth over $50 million ever consents to an interview in 1999, ADS 1984 and SFS 1999 will show an (incorrect) increase in wealth inequality which could simply be due to the use of better interviewing techniques in the latter survey than in the former.[5] For these reasons, most of the analysis conducted in this paper uses three different samples: 1) all family units (first sample), 2) all family units except those at the top 1% of the wealth distribution (second sample) and, 3) all family units except those at the top 5% of the wealth distribution (third sample). For simplicity, we use the terms wealth and net worth interchangeably.

III. CHANGES IN AVERAGE WEALTH AND MEDIAN WEALTH

Table 1 shows average and median wealth for all three aforementioned samples. For all three samples, real median wealth grew by roughly 10% between 1984 and 1999. Real average wealth rose between 28% and 37%. Note that excluding the top 1% of family units lowers the growth rate of average wealth from 37% to 31%, indicating that the choice of the sample matters. The

[5] Weighting procedures cannot correct this problem since no family with wealth over $10 ($50) million would be observed in the sample.

growth in median and average wealth occurred despite an increase in the percentage of family units with zero or negative wealth.[6]

Financial wealth is a second concept of wealth which is useful for analysis. By financial wealth, we mean net worth minus net equity in housing and net business equity. Put simply, we define financial wealth as the stock of wealth left to a family *without* selling the house and the business. Financial wealth measures the stock of liquid assets a family could use relatively quickly to finance consumption following a substantial decrease in family income. Median financial wealth increased by 27%-36% between 1984 and 1999 while average financial wealth rose at a much faster pace, growing at a rate of 53%-92%. As a result, the relative importance of financial wealth in net worth rose during the period.[7]

Table 2 shows that wealth increases with the age of the major income recipient, at least until 65. Part of the increase in average wealth observed between 1984 and 1999 could then be due to the aging of family units. Shift-share analysis reveals that between 30% and 39% of the growth in average wealth appears to be related to the aging of family units. The rest is due to growth in average wealth within age groups.

IV. HAS WEALTH INEQUALITY INCREASED BETWEEN 1984 AND 1999?

Since it is unclear whether family units should be the unit of analysis used when measuring wealth inequality (Davies, 1979), we consider, for each of the three samples, two different units of analysis: the family unit and the individual.[8] When individuals are the unit of analysis, wealth is divided by the number of individuals in the family.

Apart from the Gini coefficient, we use two other inequality measures: the coefficient of variation and the exponential measure. While the Gini coefficient is sensitive to changes in the middle of the wealth distribution, the coefficient of variation is sensitive to changes at the top and the exponential measure is sensitive to changes at the bottom of the distribution.

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[6] Using the sample of all family units (first sample), the percentage of family units with zero or negative net worth increased from 11% in 1984 to 13% in 1999. Similar increases are observed for the two other samples.

[7] The share of average financial wealth in net worth rose from: a) 27% to 38%, b) 29% to 39%, c) 30% to 36% for the first, second and third sample, respectively.

[8] When using family units as the unit of analysis, an unattached individual with a net worth of $49,000 will be given a lower rank in the wealth distribution than a family of four with a net worth of $50,000. A different conclusion would be reached if individuals were the unit of analysis, i.e. if wealth was divided by the number of individuals in the family.

The Gini coefficient increased—between 4% and 8%— for all six combinations of samples/units of analysis considered (Table 3). Using bootstrap weights, we find that the increase is always statistically significant at the 1% level.[9]

For the sample of all family units, the coefficient of variation increases much more (35%), no doubt reflecting changes in the upper tail of the wealth distribution. For the first two samples, all three inequality measures show an increase which varies between 3% and 30%. However, for the sample excluding the top 5% of family units, the exponential measure decreases by 4%-7%. This implies that the 1999 Lorenz curve and the 1984 Lorenz curve cross in this case.

In order to make rigorous statements about changes in wealth inequality, selecting a set of inequality measures is insufficient. The "real" test consists in plotting Lorenz curves for both 1984 and 1999: if the 1999 Lorenz curve lies below the 1984 curve at all points of the wealth distribution, then analysts can say unambiguously that wealth inequality has risen. In contrast, if the two Lorenz curves cross, it is unclear whether wealth inequality has risen. In this case, it is always possible to find one inequality measure which will show an increase in inequality and another which will show the opposite conclusion.

Inspection of the Lorenz curves (not shown here) for all six combinations reveals that, in general, these curves cross at the 1st percentile, i.e. the 1999 Lorenz curve lies below the 1984 Lorenz curve at all points of the wealth distribution except the first percentile. Hence, for the six combinations defined above, we cannot rigorously say that wealth inequality has risen between 1984 and 1999.

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[9] We are not able to create bootstrap samples properly for the 1984 survey because we have only the final weights. The construction of bootstrap samples should use the original weights and other information on the details of the sample which are no longer available for the 1984 survey. While bootstrapping with the available information is doable, it would probably underestimate the true level of sampling error. We overcome this problem by noting that since the sample size for the 1984 survey was a little smaller than the 1999 survey, we can assume that the sampling error in the 1984 Survey is at least equal to and likely a little larger than for the 1999 Survey. The standard errors for average wealth were published for the 1984 survey and can be compared to standard errors for comparable wealth estimates in the 1999 Survey. This allows us to compare the difference between the sampling error levels in the two surveys and create an adjustment factor if it appears necessary to estimate a higher sampling error for the 1984 survey. Hence, we use the 1999 survey (bootstrap) sampling error levels to roughly estimate the error levels in the 1984 surveys. While this method is very crude, it is easy to implement and reflects the view that our ability to estimate sampling errors in the 1984 survey more precisely is limited. The adjustment factor is 1.08, indicating the standard error for average wealth in 1984 is 8% higher than its counterpart in 1999 (measured in 1984 constant dollars). To provide conservative significance tests, we assume that the adjustment factor is 2.0 (a doubling of the standard error in 1984). Even with these conservative

However, this ambiguity disappears when we alter slightly these six combinations, i.e. when we further exclude the bottom 0.5% of the wealth distribution[10]. In this case, the Lorenz curve for 1999 lies always below the Lorenz curve for 1984. As expected, all three measures of inequality now increase between 1984 and 1999 (Appendix 1, Table 2). Hence, when we consider 99.5%, 98.5% or 94.5% of family units, we can say that wealth inequality has unambiguously risen between 1984 and 1999.[11] This is the position we adopt in this paper.[12]
For all three samples, the choice of the unit of analysis does not appear to matter: the percentage changes in inequality obtained using family units as the unit of analysis are fairly close to those obtained when individuals are considered.[13] For this reason, the rest of the analysis conducted in this paper uses family units as the unit of analysis.

While the aforementioned inequality measures provide a summary of the changes in the wealth distribution, they are not very intuitive. A simple way to look at changes in the wealth distribution is to compare growth rates of median wealth across deciles.[14] This exercise shows that real median wealth fell in the bottom three deciles but rose at least 27% in the top three deciles (Table 4). Hence, the increase in wealth inequality did not occur in a context where all segments of the population enjoyed increases in real wealth.

Only family units located in the upper two deciles (9th and/or 10th decile) of the wealth distribution have increased their share of total net worth during the period (Table 5). For all other eight deciles, the share of total net worth has fallen. These results imply that only family

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assumptions, we find that the increase in the Gini coefficient is always significant at the 1% level (see Appendix 1, Table 1).

[10] We refer here to the bottom 0.5% of the wealth distribution of *family units*.

[11] For all six combinations, the increases in the Gini coefficient observed between 1984 and 1999 when we further exclude the bottom 0.5% of the wealth distribution exceed by at most 0.3 percentage point the increases reported in the third column of Table 3.

[12] One could argue that the growth in wealth inequality documented in this paper is spurious, i.e. *simply* reflects the fact that financial assets—which are predominantly held by the rich—are better reported in 1999 than they were in 1984. We address this issue in Appendix 2. We compare estimates of financial assets derived from the wealth surveys used in this paper with estimates derived from National Accounts. We show that, compared to National Accounts' estimates, financial assets are less underreported in SFS 1999 than they were in ADS 1984. However, most of the increase in the Gini coefficient measured in this paper remains after implementing either proportional corrections or non-linear corrections which assume a greater degree of underreporting among wealthy families than among their poorer counterparts. Therefore, we conclude that the growth in wealth inequality documented in this paper is unlikely to be spurious.

[13] The only exceptions occur for the exponential measure which produces more pronounced *relative* differences in growth rates (between family units and individuals) for the samples excluding the top 1% and the top 5% of family units.

[14] Note that median wealth at the bottom (top) decile corresponds to wealth at the 5th (95th) percentile.

units located in the upper two deciles have seen their average wealth increase faster than overall average wealth.

Wealth inequality did not rise uniformly in all types of family units. As measured by the Gini coefficient, it increased much more among non-elderly couples with children and among lone-parent families than among unattached individuals and non-elderly couples with no children (Table 6). Results not shown confirm that this pattern also holds when we use the coefficient of variation and the exponential measure.[15] Among non-elderly couples with children under 18, real average wealth fell roughly 15% in the second quintile but rose about 20% in the fourth quintile and even more in the fifth quintile (Table 7).

V. CHANGES IN THE WEALTH STRUCTURE: OVERVIEW

The growth of wealth inequality occurred in conjunction with substantial changes in the wealth structure. Real median wealth and real average wealth evolved very differently for different family units. First, both rose much more among family units whose major income recipient is a university graduate than among other family units (Table 8). Second, both fell among family units whose major income recipient is aged 25-34 and increased among those whose major income recipient is aged 55-64. They rose even more among family units whose major income recipient is aged 65 and over. Third, both increased among Canadian-born family units and among foreign-born family units who have been living in Canada for 20 years or more but fell among foreign-born family units who have been living in Canada for less than 10 years. Fourth, both increased faster among non-elderly couples with no children than among non-elderly couples with children under 18.

In many population sub-groups, real median wealth grew much more slowly than average wealth, likely reflecting an increase in inequality within population sub-groups. For instance, among family units whose major income recipient is aged 25-34, real median wealth fell 36% while real average wealth fell only 4%. Similarly, non-elderly couples with children of under 18 experienced essentially no change in their real median wealth but enjoyed an increase

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[15] Among elderly couples with no children or other relatives, inequality rose little except when we use the coefficient of variation and consider the sample of all family units.

30% in their real average wealth (Table 9).[16]

Young couples with children under 18—i.e. those whose major income earner is aged 25-34—experienced drastic changes. Their median and average wealth fell 30% and 20%, respectively (Table 9).[17] This decline in net worth has had non-negligible consequences: the percentage of these couples with zero or negative wealth rose from 9.5% in 1984 to 16.1% in 1999. The decline in their median wealth led to a 39% decrease in their net equity on principal residence, which was partly offset by an increase in their median financial wealth.[18]

Among family units whose major income recipient is aged 25-34, the decline in real median wealth is unlikely to be due solely to a decrease in their real median after-tax income. The reason is that while the former dropped by 36%, the latter fell only by 7%.[19] However, growth rates of average wealth and average after-tax income diverge to a much lesser extent, being equal to -4% and 1%, respectively. Inheritances and inter vivos transfers (e.g. parental financing of education or of the down payment on a house) are unlikely to be a factor since the parents of the 1999 cohort are unlikely to be poorer than those of the 1984 cohort. Other potential explanations are discussed below.

In contrast, the dramatic increase in real median wealth and average wealth (56% and 51%, respectively) of family units whose major income recipient is at least 65 years old likely reflects a combination of factors: 1) possibly larger inheritances received by the 1999 cohort, compared to the 1984 cohort, 2) higher income from private pensions, and 3) higher income from the Canada and Quebec Pension Plans, from the Guaranteed Income Supplement and Old Age Security.

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[16] Couples with children under 18 are defined as couples with *at least* one child of the major income earner under age 18.

[17] The bootstrap standard error of median wealth in 1999 equals 2,666.69. Even if we assume that the standard error of median wealth in 1984 is twice as high, the difference between median wealth in 1999 and median wealth in 1984 is statistically significant at the 5% level.

[18] Median net equity on principal residence fell from $26,054 in 1984 to $16,000 in 1999. Median financial wealth rose from $7,157 in 1984 to $8,000 in 1999.

[19] As pointed out in section VII, this statement must be made with caution since changes in wealth depend, among other things, on changes in the set of annual after-tax incomes received in the past, not only on changes in current after-tax income measured by cross-sectional data. In other words, while current after-tax income dropped by 7%, *accumulated* after-tax income could have dropped by more than 7%.

In sum, family units headed by new entrants to the labor market—i.e. young individuals and recent immigrants—have lost ground relative to older families.[20] Furthermore, within a given age group, families headed by individuals who do not have a university degree have lost ground relative to families headed by university graduates.[21]

VI. WHY HAS WEALTH INEQUALITY INCREASED: USING RE-WEIGHTING METHODS

The substantial changes in family structure that Canada experienced over the last two decades may have had an impact on wealth inequality. Specifically, the growing proportion of unattached individuals and lone-parent families, which generally have lower-than-average wealth, could have contributed to the growth of wealth inequality. To assess the extent to which this is the case, we re-weight the 1999 data so that the relative importance of various types of family units is equal to that observed in 1984.[22] Then we calculate the inequality measures resulting from this re-weighting. The results are presented in Table 10.

Whether changes in family structure tended to increase wealth inequality cannot be said with certainty. When all family units are considered, the impact of changes in family structure is ambiguous. Comparing columns 2 and 3 of Table 10, we find that applying the 1984 family structure to the 1999 data decreases the Gini coefficient and the exponential measure but increases the coefficient of variation (compared to their 1999 actual values). For the sample excluding the top 1% of the wealth distribution, wealth inequality would have been lower in 1999 if the composition of family units had remained the same as it was in 1984. For this sample, changes in family structure account for 14%-22% of the growth in wealth inequality.[23]

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[20] Morissette (2002) combines wealth data with income data and shows that between 1984 and 1999, recent immigrants have become much more vulnerable to income losses and unexpected expenditures. In 1984, of all persons living in immigrant families arrived less than 10 years ago, 16% were living in low income *and* would have remained in low income even if they had liquidated all their financial assets and added the proceeds to their after-tax income. This fraction rose to 26% in 1999. The corresponding numbers for all individuals living in Canada were 10% both in 1984 and 1999, compared to at least 42% for persons living in female lone-parent families.

[21] Since there is evidence that financial assets are better reported in 1999 than in 1984 (see Appendix 2), the growth rates of wealth observed for groups with growing wealth must be interpreted with caution. They likely represent an upper bound for the true growth rates of wealth of these groups.

[22] We use 14 categories to define various types of family units.

[23] The coefficient of variation one would have observed in 1999 if the 1984 family structure had prevailed equals 1.498, rather than 1.517. Hence, in this case, 22% [i.e. (1.517-1.498)/(1.517-1.429)] of the growth in the coefficient of variation can be accounted for by changes in family structure.

For the sample excluding the top 5% of the wealth distribution, changes in family structure account for 25% and 23% of the growth in the Gini coefficient and the coefficient of variation, respectively.

The aging of the Canadian population may also have affected wealth inequality. A priori, its impact is unclear since it is associated with a decline in the relative importance of young families—who have lower-than-average-wealth—and an increase in the relative importance of older families, which tend to have higher-than-average wealth. To assess the impact of aging, we re-weight the 1999 data with the 1984 age structure, using the six age groups defined in Table 2. Columns 2 and 4 of Table 10 show that the impact of aging is unambiguous: had the 1984 age structure prevailed in 1999, wealth inequality would have been higher than it was in 1999. Hence, the aging of the Canadian population tended to reduce wealth inequality.

Since real median and average wealth evolved very differently across age groups and education levels, it is worth measuring the extent to which changes in the wealth structure have induced an increase in wealth inequality. In the third and fourth column of Table 11, we ask what the level of wealth inequality would have been in 1999 if the structure of average wealth by age and/or education level of the major income recipient had been the same as it was in 1984. To do so, we simply re-scale the 1999 wealth values within each age/education cell j by the factor M_{j84}/ M_{j99}, where M_{j84} and M_{j99} equal the average wealth of group j in 1984 and 1999, respectively.[24] Applying the 1984 wealth structure to the 1999 data generally tends to decrease the Gini coefficient (compared to its 1999 value) but generally tends to increase the coefficient of variation and the exponential measure. Thus, it is unclear whether changes in relative wealth by age and education (of the major income recipient) have contributed to the growth of wealth inequality.

The re-weighting methods used so far are fairly simple but cannot be used when explanatory variables, such as a family unit's permanent income, are continuous. Since wealth of a family depends, among other factors, on its permanent income, this is an important limitation. Fortunately, Dinardo, Fortin and Lemieux (1996) have proposed a semi-parametric approach which allow analysts to take into account the impact of continuous variables as well as of discrete variables.

In the fifth column of Table 11, we implement this approach. We answer the following question: what would wealth inequality have been in 1999 if permanent income and other attributes of family units had remained at their 1984 level *and* family units had kept the net worth observed in 1999? The other attributes considered in this exercise are: age of major income recipient (5 age groups), education level of major income recipient (2 education levels), a lone-parent family indicator, family size, provincial controls and a rural-urban indicator.[25] [26] For all three samples, our conterfactual inequality measures for 1999 are always higher than the actual inequality measures in 1999. This means that if the distribution of permanent income and other family attributes had remained at their 1984 level and family units had kept the net worth observed in 1999, wealth inequality would have been higher than it was in 1999. At the very least, this suggests that permanent income and other socio-demographic characteristics, as measured with cross-sectional data, are not major factors behind the growth of wealth inequality. In the next section, we confirm this finding using regression-based methods.

VII. WHY HAS WEALTH INEQUALITY INCREASED: USING REGRESSION-BASED METHODS

In this section, we move away from the concept of inequality (where greater inequality implies that the 1999 Lorenz curve would lie below the 1984 Lorenz curve at all points of the wealth distribution) and ask the following question: why has the average wealth of low-wealth family units grown at a smaller rate than the average wealth of wealthier family units? To do so, we use regression-based methods.

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[24] When doing so, we hold constant wealth inequality within age/education cells but allow average wealth to change for the whole population.

[25] We define a family unit's permanent income as the predicted income of this unit when the major income recipient is aged 45 and the spouse (if present) age is set equal to what his/her age would be when the major income recipient is aged 45. See next section for further details.

[26] To implement this approach, we first pool the 1984 and 1999 data. Second, we estimate a logit model where the dependent variable equals 1 if a family unit with a given level of permanent income and other given attributes is observed in 1984, 0 if it is observed in 1999. Third, we re-weight the 1999 data by the factor $(P_{i84}/P_{i99})*(K_{99}/K_{84})$, where P_{i84} and P_{i99} are the probability of family i being observed in 1984 and 1999, respectively, K_{99} and K_{84} are the sum of weights for 1999 and 1984, respectively. Fourth, after re-weighting the 1999 data, we calculate the counterfactual inequality measures. The explanatory variables used in the logit model include permanent income and other attributes defined above.

VII.1 Empirical Framework

Consider the stock of wealth of family unit i at the beginning of period T, W_{iT}. Wealth at the beginning of period T is a function of the following variables:

(1) $W_{iT} = f(W_{i0}, IV_{iT-1}, Y_{iT-1}, r_{iT-1}, Z_{iT-1})$

where W_{i0} is the inheritance of family unit i at t=0, IV_{iT-1} are *inter vivos* transfers received in the past, (from t= 0 to t=T-1), Y_{iT-1} is a vector of past annual incomes, r_{iT} is a vector of past annual rates of return on the family unit's savings and Z_{iT-1} is a vector of socio-demographic variables (e.g. age of major income recipient, family size, lone parent status) which may have affected the savings rate of family unit i in the past.

Equation (1) implies that the stock of wealth of family unit i at the beginning of period T depends on the set of incomes, inter vivos transfers and rates of return obtained in the past and on the demographic *history* of family unit i.[27] This means that the ideal data set to analyze equation (1) would consist of longitudinal data allowing the analyst to follow family unit i from t = 0 to t = T-1. In other words, to fully understand the stock of wealth of family unit i in 1984 (1999), we would ideally use information on the vector of incomes, inter vivos transfers and rates of return obtained by this family unit prior to 1984 (1999) as well as information on inheritances and the demographic history of this family unit.[28]

Given that no such Canadian longitudinal data sets exist, we follow the methodology used by Blau and Graham (1990) and Menchik and Jianakoplos (1997) to study black-white wealth differentials and apply it to the investigation of the causes of the growth in wealth inequality. First, we specify the following wealth equation:

(2) $\ln W_{it} = \alpha_0 + Y_{it}*\beta_1 + Z_{it}*\beta_2 + u_{it}$

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[27] Note that the rates of return obtained in the past, $r_{iT-1,}$ depend on the share of total assets allocated to risky assets in the *past*, i.e. from t=0 to t=T-1 (SH_{T-1}): on average, families who allocated a larger share of their portfolio to risky assets are likely to have experienced higher rates of return. This suggests that a wealth regression could include the share of total assets allocated to risky assets in the past, i.e. prior to 1984 and 1999. Unfortunately, the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999 contain no such information. Menchik and Jianakoplos (1997) use longitudinal data from the 1976 National Longitudinal Survey of Mature Men to calculate a household-specific rate of return received in the past. As expected, this variable has a positive and statistically significant effect in their wealth regression. Blau and Graham (1990) and Altonji et al. (2000) include no controls for rates of return in their wealth equations.

[28] An example of this approach is the study by Gittleman and Wolff (2000) who use longitudinal data from the Panel Study of Income Dynamics (PSID) to follow families over time.

where $\ln W_{it}$ is the natural logarithm of net worth of family unit i at year t, Y_{it} is a vector of a family unit's permanent and transitory income, Z_{it} is a vector of socio-demographic characteristics which may affect a family unit's savings rate, and u_{it} is a normally distributed random term. We define a family unit's permanent income as the predicted income of this unit when the major income recipient is aged 45 and the spouse (if present) age is set equal to what his/her age would be when the major income recipient is aged 45.[29]

Defining $w_{it} = \ln W_{it}$, we rewrite equation (2) in a more compact form:

$$(3)\ w_{it} = X_{it}*\beta + u_{it}$$

where X_{it} combines the two vectors Y_{it} and Z_{it}.

Second, using the standard Oaxaca-Blinder decomposition, we note that:

$$(4)\ \bar{w}^{j}_{99} - \bar{w}^{j}_{84} = \hat{\beta}_{99} * (\bar{X}^{j}_{99} - \bar{X}^{j}_{84}) + \bar{X}^{j}_{84} * (\hat{\beta}^{j}_{99} - \hat{\beta}^{j}_{84})$$

Equation (4) indicates that the change in average log wealth between 1984 and 1999 for family units of group j (e.g. low-wealth family units) is the sum of two components. The first component on the right of (4) is the part of the growth in wealth of this group attributable to changes over time in the mean characteristics of the group. The second component is the part due to differences in the returns to these characteristics as well as differences in the constant

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[29] Since current income may not be a very good proxy for the lifetime or permanent income upon which savings decisions are based, we follow Blau and Graham (1990) and Menchik and Jianakoplos (1997) and estimate wealth regressions with measures of permanent and transitory income. To estimate permanent income, we first regress after-tax family income on: 1) a vector of age dummy variables for the major income recipient [less than 30, 30-44, 45-54, 55-64 and 65 and over], 2) education of the major income recipient [not a university graduate, university graduate], 3) a variable distinguishing singles from couples and classifying couples by age and education level of the spouse [male neither married nor living common-law, female neither married nor living common-law and 12 types of couples (six age categories for the age of the spouse times 2 categories for the education of the spouse)], 4) provincial controls and, 5) urban-rural status. Permanent income is set equal to predicted income evaluated at age of major income recipient equal to 45 (the spouse's age is set equal to what his/her age would be when the major income recipient was 45). Transitory income is defined as the difference between observed income and predicted income evaluated at the actual age of the major income recipient and of his/her spouse. Altonji et al. (2000) take advantage of the longitudinal nature of the Panel Study of Income Dynamics (PSID) and estimate permanent income using panel data regressions.

terms. Applying (4) to both low-wealth and high-wealth family units, the difference between the growth rate of wealth of high-wealth family units (h) and the growth rate of wealth of low-wealth family units (l) can be expressed as follows[30] :

$$(5)\ (\overline{w}^{h}_{99} - \overline{w}^{h}_{84}) - (\overline{w}^{l}_{99} - \overline{w}^{l}_{84}) =$$
$$(\hat{\beta}^{h}_{99} * (\overline{X}^{h}_{99} - \overline{X}^{h}_{84}) - \hat{\beta}^{l}_{99} * (\overline{X}^{l}_{99} - \overline{X}^{l}_{84})) +$$
$$(\overline{X}^{h}_{84} * (\hat{\beta}^{h}_{99} - \hat{\beta}^{h}_{84}) - \overline{X}^{l}_{84} * (\hat{\beta}^{l}_{99} - \hat{\beta}^{l}_{84}))$$

The first line of equation (5) is the *difference* between the change over time in average log wealth of high-wealth family units and that of low-wealth family units. The component on the second line of (5) is the portion of this *difference* due to changes in relative mean characteristics across groups of family units (i.e. relative changes in the composition of the population), weighted at group-specific 1999 coefficients. This component allows us to measure the degree to which differences in the growth of permanent/transitory income (or other socio-demographic characteristics) account for the growth in the wealth gap between low-wealth and high-wealth family units. The second component, defined on the third line of (5), is the change due to variation in the relative returns to these characteristics across groups of family units, weighted by group-specific 1984 means of the explanatory variables. Equation (5) can also be rewritten in an equivalent way by weighting the second line of (5) at group-specific 1984 coefficients and the third line of (5) at group-specific 1999 means of the explanatory variables.

To perform this decomposition, we estimate equation (2) separately for low-wealth and high-wealth family units and for each of the years 1984 and 1999. The dependent variable we first select is the natural logarithm of net worth of a family unit (in 1999 constant dollars). The explanatory variables in the wealth regressions include permanent income, transitory income, age of major income recipient (5 age groups), education level of major income recipient (2 education levels), a lone-parent family indicator, family size, provincial controls and a rural-urban indicator.[31] Low-wealth family units are defined as those located between the 15th and the

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[30] Baker et al. (1995) perform this decomposition to analyze the change in the gender wage gap over time.

[31] Education is included as a potential factor that may affect a family's savings rate. Changes in the coding of the education variable between 1984 and 1999 imply that only the two following educational categories are consistent over time: 1) individuals with less than a university degree, and 2) university graduates. The lone-parent family indicator is used to capture the negative impact of child care expenditures on lone-parent families' savings rate. For a given level of income, larger family size likely increases consumption expenditures and

50th percentile of the wealth distribution. High-wealth family units are defined in two different ways: 1) those located between the 50th and the 85th percentile and, 2) those located between the 60th and the 95th percentile of the wealth distribution. The decomposition of equation (5) is performed using the two types of weighting schemes defined in the previous paragraph.

It is important to acknowledge that the lack of longitudinal data prior to 1984 for family units selected in ADS 1984 and prior to 1999 for those selected in SFS 1999 limit our ability to estimate family units' permanent income. As pointed out by Altonji et al (2000), much of the variation in permanent income may be within the socio-demographic cells included in the income regression used to calculate permanent income. Furthermore, our measure of permanent income is based solely on family units' current income (and demographics) and, as such, does not capture the number of years members of a family unit have been working full-time in the labor market. This means that if the current income of young families has remained unchanged between 1984 and 1999 but if young families' members have been getting full-time jobs later in their life in the 1990s than their counterparts did in the 1980s, the former group will have accumulated less money than the latter. Although this may be an important factor behind the growth of wealth inequality, it will not be captured in our wealth regressions.[32]

VII.2 Estimation Results

VII.2.1 Using the Natural Logarithm of Wealth as the Dependent Variable

Table 12 shows the average values of the variables used in the log wealth regressions. Between 1984 and 1999, average log wealth of family units located in the 15-50th percentile dropped by -0.128, while average log wealth of those located in the 50-85th (60-95th) percentile increased by 0.210 (0.264).

For low-wealth family units as well as for both definitions of high-wealth family units, permanent income is higher than actual (after-tax) income. As expected, transitory income is, on average, very close to zero.

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decreases a family's savings rate. Provincial and urban/rural controls are intended to capture differences in wealth associated with differences in cost of living. Controls for inheritances (W_{i0}), inter-vivos transfers (IV_{iT-1}) and rates of return (r_{iT-1}) are not included in the wealth equation since ADS 1984 and SFS 1999 contain no information on these variables.

Between 1984 and 1999, permanent income has dropped slightly for low-wealth family units but has increased for high-wealth family units. Hence, this difference in changes in permanent income may potentially explain part of the growth in the wealth gap between high-wealth family units and low-wealth family units.

The percentage of young family units—i.e. those whose major income recipient is less than 30 years old—has dropped much more among low-wealth family units (from 35% to 21%) than among their high-wealth counterparts (from 10% to 5% for family units located in the 50-85th percentile, from 8% to 3% for family units located in the 60-95th percentile). Since the average wealth of young family units is below the overall average, these diverging changes in the relative importance of young family units may tend to *reduce* the wealth gap. However, the percentage of older family units—i.e. those whose major income recipient is at least 65 years old—has risen by at least 5 percentage points among high-wealth family units but has remained virtually unchanged among low-wealth family units. This diverging pattern tends to *increase* the wealth gap. As a result, the effect of the changes in the age composition of low-wealth and high-wealth units on the growth in the wealth gap is unclear.

Increases in educational attainment are very similar across groups of family units. The percentage of major income recipients with a university degree has risen by 6 percentage points (from 11% to 17%) among low-wealth family units and by 7 to 9 percentage points among high-wealth family units. Hence, education is unlikely to be a major factor behind the growth in the wealth gap. Similarly, the percentage of lone-parent families has risen very slightly (from 4% to 5%) among low-wealth family units and has remained virtually unchanged among high-wealth family units. As a result, changes in the relative importance of lone-parent families are also unlikely to play a substantial role.

The same conclusion can be reached for family size, province and urban/rural status: there are no substantially diverging patterns for these three variables. Hence, our expectations are the following: 1) changes in permanent income and in age composition may play a role in explaining the growing wealth gap while 2) changes in other demographic characteristics are unlikely to do so.

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[32] This potential decrease in the number of years worked full-time could be offset by the fact that the longer time spent by youth living at their parents' home in the 1990s (compared to the 1980s) may allow them to accumulate more money than if they had left the "nest" earlier.

Table 13 confirms these expectations. Whatever definition of high-wealth family unit is considered and whatever weighting scheme is used, education, lone-parent status, family size, province and urban-rural status explain virtually none of the growth in the wealth gap.[33] Differences in the growth of permanent income do play a role but their impact is very limited: they only explain between 9% and 15% of the growth in the wealth gap. Unsurprisingly, transitory income has no impact. The effect of permanent income is offset by the fact that differences in changes in age composition across groups tended to reduce the wealth gap. The consequence is that, taken together, all explanatory variables explain virtually none of the growth in the wealth gap.

The conclusion is that neither (differences in) changes in permanent income nor (differences in) changes in socio-demographic characteristics, *as measured with cross-sectional data*, explain a significant portion of the growing gap between low-wealth and high-wealth family units.[34] Going back to equation (1), this suggests that *differences* across groups *in the growth* of inheritances, inter vivos transfers, past rates of return and/or in the number of years spent working full-time are likely to have contributed to the growth in the wealth gap between low-wealth and high-wealth family units.

VII.2.2 Using the Level of Wealth as the Dependent Variable

Using the natural logarithm of wealth as the dependent variable allows us to compare (approximately) the *growth rates* of wealth experienced by low-wealth and high-wealth families between 1984 and 1999. However, the log wealth specification prevents us from including in our decomposition family units with zero or negative wealth. To be able to do so, we need to specify a wealth equation which uses the level of wealth as the dependent variable. In this case, equation (5) measures the change over time in the wealth gap between low-wealth and high-wealth family units. By wealth gap, we mean the difference between the average wealth of low-wealth family units and that of high-wealth family units in a given year.

The problem with this alternative specification is that the wealth gap will always increase whenever the average wealth of low-wealth and high-wealth family units grows at

[33] Detailed results of log wealth regressions are presented in Appendix 3, Tables 1-6.

[34] This conclusion holds when we use—among other regressors—a quadratic in age of the major income recipient (and spouse) in the income regressions and a quadratic in age of the major income recipient in the log wealth regressions.

exactly the same rate. The increase is then simply due to the fact the level of wealth of low-wealth family units is lower than that of high-wealth family units. Similarly, whenever the average wealth of the former group increases by, for instance, 5% while the average wealth of the latter group increases by 10%, part of the increase in the wealth gap will simply be due, not to differences in growth rates, but rather simply to the fact the level of wealth of the former group is lower than that of the latter group. It is then impossible to interpret equation (5) in a meaningful way. Because our primary interest is to explain why the growth rates of average wealth have differed between low-wealth and high-wealth family units between 1984 and 1999, using the level of wealth as the dependent variable appears, at first, inappropriate for our purposes.

One way to overcome this problem is to recognize that whenever the average wealth of one group of family units remains unchanged over time while that of the other group varies, the whole change over time in the wealth gap will be due to differences in growth rates across groups of family units. For instance, if the growth rate of average wealth of low-wealth family units equals 0% while that of high-wealth family units equals 10%, then the whole increase in the wealth gap can be attributed to diverging growth rates. In that case, equation (5) can be interpreted in a meaningful way.

Fortunately, it turns out that the average wealth of the bottom 50% of the wealth distribution remained essentially unchanged between 1984 and 1999: it decreased by only -0.6% (from $13,808 to $13,722). Meanwhile, the average wealth of family units located between the 60th and 95th percentile rose 32.8% (from $188,469 to $250,223). As a result, 99.9% of the increase in the wealth gap between these two groups can be attributed to diverging growth rates.[35] For this reason, we recalculate equation (5) using the level of wealth as the dependent variable in the wealth regression. The results are presented in Table 14.[36]

Our main conclusion—that neither (differences in) changes in permanent income nor (differences in) changes in socio-demographic characteristics explain a significant portion of the

[35] The wealth gap increased by $61,840 [i.e. ($250,223 - $13,722) – ($188,469 - $13,808)]. Had the average wealth of family units located in the bottom 50% of the wealth distribution remained unchanged, the wealth gap would have risen by $61,754 [i.e. ($250,223 - $188,469)], i.e. 99.9% of the observed increase in the wealth gap.

[36] Detailed results of (level of) wealth regressions are presented in Appendix 3, Tables 7-10.

growing gap between low-wealth and high-wealth family units—remains unchanged. Taken together, income and demographic factors explain at most 8% of the increase in the wealth gap.

VIII. AN ACCOUNTING EXPLANATION FOR THE GROWTH OF WEALTH INEQUALITY

In any given year t, the Gini coefficient of wealth (G_t) is the sum of the contributions of each wealth component k to overall inequality (C_{kt}):

$$(6)\ Gt = \Sigma\ C_{kt}$$

In the case of the Gini coefficient, the contribution of each wealth component k to overall inequality equals (Lerman and Yitzhaki, 1985):

$$(7)\ C_{kt} = G_{kt} * S_{kt} * R_{kt}$$

where G_{kt} is the Gini coefficient of wealth component k in year t, S_{kt} is the share of component k in total net worth and R_{kt} is the "Gini correlation" between the component k and the overall net worth.[37] Equation (7) implies that the contribution of wealth component k to overall wealth inequality is higher, the more unequally this wealth component is distributed (i.e. the higher G_{kt} is), the greater the relative importance of this wealth component in overall net worth is (i.e. the greater S_{kt} is) and the greater the correlation between this component and overall net worth is (i.e. the greater R_{kt} is). For instance, since the share of housing (vehicles) in overall net worth is high (low), we expect—other things being equal—housing (vehicles) to have a relatively large (small) contribution to overall inequality in a given year.

Combining equations (6) and (7), the change in the Gini coefficient between 1984 and 1999 can be expressed as the sum of the changes in the contribution of each component:

$$(8)\ G_{99} - G_{84} = (\Sigma\ G_{k99} * S_{k99} * R_{k99}) - (\Sigma\ G_{k84} * S_{k84} * R_{k84})$$

[37] R_{kt} equals the ratio of the covariance of wealth component k with cumulative distribution of overall net worth to the covariance of wealth component k with the cumulative distribution of component k. It equals 1 whenever the ranking of family units on the particular component is identical to the ranking of family units on overall net worth (see Pedersen, 1999:220, quoted by Myles, 2000).

It is important to understand that the decomposition of the change in the Gini coefficient performed in equation (8) is a purely accounting exercise. For instance, equation (8) may reveal that part of the growth in inequality observed between 1984 and 1999 is accounted for by an increase in the contribution C_{kt} of stocks to overall inequality. If this increase in the contribution of stocks is, for instance, due to an increase in the relative importance of stocks in overall net worth (S_{kt}) or to an increase in inequality in the stocks distribution (G_{kt}), equation (8) does not tell us *why* the relative importance of stocks has increased nor *why* the distribution of stocks has become more unequal. Furthermore, the relative importance of a given wealth component at time T does not explain net worth at time T.[38]

In Table 15, we use the sample consisting of all family units and look at the contribution C_{kt} of each wealth component to overall inequality in a given year.[39] Information on G_{kt}, S_{kt}, and R_{kt} is also presented. Three points are worth noting regarding these last three variables.

First, of all wealth components representing at least 5% of net worth, principal residence and vehicles are the two most equally distributed wealth components, exhibiting a Gini coefficient ranging between 0.605 and 0.635, depending on the year considered (Table 15, column 2). In contrast, 1) stocks, bonds and mutual funds, 2) real estate other than principal residence, and 3) business equity, are the three most unequally distributed wealth components, with Gini coefficients ranging between 0.916 and 0.985. Second, principal residence is by far the most important wealth component, accounting for 49%-51% of net worth (Table 15, column 3). Third, the "Gini correlation" is the highest for business equity (between 0.928 and 0.933), indicating that the ranking of family units by business equity is very close to the ranking of family units by net worth (Table 15, column 4). Conversely, among all assets, the "Gini correlation" is the lowest for vehicles: it ranges between 0.525 and 0.590. This means that the ranking of family units by value of vehicles convey less information about the ranking of family

[38] For any given family unit, the relative importance of a given wealth component in overall net worth at time T results from a portfolio decision regarding the *allocation* of net worth at time T but does not explain net worth at time T. Net worth at time T depends—among other factors—on rates of return received in the *past*, which in turn are likely to depend on the allocation of net worth between high-risk and low-risk assets which was done in the *past*. Net worth at time T does not depend on the allocation of net worth at time T.

[39] See Appendix 4 for the results regarding the two other samples excluding the top 1% and the top 5% percent of family units, respectively.

units by net worth, compared to business equity.[40]

Dramatic shifts in the relative importance of wealth components took place between 1984 and 1999. The share of registered retirement savings plans (RRSPs) in wealth increased from 4% to 16%, reflecting the growing popularity of this financial asset in family units' portfolio.[41] Similarly, the share of stocks, bonds and mutual funds rose from 6% to 11%. The share of mortgage on principal residence rose from 10% to 14%, probably due in part to the easier access to mortgage loans provided by financial institutions between 1984 and 1999.[42] These changes were accompanied by a marked decrease in the relative importance of business equity (from 25% to 17%) and a more moderate decrease in the relative importance of deposits (from 11% to 8%).[43]

In a given year, which wealth components contribute the most to wealth inequality? Both in 1984 and 1999, principal residence has by far the biggest contribution to overall inequality. It accounts for 34%-36% of overall inequality (Table 15, column 6). While the contribution of principal residence remained stable between 1984 and 1999, this was not the case for other wealth components. The contribution of RRSPs to overall inequality rose from 4% to 15%. The contribution of stocks, bonds and mutual funds increased from 6% to 13%. In contrast, the contribution of business equity dropped dramatically, showing a decline from 32% to 21%. The contribution of deposits also fell (from 10% to 6%).[44]

While the growing contribution of RRSPS, stocks, bonds and mutual funds to overall inequality comes as no surprise, the markedly decreasing contribution of business equity is, at first, puzzling.

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[40] Almost all of these qualitative conclusions hold for the two other samples. The only exception is that the "Gini correlation" for business equity, while among the highest across wealth components, is not always the highest in the two other samples, especially in the sample excluding the top 5% of family units.

[41] The Income Tax Act raised the dollar limit on contributions to RRSPs from $5,500 in 1984 to $13,500 in 1999 (for individuals without a registered pension plan). This is likely to have contributed to the growing popularity of RRSPs. The growing importance of self-employed individuals, who rely on RRSPs and other financial assets to build retirement savings, may also have contributed to the growing popularity of RRSPs.

[42] This easier access to mortgage loans is also consistent with the fact that inequality in mortgage on principal residence decreased from 0.833 to 0.794 during the period.

[43] These qualitative conclusions hold when we exclude the top 1% of family units. However, when we exclude the top 5% of family units, the relative importance of stocks, bonds and mutual funds rises only marginally and the relative importance of deposits falls more than the relative importance of business equity.

[44] These qualitative conclusions hold when we exclude the top 1% of family units. However, when we exclude the top 5% of family units, the contribution of stocks, bonds and mutual funds rises only marginally.

The puzzle can be resolved. First, note that the decline in the contribution of business equity to overall inequality is, in an accounting sense, entirely explained by the decrease in the relative importance of business equity in net worth (from 25% to 17%).[45] Second, note that the bulk of the decrease in the relative importance of business equity in net worth is explained by the fact that the average business equity for family units who have a business dropped from $224,000 in 1984 to $156,000 in 1999 (1999 constant dollars).[46]

Third, shift-share analysis shows that this decrease in the average business equity of family units with a business is entirely explained by the fact that the distribution of businesses moved towards very small firms. More precisely, the percentage of businesses with net equity ranging between $0 and $10,000 rose from 20% in 1984 to 49% in 1999 while the relative importance of businesses with net equity of $100,000-$500,000 dropped from 29% to 17% (Table 16). This increase in self-employment in very small businesses occurred in a period where self-employment without paid help grew tremendously.[47] This suggests that the move towards self-employed jobs without paid help and with very small assets (e.g. self-employed persons operating a consulting business with a microcomputer and some other electronic equipment at home) is at the heart of the decrease in the relative importance of business equity and thus, is an important factor behind the decrease in the contribution of business equity to overall inequality.

Since the contribution of RRSPs and stocks, bonds and mutual funds to overall inequality has increased between 1984 and 1999, while the contribution of business equity and

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[45] The Gini coefficient for business equity rose slightly between 1984 and 1999 (from 0.963 to 0.985) while the "Gini correlation" for business equity remained virtually unchanged (0.933 in 1984 and 0.928 in 1999).

[46] Between 1984 and 1999, average wealth rose from $128,875 to $176,087. Average business equity for all family units dropped from $31,743 to $29,028. This decrease occurred despite the fact that the proportion of family units with a business rose from 14.2% to 18.7% during the period. Hence, all the drop in average business equity is due to the fact that average business equity for family units with a business dropped from $224,086 to $155,610. Had average business equity for family units with a business remained unchanged at $224,086, average business equity for all family units would have been equal to $41,904 (i.e. $224,086 times 18.7%) and would have represented 24% (i.e. $41,904 / $176,087) of net worth. Under these conditions, the relative importance of business equity in net worth would have dropped only from 25% to 24%, rather than from 25% to 17%. Hence, the bulk of the decrease in the relative importance of business equity in net worth is explained by the fact that the average business equity for family units with a business dropped from $224,086 in 1984 to $155,610 in 1999.

[47] ADS 1984 and SFS 1999 indicate that, between 1984 and 1999, the number of family units having a business with a net equity of $0-$10,000 rose by roughly 850,000. This is consistent with the fact that, during the same period, the number of self-employed individuals without paid help grew by roughly 760,000 [Labor Force Historical Review 1999, CD-Rom 71F0004XCB].

deposits has fallen, we expect these four wealth components to be the major factors accounting for the growth in wealth inequality during the period.

Using equation (8), we confirm this conjecture. Between 1984 and 1999, the Gini coefficient of wealth increased by 0.036 (Table 17, column 1). The two most important contributors to the growth of wealth inequality were RRSPs (0.079) and stocks, bonds and mutual funds (0.049), which tended to increase the Gini by 0.128 (0.079 + 0.049). The effect of these two factors was partially offset by business equity and deposits: business equity tended to reduce the Gini by 0.071 while deposits tended to reduce the Gini by 0.019. Principal residence explained virtually none of the growth in wealth inequality.

Thus, when we consider all family units, the growth of wealth inequality can be explained, in an accounting sense, mainly by the growing contribution of RRSPs and stocks, bonds and mutual funds to overall inequality, which is partially offset by the declining contribution of business equity and deposits.[48]

This qualitative conclusion holds when we exclude the top 1% of family units (Table 17, column 2).[49] However, it must be altered when we exclude the top 5% of family units. In this case, RRSPs remain the most important contributor to the growth of wealth inequality but stocks, bonds and mutual funds no longer have a major impact.[50] Business equity and deposits remain the two most important factors tending to decrease wealth inequality.

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[48] In the late 1980s, pension legislation was revised to allow people leaving their employer pension plan to remove the money from the plan and put it in a locked-in RRSP (called a locked-in retirement account or LIRA). In 1984, this money would more likely have been left in the plan. Since we do not have estimates of employer pension plan assets for 1984, we would ideally like to exclude LIRAs from our concept of wealth when using 1999 data. Unfortunately, data editing suggested that many respondents did not have a clear idea of the distinction between LIRAs and RRSPs in 1999. Accordingly, it was decided to include LIRAs with RRSPs in the SFS data set. To check whether the finding that RRSPs have, of all wealth components, contributed the most to the increase in wealth inequality, is robust, we also calculated imputed values for LIRAs and excluded these values from the concept of wealth in 1999. In this case, the Gini coefficient of wealth increased by 0.037. The two most important contributors to the growth of wealth inequality were still RRSPs (0.072) and stocks, bonds and mutual funds (0.051), which tended to increase the Gini by 0.123 (0.072 + 0.051). Once again, the effect of these two factors was partially offset by business equity and deposits: business equity tended to reduce the Gini by 0.069 while deposits tended to reduce the Gini by 0.019. Principal residence explained virtually none of the growth in wealth inequality. Thus, excluding LIRAs from the 1999 data does not affect our conclusion regarding the importance of RRSPs.

[49] Between 1984 and 1999, the Gini coefficient of wealth increased by 0.029 for this sample. RRSPs and stocks, bonds and mutual funds tended to increase the Gini by 0.084 and 0.024, respectively. Business equity tended to reduce the Gini by 0.060 while deposits tended to reduce the Gini by 0.015. Principal residence had some effect (0.011) but this was mainly offset by the equalizing impact of mortgage on principal residence (-0.008).

[50] Principal residence was the second most important contributor to the growth of wealth inequality but its impact was partially offset by the equalizing effect of mortgage on principal residence.

IX. SUMMARY AND CONCLUSIONS

This paper has documented the evolution of wealth inequality in Canada between 1984 and 1999. The main findings can be summarized as follows:

1. wealth inequality has increased between 1984 and 1999;
2. the growth in wealth inequality has been associated with substantial declines in real average and median wealth for some groups, such as young couples with children and recent immigrants;
3. only the 10^{th} (and for some samples, the 9^{th}) decile has increased its share of total net worth between 1984 and 1999;
4. wealth inequality increased more among non-elderly couples with children and among lone-parent families than among unattached individuals and non-elderly couples with no children;
5. real median wealth and real average wealth rose much more among family units whose major income recipient is a university graduate than among other family units; they both fell among family units whose major income recipient is aged 25-34 and increased among those whose major income recipient is aged 55 and over;
6. the aging of the Canadian population over the 1984-1999 period has tended to increase average wealth and to reduce wealth inequality;
7. when all family units are considered, changes in family structure—i.e. the growing proportion of lone-parent families and unattached individuals—have an ambiguous impact on wealth inequality. However, when the top 1% of family units are excluded, changes in family structure account for 14%-22% of the growth in wealth inequality;
8. changes in relative average wealth by age and education level of the major income recipient have an ambiguous effect on wealth inequality;
9. depending on whether wealth is specified in logarithms or levels, regression-based methods suggest that changes in families' permanent after-tax income account for 3%-15% of the growth in the wealth gap between low-wealth and high-wealth family units;
10. in a purely accounting (and not causal) sense, registered retirement savings plans (RRSPs) have, of all wealth components, contributed the most to the increase in wealth inequality.

Several factors may have contributed to the growth of wealth inequality. First, the increase in the length of time young individuals stay in school before entering the labor market in a full-time job (decreasing the number of years over which they have had significant incomes) and the greater debt load of students (Finnie, 2001) probably account for part of the decrease in their real median wealth.[51] Second, the booming stock market of the 1990s has likely contributed to the rapid revaluation of financial assets observed in Canada over the last decade (Yan, 2001). Since financial assets are held predominantly by families at the top of the wealth distribution, this revaluation is likely to have contributed to the growth of wealth inequality.[52] Third, easier access to credit and/or changes in preferences may have induced some low-wealth families to accumulate more debt in order to finance consumption expenditures, thereby decreasing their net worth. Fourth, increases in contributions to RRSPs made by families in the middle of the wealth distribution could have widened the gap between them and poorer families *if* these greater contributions induced an increase in their savings rate. Fifth, differences—between low-wealth and high-wealth family units—in the growth of inheritances and inter vivos transfers may also have played a role. These factors cannot be quantified with existing data sets.

The growing proportion of young couples with children who have zero or negative wealth suggests that a non-negligible fraction of today's young families may be vulnerable to negative shocks, i.e. have no accumulated savings that can provide liquidity in periods of economic stress. Whether the picture one gets of vulnerable families changes when considering wealth instead of income is a question which deserves further research.

[51] The fact that young individuals get married later—thereby benefiting later from the economies of scale associated with cohabitation—could also be a factor. However, it might be offset by the fact that some young individuals stay with their parents for a longer period and/or use other forms of cohabitation. Similarly, the downward shift in the age-earnings profile of young men, documented by Beaudry and Green (1996), may have tended to reduce real wealth of young males but its impact may have been partly offset by the growing number of dual-earner couples among young families.

[52] This is what we mean when we argue that differences—between low-wealth and high-wealth family units—in the growth of rates of return on savings are likely to have played a role in the growth of wealth inequality.

Table 1 : Average and median wealth, by family unit, 1984 and 1999.

	1999 constant dollars		
	1984	**1999**	**% change 1984-1999**
I. All family units			
A) Net worth			
Median	58,392	64,600	10.6%
Average	128,875	176,087	36.6%
Percent with zero or negative net worth	10.8%	13.3%	23.1%
B) Financial wealth			
Median	10,897	14,850	36.3%
Average	34,563	66,514	92.4%
Percent with zero or negative financial wealth	17.7%	19.7%	11.3%
Sample size	14,029	15,933	-
II. Top 1% of family units excluded *			
A) Net worth			
Median	56,982	63,066	10.7%
Average	107,918	140,864	30.5%
Percent with zero or negative net worth	10.9%	13.4%	22.9%
B) Financial wealth			
Median	10,728	14,310	33.4%
Average	31,371	54,274	73.0%
Percent with zero or negative financial wealth	17.8%	19.9%	11.8%
Sample size	13,870	15,452	-
III. Top 5% of family units excluded *			
A) Net worth			
Median	51,483	56,600	9.9%
Average	84,315	108,116	28.2%
Percent with zero or negative net worth	11.3%	14.0%	23.9%
B) Financial wealth			
Median	9,962	12,650	27.0%
Average	25,423	38,783	52.6%
Percent with zero or negative financial wealth	18.2%	20.7%	13.7%
Sample size	13,282	14,474	-

Source : Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* After ranking family units by ascending order of their net worth.
- Financial wealth equals net worth minus net equity in housing and net business equity.

Table 2 : Average wealth by age of major income recipient, 1984 and 1999.

	Average wealth (1999 constant $)			Distribution of family units by age of major income recipient		
	(1) 1984	(2) 1999	(3) % change 1984-99	(4) 1984 %	(5) 1999 %	(6) change 1984-99
I. All family units						
Age of major income recipient						
Less than 25	32,284	32,918	2.0%	10.2	5.9	-4.2
25-34	69,890	67,264	-3.8%	26.0	19.5	-6.5
35-44	137,608	151,915	10.4%	20.2	24.7	4.5
45-54	202,422	247,751	22.4%	14.7	19.6	4.9
55-64	210,290	302,856	44.0%	13.1	11.9	-1.2
65 and over	140,749	211,862	50.5%	15.9	18.3	2.4
Average wealth - total	128,875	176,087	36.6%	100.0	100.0	-
% of growth in average wealth (36.6% = 100) accounted for by demographic weights						
1984 weights **31.4**						
1999 weights **29.9**						
II. Top 1% of family units excluded						
Age of major income recipient						
Less than 25	31,722	24,599	-22.5%	10.3	6.0	-4.3
25-34	61,864	58,476	-5.5%	26.2	19.7	-6.5
35-44	113,998	118,501	3.9%	20.1	24.8	4.6
45-54	158,823	190,114	19.7%	14.5	19.5	4.9
55-64	176,397	234,190	32.8%	13.0	11.8	-1.2
65 and over	122,615	185,074	50.9%	15.9	18.3	2.4
Average wealth - total	107,918	140,864	30.5%	100.0	100.0	-
% of growth in average wealth (30.5% = 100) accounted for by demographic weights						
1984 weights **35.4**						
1999 weights **31.5**						
III. Top 5% of family units excluded						
Age of major income recipient						
Less than 25	24,123	16,461	-31.8%	10.6	6.2	-4.4
25-34	51,388	49,404	-3.9%	26.8	20.3	-6.5
35-44	93,122	97,697	4.9%	20.3	25.2	4.9
45-54	125,117	141,893	13.4%	14.2	18.9	4.8
55-64	129,691	167,891	29.5%	12.3	11.3	-1.1
65 and over	97,023	147,156	51.7%	15.8	18.1	2.3
Average wealth - total	84,315	108,117	28.2%	100.0	100.0	-
% of growth in average wealth (28.2% = 100) accounted for by demographic weights						
1984 weights **38.6**						
1999 weights **34.6**						

Source : Assets and Debts Survey of 1984, Survey of Financial Security of 1999.

Table 3 : Changes in wealth inequality, 1984-1999.

	1984	1999	Change 1984-1999 %
I. All family units			
A) Unit of analysis : family unit			
Gini	0.691	0.727	5.2
CV	2.325	3.146	35.3
Exponential	0.531	0.560	5.5
B) Unit of analysis : individuals			
Gini	0.678	0.723	6.6
CV	2.390	3.105	29.9
Exponential	0.501	0.541	8.0
II. Top 1% of family units excluded *			
A) Unit of analysis : family unit			
Gini	0.646	0.675	4.4
CV	1.429	1.517	6.2
Exponential	0.542	0.556	2.6
B) Unit of analysis : individuals			
Gini	0.635	0.674	6.2
CV	1.517	1.639	8.0
Exponential	0.468	0.493	5.5
III. Top 5% of family units excluded *			
A) Unit of analysis : family unit			
Gini	0.605	0.637	5.4
CV	1.169	1.255	7.4
Exponential	0.906	0.838	-7.4
B) Unit of analysis : individuals			
Gini	0.597	0.642	7.5
CV	1.266	1.397	10.3
Exponential	0.492	0.472	-3.9

Source : Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* After ranking family units by ascending order of their net worth.

Table 4: Changes in median net worth from 1984 to 1999, by net worth decile.

	Median net worth (1999 constant dollars)		Change from 1984 to 1999	
	(1)	(2)	(3)	(4)
	1984	1999	(2) - (1)	%
I. All family units				
Decile				
1st	-1,824	-5,700	-3,876	-
2nd	674	101	-573	-85.0
3rd	6,743	5,920	-823	-12.2
4th	21,380	22,700	1,320	6.2
5th	45,365	49,580	4,215	9.3
6th	72,155	81,466	9,311	12.9
7th	104,764	129,000	24,237	23.1
8th	147,751	192,500	44,749	30.3
9th	222,861	299,373	76,512	34.3
10th	464,376	628,100	163,724	35.3
II. Top 1% of family units excluded *				
Decile				
1st	-1,839	-5,900	-4,061	-
2nd	615	100	-515	-83.7
3rd	6,448	5,550	-898	-13.9
4th	20,684	22,000	1,316	6.4
5th	44,139	47,929	3,790	8.6
6th	70,861	79,301	8,440	11.9
7th	102,331	125,400	23,069	22.5
8th	143,298	186,025	42,728	29.8
9th	213,797	283,545	69,748	32.6
10th	407,976	559,350	151,374	37.1
III. Top 5% of family units excluded *				
Decile				
1st	-1,992	-6,220	-4,228	-
2nd	463	50	-413	-89.2
3rd	5,574	4,500	-1,074	-19.3
4th	17,864	19,060	1,196	6.7
5th	39,388	42,597	3,209	8.1
6th	65,288	72,200	6,912	10.6
7th	93,028	112,600	19,572	21.0
8th	130,031	165,600	35,569	27.4
9th	183,957	242,455	58,498	31.8
10th	296,079	410,500	114,421	38.6

Source : Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* After ranking family units by ascending order of their net worth.

Table 5: Shares of total net worth held by each decile, 1984 and 1999.

	(1) 1984	(2) 1999	(3) (2) - (1)
I. All family units	%	%	
Decile			
1st	-0.5	-0.6	-0.1
2nd	0.1	0.0	-0.1
3rd	0.5	0.4	-0.2
4th	1.7	1.3	-0.4
5th	3.5	2.8	-0.7
6th	5.6	4.7	-1.0
7th	8.2	7.4	-0.8
8th	11.5	11.0	-0.6
9th	17.5	17.4	-0.2
10th	51.8	55.7	3.9
II. Top 1% of family units excluded *			
Decile			
1st	-0.6	-0.8	-0.2
2nd	0.1	0.0	-0.1
3rd	0.6	0.4	-0.2
4th	1.9	1.6	-0.4
5th	4.1	3.4	-0.7
6th	6.6	5.7	-0.9
7th	9.5	9.0	-0.5
8th	13.4	13.3	-0.1
9th	20.1	20.7	0.6
10th	44.2	46.6	2.4
III. Top 5% of family units excluded *			
Decile			
1st	-0.7	-1.0	-0.3
2nd	0.1	0.0	-0.1
3rd	0.7	0.5	-0.2
4th	2.2	1.8	-0.4
5th	4.7	4.0	-0.7
6th	7.7	6.7	-1.0
7th	11.1	10.4	-0.7
8th	15.5	15.4	-0.1
9th	22.0	22.8	0.8
10th	36.8	39.5	2.6

Source : Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* After ranking family units by ascending order of their net worth.

Table 6: Gini coefficient by family type, 1984 and 1999.

	1984	1999	% change
I. All family units			
Unattached individuals - elderly	0.647	0.655	1.2%
Unattached individuals - non elderly	0.853	0.868	1.8%
Non-elderly couples with no children or other relatives	0.666	0.695	4.4%
Non-elderly couples with children under 18 **	0.647	0.707	9.3%
Non-elderly couples with children 18 and over or other relatives ***	0.540	0.614	13.7%
Elderly couples with no children or other relatives	0.540	0.541	0.2%
Lone-parent families	0.807	0.897	11.2%
Other family types	0.667	0.650	-2.5%
II. Top 1% of family units excluded *			
Unattached individuals - elderly	0.626	0.633	1.1%
Unattached individuals - non elderly	0.840	0.852	1.4%
Non-elderly couples with no children or other relatives	0.612	0.618	1.0%
Non-elderly couples with children under 18 **	0.587	0.636	8.3%
Non-elderly couples with children 18 and over or other relatives ***	0.460	0.530	15.2%
Elderly couples with no children or other relatives	0.490	0.486	-0.8%
Lone-parent families	0.807	0.866	7.3%
Other family types	0.612	0.603	-1.5%
III. Top 5% of family units excluded *			
Unattached individuals - elderly	0.598	0.599	0.2%
Unattached individuals - non elderly	0.823	0.840	2.1%
Non-elderly couples with no children or other relatives	0.568	0.569	0.2%
Non-elderly couples with children under 18 **	0.535	0.591	10.5%
Non-elderly couples with children 18 and over or other relatives ***	0.385	0.461	19.7%
Elderly couples with no children or other relatives	0.416	0.416	0.0%
Lone-parent families	0.801	0.864	7.9%
Other family types	0.560	0.553	-1.3%

Source : Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* After ranking family units by ascending order of their net worth.
** : The family includes at least one child of the major income earner under 18. Other relatives may also be in the family.
*** : Includes no children under 18.

Table 7: Changes in average net worth of non-elderly couples with children under 18, by quintile.*

	Average net worth (1999 constant dollars)		Change from 1984 to 1999	
	(1)	(2)	(3)	(4)
	1984	1999	(2) - (1)	%
I. All non-elderly couples with children under 18				
Quintile				
1st	65	-3,275	-3,340	-
2nd	34,849	29,819	-5,030	-14.4
3rd	77,853	80,498	2,645	3.4
4th	140,961	170,174	29,213	20.7
5th	493,015	703,527	210,512	42.7
II. Top 1% of non-elderly couples with children under 18 excluded **				
Quintile				
1st	-83	-3,392	-3,309	-
2nd	34,289	29,192	-5,097	-14.9
3rd	76,645	78,806	2,161	2.8
4th	137,703	165,624	27,921	20.3
5th	383,161	494,398	111,237	29.0
III. Top 5% of non-elderly couples with children under 18 excluded **				
Quintile				
1st	-708	-4,013	-3,305	-
2nd	31,954	26,815	-5,139	-16.1
3rd	71,845	72,356	511	0.7
4th	126,223	149,044	22,821	18.1
5th	269,504	349,289	79,785	29.6

Source : Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* couples with at least one child of the major income earner under age 18.
** After ranking couples with children by ascending order of their net worth.

Table 8: Median and average wealth by characteristics of the major income recipient, 1984-1999 - All family units.*

	Median wealth			Average wealth		
	(1) 1984 $	(2) 1999 $	(3) % Change 1984-99	(4) 1984 $	(5) 1999 $	(6) % Change 1984-99
Education level of major income recipient						
Not a university graduate	52,807	54,100	2.4	119,344	145,279	21.7
University graduate	99,637	118,000	18.4	189,295	289,522	52.9
Age of major income recipient						
24 or younger	3,073	150	-95.1	32,285	32,918	2.0
25-34	23,395	15,100	-35.5	69,890	67,264	-3.8
35-44	73,488	60,000	-18.4	137,608	151,915	10.4
45-54	123,987	115,200	-7.1	202,422	247,751	22.4
55-64	129,090	154,115	19.4	210,290	303,856	44.5
65 or older	80,789	126,000	56.0	140,749	211,863	50.5
Education / Age of major income recipient						
25-34 - Not a university graduate	21,196	11,100	-47.6	62,564	49,836	-20.3
25-34 - University graduate	41,224	30,900	-25.0	102,119	112,088	9.8
35-54 - Not a university graduate	80,461	65,800	-18.2	153,211	156,045	1.8
35-54 - University graduate	130,271	144,741	11.1	218,715	312,320	42.8
Immigration Status of Major Income Recipient						
Canadian born	53,947	60,500	12.1	122,866	168,695	37.3
Immigrant: in Canada 20 years or more	120,002	171,300	42.7	194,756	285,585	46.6
Immigrant: in Canada 10-19 years	68,047	44,500	-34.6	114,357	140,782	23.1
Immigrant: in Canada less than 10 years	17,625	13,100	-25.7	90,103	75,686	-16.0
Family type						
Unattached individuals - elderly	41,380	70,000	69.2	78,674	138,107	75.5
Unattached individuals - non elderly	5,772	6,000	4.0	47,204	63,888	35.3
Couples, no children (a)	71,526	101,603	42.1	151,171	244,174	61.5
Couples, children under 18 (b)	77,703	77,800	0.1	144,151	195,922	35.9
Couples, children 18 and over (c)	155,788	167,400	7.5	252,529	312,493	23.7
Elderly couples, no children (d)	121,075	177,500	46.6	198,498	280,487	41.3
Lone-parent families	1,870	3,656	95.5	38,534	63,808	65.6
Other family types	75,856	112,700	48.6	147,715	210,155	42.3

Source : Assets and Debts Survey of 1984 and Survey of Financial Security of 1999.

* The numbers are expressed in 1999 constant dollars.

(a): Non-elderly couples with no children or other relatives

(b): Non-elderly couples with children under 18

(c):Non-elderly couples with children 18 and over or other relatives

(d) : Elderly couples with no children or other relatives

Table 9: Changes in average and median net worth of non-elderly couples with children under 18, by age of major income recipient.*

	Net worth (1999 constant dollars)		
	(1) 1984	(2) 1999	(3) % change
Age of major income recipient			
I. 25-54			
Average	149,674	194,949	30.2%
Median	78,622	78,500	-0.2%
% of couples with zero or negative net worth	6.2	8.5	
II. 25-34			
Average	94,915	76,408	-19.5%
Median	43,990	30,841	-29.9%
% of couples with zero or negative net worth	9.5	16.0	
III. 35-44			
Average	163,372	197,931	21.2%
Median	91,123	89,500	-1.8%
% of couples with zero or negative net worth	4.9	6.8	
IV. 45-54			
Average	227,809	326,831	43.5%
Median	144,370	161,500	11.9%
% of couples with zero or negative net worth	2.8	3.4	

Source : Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* non-elderly couples with at least one child of the major income recipient age 18.

Table 10: Counterfactual levels of wealth inequality in 1999 (based on 1984 weights).*

	Actual data		1999 based on	
	(1)	(2)	(3)	(4)
	1984	1999	1984 family type structure	1984 age structure
I. All family units				
Gini	0.691	0.727	0.724	0.750
CV	2.325	3.146	3.157	3.261
Exponential	0.531	0.560	0.558	0.590
II. Top 1% of family units excluded *				
Gini	0.646	0.675	0.669	0.702
CV	1.429	1.517	1.498	1.613
Exponential	0.542	0.556	0.554	0.612
III. Top 5% of family units excluded *				
Gini	0.605	0.637	0.629	0.668
CV	1.169	1.255	1.235	1.341
Exponential	0.906	0.838	0.848	1.074

Source : Assets and Debts Survey of 1984 and Survey of Financial Security of 1999.
* Family units are the unit of analysis.

Table 11 : Counterfactual levels of wealth inequality in 1999.*

	Actual data		1999 based on		
	(1) 1984	(2) 1999	(3) 1984 relative wealth by age	(4) 1984 relative wealth by age and education level	(5) 1984 family characteristics
I. All family units					
Gini	0.691	0.727	0.725	0.721	0.740
CV	2.325	3.146	3.207	3.161	3.244
Exponential	0.531	0.560	0.572	0.580	0.603
II. Top 1% of family units excluded *					
Gini	0.646	0.675	0.672	0.671	0.695
CV	1.429	1.517	1.519	1.507	1.597
Exponential	0.542	0.556	0.643	0.656	0.676
III. Top 5% of family units excluded *					
Gini	0.605	0.637	0.637	0.636	0.661
CV	1.169	1.255	1.260	1.257	1.326
Exponential	0.906	0.838	1.222	1.174	1.312

Source : Assets and Debts Survey of 1984 and Survey of Financial Security of 1999.
* Family units are the unit of analysis.

Table 12: Descriptive statistics - variables included in the log wealth regressions, 1984 and 1999.

I. Explanatory variables in the wealth regression	15-50th percentile 1984	15-50th percentile 1999	50-85th percentile 1984	50-85th percentile 1999	60-95th percentile 1984	60-95th percentile 1999
Actual income *	30.394	31.509	43.929	46.289	49.326	50.815
Permanent income ($000)	35.847	34.744	50.908	54.408	56.290	58.902
Transitory income ($000)	7.48E-08	-1.57E-08	2.31E-07	2.08E-07	4.86E-08	-1.72E-07
Fraction of family units whose major income recipient is aged:						
Less than 30	0.348	0.211	0.097	0.046	0.077	0.030
30-44	0.338	0.407	0.353	0.340	0.323	0.294
45-54	0.091	0.156	0.185	0.233	0.215	0.246
55-64	0.076	0.079	0.171	0.137	0.195	0.170
65 an over	0.148	0.147	0.195	0.245	0.191	0.260
Fraction of family units whose major income recipient is :						
Not a university graduate	0.889	0.826	0.857	0.781	0.833	0.744
A university graduate	0.111	0.174	0.143	0.219	0.167	0.256
Fraction of family units who are:						
Not lone-parent families	0.964	0.948	0.981	0.982	0.983	0.987
Lone-parent families	0.036	0.052	0.019	0.018	0.017	0.013
Family size	2.384	2.254	2.922	2.655	2.997	2.701
Fraction of family units living in:						
Newfoundland	0.022	0.021	0.021	0.015	0.015	0.009
Prince-Edward-Island	0.004	0.005	0.005	0.004	0.004	0.004
Nova Scotia	0.034	0.034	0.036	0.032	0.029	0.026
New Brunswick	0.033	0.029	0.025	0.026	0.019	0.018
Quebec	0.294	0.294	0.252	0.245	0.216	0.212
Ontario	0.319	0.330	0.380	0.375	0.403	0.409
Manitoba	0.039	0.040	0.044	0.039	0.045	0.035
Saskatchewan	0.036	0.031	0.037	0.036	0.041	0.035
Alberta	0.104	0.089	0.077	0.102	0.083	0.104
British Columbia	0.115	0.127	0.122	0.125	0.145	0.147
Fraction of family units living in:						
rural areas	0.145	0.156	0.177	0.195	0.166	0.180
urban areas	0.855	0.844	0.823	0.805	0.834	0.820
II. Wealth						
Average wealth (1999 constant $)	21,386	22,652	121,670	153,684	188,469	250,223
Average log wealth	9.453	9.325	11.643	11.853	12.050	12.314
Sample size	4,863	5,252	5,049	5,499	4,974	5,509

* not an explanatory variable in the wealth regression. See text for the definition of permanent and transitory income.
Source: Assets and Debts Survey of 1984, Survey of Financial Security of 1999.

Table 13: Decomposition of the difference between the change over time in average log wealth of low-wealth family units and that of low-wealth family units.

I. Average log wealth

	1984	1999	Change 1984-99
15-50th percentile	9.453	9.325	-0.128
50-85th percentile	11.643	11.853	0.210
Difference in changes over time	-	-	**0.338**
15-50th percentile	9.453	9.325	-0.128
60-95th percentile	12.050	12.314	0.264
Difference in changes over time	-	-	**0.392**

II. Decomposition of difference in changes over time

	(0.338 = 100.0)		(0.392 = 100.0)	
	Weighting scheme 1	**Weighting scheme 2**	**Weighting scheme 1**	**Weighting scheme 2**
A) Percentage explained by:				
Permanent income	15.2	9.8	12.6	8.6
Transitory income	0.0	0.0	0.0	0.0
age	-14.8	-10.3	-15.1	-10.4
education	-1.5	-1.9	-0.1	-1.4
lone-parent status	-0.1	1.8	-0.2	1.5
family size	-1.9	0.2	-1.0	0.7
province	2.9	1.6	2.7	1.6
urban/rural status	-1.8	-1.3	-1.4	-0.8
Total explained	-2.0	-0.1	-2.5	-0.2
B) Percentage unexplained	102.0	100.1	102.5	100.2
C) Difference in changes over time	100.0	100.0	100.0	100.0

Source : Authors' calculations from the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999.

Table 14: Decomposition of the change in the wealth gap between low-wealth and high-wealth family units.

I. Average wealth

	1984	1999	Change 1984-99	Change 1984-99
	$	$	$	%
0-50th percentile	13,808	13,722	-86	-0.6
60-95th percentile	188,469	250,223	61,754	32.8
Wealth gap	174,661	236,501	**61,840**	35.4

II. Decomposition of the change in wealth gap

	($61,840 = 100)	
	Weighting scheme 1	Weighting scheme 2
A) Percentage explained by:		
Permanent income	2.7	2.7
Transitory income	0.0	0.0
age	0.0	-0.1
education	3.7	1.5
lone-parent status	0.0	0.0
family size	-0.2	-0.1
province	1.4	1.0
urban/rural status	0.0	0.3
Total explained	7.6	5.3
B) Percentage unexplained	92.4	94.7
C) Change in wealth gap	100.0	100.0

Source : Authors' calculations from the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999.

Table 15: Decomposition of overall wealth inequality by wealth component, 1984 and 1999 - all family units.

I. 1984	(1) Gt	(2) Gkt	(3) Skt	(4) Rkt	(5) Ckt (2)*(3)*(4)	(6) Ckt/Gt %
Wealth component						
Assets						
Deposits, non-RRSP	-	0.773	0.114	0.741	0.065	9.5
Stocks, bonds and mutual funds, non-RRSP	-	0.916	0.061	0.791	0.044	6.4
RRSPs / LIRAs	-	0.889	0.044	0.755	0.029	4.3
Other investments or financial assets, non-RRSP	-	0.970	0.028	0.773	0.021	3.0
Principal residence	-	0.629	0.494	0.798	0.248	35.9
Real estate other than principal residence	-	0.920	0.115	0.742	0.078	11.3
Vehicles	-	0.610	0.065	0.525	0.021	3.0
Other assets	-	0.987	0.002	0.586	0.001	0.2
Business equity	-	0.963	0.246	0.933	0.221	32.0
Debts						
Mortgage on principal residence	-	0.833	0.100	0.250	0.021	-3.0
Other debt	-	0.832	0.069	0.306	0.018	-2.5
Total	0.691	-	-	-	-	100.0

II. 1999	(1) Gt	(2) Gkt	(3) Skt	(4) Rkt	(5) Ckt (2)*(3)*(4)	(6) Ckt/Gt %
Wealth component						
Assets						
Deposits, non-RRSP	-	0.825	0.075	0.747	0.046	6.3
Stocks, bonds and mutual funds, non-RRSP	-	0.948	0.109	0.902	0.093	12.9
RRSPs / LIRAs	-	0.823	0.159	0.827	0.109	14.9
Other investments or financial assets, non-RRSP	-	0.966	0.020	0.761	0.014	2.0
Principal residence	-	0.605	0.513	0.805	0.250	34.4
Real estate other than principal residence	-	0.931	0.109	0.773	0.079	10.8
Vehicles	-	0.635	0.058	0.590	0.022	3.0
Other assets	-	0.990	0.004	0.885	0.004	0.5
Business equity	-	0.985	0.165	0.928	0.151	20.7
Debts						
Mortgage on principal residence	-	0.794	0.141	0.224	0.025	-3.5
Other debt	-	0.792	0.072	0.268	0.015	-2.1
Total	0.727	-	-	-	-	100.0

Source : Authors' calculations from the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999.
- See text for definition of variables.

Table 16: Percentage distribution of family units*, by net equity classes, 1984 and 1999.

	1984 %	1999 %	Change 1984-99
I. Distribution			
Net equity classes (1999 constant $)			
x < 0	0.4	1.0	0.6
(0 < x < 10,000)	20.2	48.6	28.4
(10,000<= x < 20,000)	9.7	7.3	-2.4
(20,000<= x < 30,000)	4.7	5.4	0.7
(30,000<= x < 40,000)	7.7	3.1	-4.6
(40,000<= x < 50,000)	3.6	2.1	-1.5
(50,000<= x < 60,000)	2.5	3.4	0.9
(60,000<= x < 70,000)	3.3	1.8	-1.4
(70,000<= x < 80,000)	4.0	1.6	-2.4
(80,000<= x < 90,000)	1.3	1.1	-0.3
(90,000<= x < 100,000)	2.7	0.8	-1.9
(100000<= x < 500,000)	28.6	16.9	-11.7
(500000<= x <1,000,000)	7.7	3.8	-3.9
x >= 1,000,000	3.8	3.1	-0.7
Total	100.0	100.0	-
II. Shift-share analysis			
- Average business equity for family units with a business (1999 constant $):	224,086	155,610	
- a) *Hypothetical* average business equity in 1999 based on 1984 class-specific weights :	-	231,206	
- b) *Hypothetical* average business equity in 1984 based on 1999 class-specific weights :	146,358	-	
- Fraction of the decline in average business equity accounted for by changes in the distribution of businesses by net equity classes :			
a) 1984 class-specific weights : (231,206-155,610)/(224,086-155,610) = 110.4%			
b) 1999 class-specific weights : (224,086-146,358)/(224,086-155,610) = 113.5%			

Source : Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* Family units with non-zero business equity only.

Table 17: Decomposition of the change in Gini coefficient by wealth component, 1984-1999.

	(1) All family units	(2) Top 1% of family units excluded	(2) Top 5% of family units excluded
Contribution of each wealth component to the change in Gini coefficient :			
Wealth component			
Assets			
Deposits, non-RRSP	-0.019	-0.016	-0.024
Stocks, bonds and mutual funds, non-RRSP	0.049	0.024	0.006
RRSPs / LIRAs	0.079	0.084	0.076
Other investments or financial assets, non-RRSP	-0.006	-0.006	-0.002
Principal residence	0.001	0.011	0.020
Real estate other than principal residence	0.000	-0.004	-0.008
Vehicles	0.001	0.002	0.001
Other assets	0.002	0.000	0.000
Business equity	-0.071	-0.060	-0.024
Debts			
Mortgage on principal residence	-0.004	-0.008	-0.011
Other debt	0.002	0.001	-0.002
Change in Gini coefficient between 1984 and 1999 *	0.036	0.029	0.032

Source : Authors' calculations from the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999.
* The sum of contributions of wealth components may not add to the change in Gini coefficient due to rounding.

Appendix 1 - Table 1: Standard errors of Gini coefficients, 1984-1999.**

	1984	1999	Change 1984-1999 %
I. All family units			
A) Unit of analysis: family unit	0.691	0.727	5.2
	(0.0062)	(0.0057)	
B) Unit of analysis: individuals	0.678	0.723	6.6
	(0.0062)	(0.0058)	
II. Top 1% of family units excluded *			
A) Unit of analysis: family unit	0.646	0.675	4.4
	(0.0039)	(0.0036)	
B) Unit of analysis: individuals	0.635	0.674	6.2
	(0.0042)	(0.0039)	
III. Top 5% of family units excluded *			
A) Unit of analysis: family unit	0.605	0.637	5.4
	(0.0042)	(0.0039)	
B) Unit of analysis: individuals	0.597	0.642	7.5
	(0.0045)	(0.0041)	

Source : Authors' calculations from the Assets and Debts Survey of 1984 and Survey of Financial Security of 1999.
* After ranking family units by ascending order of their net worth.
** The standard errors for 1999 take account of the complex design of SFS 1999. The standard errors for 1984 are obtained by multiplying the standard errors of 1999 by an adjustment factor of 1.08. See text for details.

Appendix 1 - Table 2: Changes in wealth inequality, 1984-1999.

	1984	1999	Change 1984-1999 %
I. Bottom 0.5% of family units excluded *			
A) Unit of analysis: family unit			
Gini	0.686	0.723	5.4
CV	2.311	3.130	35.4
Exponential	0.498	0.537	7.8
B) Unit of analysis: individuals			
Gini	0.673	0.719	6.8
CV	2.375	3.089	30.1
Exponential	0.486	0.534	9.9
II. Bottom 0.5% and top 1% of family units excluded *			
A) Unit of analysis: family unit			
Gini	0.640	0.669	4.5
CV	1.416	1.505	6.3
Exponential	0.452	0.484	7.1
B) Unit of analysis: individuals			
Gini	0.628	0.668	6.4
CV	1.503	1.627	8.3
Exponential	0.439	0.481	9.6
III. Bottom 0.5% and top 5% of family units excluded *			
A) Unit of analysis: family unit			
Gini	0.597	0.630	5.5
CV	1.153	1.239	7.5
Exponential	0.411	0.447	8.8
B) Unit of analysis: individuals			
Gini	0.589	0.635	7.8
CV	1.249	1.382	10.6
Exponential	0.398	0.447	12.3

Source: Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* After ranking family units by ascending order of their net worth.

Appendix 2 : Comparison of household surveys and National Accounts.

In this appendix, we attempt to answer two questions. First, we ask whether the reporting of financial assets in household surveys—as compared to estimates of financial assets from national accounts—improved between 1984 and 1999. We show that this is the case.

Since financial assets are held predominantly by rich family units, the better reporting of financial assets in 1999 than in 1984 could lead to an increase in *measured* wealth inequality, even if the *true* level of wealth inequality remained unchanged during the period considered. For this reason, we also ask whether the increase in wealth inequality documented in this paper for the 1984-1999 period could be simply due to the better reporting of financial assets in 1999 than in 1984. The answer is that such a scenario is unlikely since most of the increase in wealth inequality remains even after taking into account the better reporting of financial assets in 1999.

I. Has the reporting of financial assets improved between 1984 and 1999?

The answer is yes. We define financial assets as including the four following components: 1) deposits in financial institutions, non-RRSPs, 2) RRSPs/LIRAs, 3) mutual funds, stocks, bonds, non-RRSPs and, 4) other financial assets, non-RRSPs. The first two columns of the following table compare estimates of financial assets from household surveys (the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999) to those derived from National Balance Sheet Accounts. The numbers are in millions of current dollars. The third column calculates what percentage of financial assets derived from National Accounts are reported in household surveys.

Appendix 2 - Table 1: Estimates of financial assets, household surveys and National Accounts.

Year	**Household surveys**	**National Accounts**	**HS/NA**
1984	196,696	404,171	49%
1999	780,832	1,183,802	66%

Source: Assets and Debts Survey of 1984, Survey of Financial Security of 1999, National Balance Sheet Accounts, 1984 and 1999.

Table 1 shows that in 1984, the estimates of financial assets obtained from household surveys amounted to 49% of those derived from National Accounts. The corresponding number rose to 66% in 1999. Thus, based on National Accounts estimates, the reporting of financial assets in household surveys appears to have improved between 1984 and 1999.

I. Could the increase in wealth inequality measured between 1984 and 1999 simply be due to the better reporting of financial assets in 1999 than in 1984?

We show that such a scenario is unlikely by correcting household surveys's estimates of financial assets using two different methods. First, we simply apply a proportional correction, i.e. we multiply financial assets of each family unit by 100/49 in 1984 and by 100/66 in 1999 and then recalculate the level of wealth inequality in both years.

One criticism of this method is that it assumes that the degree of underreporting of financial assets is the same for all family units, whatever their true financial assets are. An alternative is to assume that wealthier family units are likely to underreport their financial assets to a greater extent than their poorer counterparts. Following Davies (1979), we assume the following:

$$\hat{A}_i = \gamma_0 A_i^{\gamma 1} \; ; \; 0 < \gamma_1 < 1 \qquad \text{(A.1)}$$

where $\hat{A}_i$ and A_i are the reported and true holdings of financial assets of family unit i and γ_1 is the elasticity of reported holdings with respect to true holdings. This elasticity is smaller than 1, implying that a 10% increase in true financial assets will lead to a less than 10% increase in reported financial assets. To take into account the improvement in reporting of financial assets between 1984 and 1999, we assume γ_1 =0.90 in 1984 and γ_1 =0.95 in 1999. The constant γ_0 is determined residually by imposing that:

$$\Sigma A_i = c \, \Sigma \hat{A}_i^{(1/\gamma 1)} \; ; \; c = (1/\gamma_0)^{(1/\gamma 1)} \qquad \text{(A.2)}$$

where ΣA_i are the total financial assets derived from National Accounts. Solving equation A.2 for 1984 and 1999 yields values of c equal to 0.558 and 0.781, respectively. Appendix 2 Table 2 shows the relationship between assumed true holdings and reported holdings implied by the aforementioned assumptions (i.e. γ_1 =0.90 and c =0.558 in 1984; γ_1 =0.95 and c = 0.781).

Our assumptions imply that in 1984, families holding $1,203 in financial assets would report 83.1% of these assets while families holding $2.591 millions would report only 38.6% of them. In 1999, our assumptions imply that families having $1,124 in financial assets would report 89.0% of these assets while families holding $1.616 millions would report only 61.9% of them. Hence, these adjustments should produce a greater disequalizing effect in 1984 than in 1999.

Table 3 shows that most of the increase in the Gini coefficient measured in this study remain whether we apply proportional corrections or the non-linear adjustments defined in equation A.1. For instance, when all family units are considered, the increase in the Gini coefficient measured in this study equals 5.2% (from 0.691 to 0.727). When proportional corrections are implemented, the resulting increase equals 6.0%. When non-linear adjustments are applied, the resulting increase equals 4.8%. As a result, it is unlikely that the increase in wealth inequality documented in this paper is simply due to the fact that financial assets are better reported in 1999 than they were in 1984.

Appendix 2 - Table 2: Reported holdings and assumed true holdings of financial assets, 1984 and 1999.

1984			1999		
(1) Reported holdings	(2) Assumed holdings	(3) (1)/(2)	(4) Reported holdings	(5) Assumed holdings	(6) (4)/(5)
$	$	%	$	$	%
1,000	1,203	83.1	1,000	1,124	89.0
2,000	2,599	77.0	2,000	2,331	85.8
4,000	5,613	71.3	4,000	4,835	82.7
5,000	7,193	69.5	5,000	6,115	81.8
8,000	12,125	66.0	8,000	10,030	79.8
10,000	15,537	64.4	10,000	12,685	78.8
16,000	26,192	61.1	16,000	20,805	76.9
20,000	33,562	59.6	20,000	26,313	76.0
40,000	72,497	55.2	40,000	54,581	73.3
50,000	92,896	53.8	50,000	69,033	72.4
100,000	200,667	49.8	100,000	143,195	69.8
200,000	433,464	46.1	200,000	297,032	67.3
500,000	1,199,800	41.7	500,000	779,268	64.2
1,000,000	2,591,711	38.6	1,000,000	1,616,444	61.9
50,000,000	200,138,672	25.0	50,000,000	99,300,216	50.4

Source: Authors' calculations from the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999.

Appendix 2 - Table 3: Changes in wealth inequality under various corrections, 1984-1999.

	1984	1999	% Change 1984-1999
I. All family units			
Gini	0.691	0.727	**5.2**
Gini: proportional correction	0.688	0.729	**6.0**
Gini: non-linear correction	0.704	0.738	**4.8**
II. Top 1% of family units excluded *			
Gini	0.646	0.675	**4.4**
Gini: proportional correction	0.647	0.677	**4.6**
Gini: non-linear correction	0.661	0.685	**3.6**
III. Top 5% of family units excluded *			
Gini	0.605	0.637	**5.4**
Gini: proportional correction	0.604	0.635	**5.1**
Gini: non-linear correction	0.616	0.642	**4.2**

Source: Assets and Debts Survey of 1984, Survey of Financial Security of 1999.
* After ranking family units by ascending order of their net worth. Family units are the unit of analysis.

Appendix 3: Results of wealth regressions.

Table 1: 15-50th percentile in 1984.
Dependent variable: natural logarithm of wealth

log wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.0221867	.0018938	11.715	0.000	.018474	.0258994
trninc	.0211159	.0010271	20.559	0.000	.0191023	.0231295
age3044	.3452823	.0390892	8.833	0.000	.2686497	.4219148
age4554	.2899797	.0586215	4.947	0.000	.1750549	.4049044
age5564	.5163119	.0626441	8.242	0.000	.3935009	.6391228
age65p	.3345664	.0499754	6.695	0.000	.2365919	.4325408
medu_uni	.1676975	.0516821	3.245	0.001	.0663771	.2690179
fml_lone	-.3651152	.0887869	-4.112	0.000	-.5391778	-.1910526
fam_siz	.0290443	.0147617	1.968	0.049	.0001046	.057984
nf	.3642319	.1095967	3.323	0.001	.1493726	.5790913
pei	.0332994	.2370049	0.141	0.888	-.4313378	.4979366
ns	.3081733	.0888606	3.468	0.001	.1339662	.4823804
nb	.2313266	.0908837	2.545	0.011	.0531534	.4094998
pq	.0058395	.0396107	0.147	0.883	-.0718154	.0834944
mn	.0591582	.0829141	0.713	0.476	-.103391	.2217074
sask	.0936302	.0865187	1.082	0.279	-.0759858	.2632462
ab	.0230944	.0557673	0.414	0.679	-.0862348	.1324235
bc	-.0854558	.0533465	-1.602	0.109	-.1900391	.0191275
urban	-.3859912	.0458908	-8.411	0.000	-.4759581	-.2960244
_cons	8.654597	.0778608	111.155	0.000	8.501955	8.80724

Adj. R squared: 0.1791

Table 2: 15-50th percentile in 1999.
Dependent variable: natural logarithm of wealth

log wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.0374619	.0028792	13.011	0.000	.0318175	.0431063
trninc	.0274023	.0012259	22.353	0.000	.0249991	.0298056
age3044	.4658903	.0523221	8.904	0.000	.363317	.5684635
age4554	.4864759	.0634979	7.661	0.000	.3619935	.6109584
age5564	.3033456	.0793372	3.823	0.000	.1478116	.4588796
age65p	.4043261	.0654002	6.182	0.000	.2761145	.5325377
medu_uni	.1504615	.0529082	2.844	0.004	.0467393	.2541836
fml_lone	.0273136	.0950369	0.287	0.774	-.1589984	.2136255
fam_siz	-.0297761	.0201202	-1.480	0.139	-.0692202	.009668
nf	.6560821	.1363466	4.812	0.000	.3887859	.9233783
pei	.2209645	.2827462	0.781	0.435	-.3333361	.7752651
ns	.3919666	.1094046	3.583	0.000	.1774878	.6064453
nb	.373093	.1188408	3.139	0.002	.1401154	.6060706
pq	.2795272	.0503712	5.549	0.000	.1807787	.3782757
mn	.1790811	.0998997	1.793	0.073	-.016764	.3749262
sask	.5080847	.1137112	4.468	0.000	.2851632	.7310061
ab	.3586624	.0714412	5.020	0.000	.2186078	.498717
bc	.1432192	.0626377	2.286	0.022	.0204231	.2660153
urban	-.5095716	.0540306	-9.431	0.000	-.6154942	-.4036491
_cons	7.949653	.1087409	73.106	0.000	7.736475	8.162831

Adj. R squared: 0.1777

Appendix 3: Results of wealth regressions.

Table 3: 50-85th percentile in 1984.
Dependent variable: natural logarithm of wealth

log wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.0024367	.0006163	3.954	0.000	.0012284	.003645
trninc	.0029347	.0002672	10.985	0.000	.0024109	.0034585
age3044	.0688431	.0182801	3.766	0.000	.033006	.1046801
age4554	.200293	.0197504	10.141	0.000	.1615735	.2390124
age5564	.2190192	.0200215	10.939	0.000	.1797683	.2582702
age65p	.1600706	.0200104	7.999	0.000	.1208415	.1992997
medu_uni	.0518047	.0166178	3.117	0.002	.0192266	.0843827
fml_lone	.0231805	.037745	0.614	0.539	-.0508161	.0971771
fam_siz	.0113447	.0043067	2.634	0.008	.0029016	.0197878
nf	-.1245975	.0354777	-3.512	0.000	-.1941493	-.0550456
pei	-.0624256	.0735836	-0.848	0.396	-.2066815	.0818303
ns	-.0807286	.0273557	-2.951	0.003	-.1343577	-.0270995
nb	-.1415523	.0321205	-4.407	0.000	-.2045225	-.078582
pq	-.0710922	.0127383	-5.581	0.000	-.0960648	-.0461197
mn	.010906	.0249265	0.438	0.662	-.0379609	.0597729
sask	-.001176	.0268276	-0.044	0.965	-.0537697	.0514177
ab	.026772	.0195357	1.370	0.171	-.0115264	.0650705
bc	.060874	.0162563	3.745	0.000	.0290046	.0927434
urban	.0139424	.0138495	1.007	0.314	-.0132087	.0410935
_cons	11.35405	.0328048	346.109	0.000	11.28974	11.41837

Adj. R squared: 0.0916

Table 4: 50-85th percentile in 1999.
Dependent variable: natural logarithm of wealth

log wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.0028137	.0006677	4.214	0.000	.0015047	.0041228
trninc	.0028298	.0002759	10.255	0.000	.0022888	.0033708
age3044	.1204945	.0278146	4.332	0.000	.0659669	.1750221
age4554	.2358201	.0285117	8.271	0.000	.1799259	.2917144
age5564	.2813692	.0304593	9.238	0.000	.2216569	.3410815
age65p	.2908268	.02908	10.001	0.000	.2338185	.3478351
medu_uni	.0559606	.0155292	3.604	0.000	.0255172	.0864039
fml_lone	-.0598977	.044222	-1.354	0.176	-.1465904	.0267951
fam_siz	.0099882	.0053823	1.856	0.064	-.0005633	.0205397
nf	-.2222955	.0469682	-4.733	0.000	-.3143717	-.1302192
pei	-.1324846	.0852666	-1.554	0.120	-.299641	.0346718
ns	-.145084	.0328697	-4.414	0.000	-.2095217	-.0806462
nb	-.2039393	.0357257	-5.708	0.000	-.2739759	-.1339026
pq	-.1006497	.0151943	-6.624	0.000	-.1304365	-.0708629
mn	-.0842947	.0295851	-2.849	0.004	-.1422932	-.0262962
sask	-.0575143	.0310048	-1.855	0.064	-.118296	.0032675
ab	-.0359699	.0197525	-1.821	0.069	-.0746926	.0027529
bc	.0221133	.018296	1.209	0.227	-.0137542	.0579808
urban	.017941	.0145166	1.236	0.217	-.0105174	.0463993
_cons	11.48715	.0417876	274.894	0.000	11.40523	11.56907

Adj. R squared: 0.0838

Appendix 3: Results of wealth regressions.

Table 5: 60-95th percentile in 1984.
Dependent variable: natural logarithm of wealth

log wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.0035428	.000757	4.680	0.000	.0020587	.0050269
trninc	.0042901	.0002737	15.676	0.000	.0037536	.0048266
age3044	-.0144035	.0238265	-0.605	0.546	-.0611139	.0323069
age4554	.1183562	.0248209	4.768	0.000	.0696962	.1670162
age5564	.1166593	.0253629	4.600	0.000	.0669369	.1663818
age65p	.0326469	.0258109	1.265	0.206	-.0179539	.0832478
medu_uni	.0534804	.020512	2.607	0.009	.0132677	.0936931
fml_lone	.0248866	.0471816	0.527	0.598	-.0676102	.1173835
fam_siz	.0030713	.005011	0.613	0.540	-.0067525	.012895
nf	-.2197423	.0484445	-4.536	0.000	-.3147149	-.1247697
pei	.0262429	.0904606	0.290	0.772	-.1510999	.2035858
ns	-.1441876	.0354574	-4.066	0.000	-.2136999	-.0746753
nb	-.2030822	.0436618	-4.651	0.000	-.2886786	-.1174858
pq	-.1107416	.0157708	-7.022	0.000	-.1416594	-.0798238
mn	-.0280903	.0290291	-0.968	0.333	-.0850002	.0288196
sask	.0375409	.030402	1.235	0.217	-.0220604	.0971422
ab	.0240272	.0221658	1.084	0.278	-.0194276	.067482
bc	.0556996	.0178664	3.118	0.002	.0206737	.0907256
urban	-.0735756	.017077	-4.308	0.000	-.1070541	-.040097
_cons	11.86798	.0425823	278.707	0.000	11.7845	11.95146

Adj. R squared: 0.1024

Table 6: 60-95th percentile in 1999.
Dependent variable: natural logarithm of wealth

log wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.0030963	.0006371	4.860	0.000	.0018474	.0043452
trninc	.0034396	.0002634	13.061	0.000	.0029233	.0039559
age3044	-.0358556	.0371553	-0.965	0.335	-.1086947	.0369835
age4554	.094153	.0376603	2.500	0.012	.0203238	.1679822
age5564	.1728812	.0392939	4.400	0.000	.0958495	.2499129
age65p	.0835896	.0385381	2.169	0.030	.0080398	.1591395
medu_uni	.1012741	.0172658	5.866	0.000	.0674263	.1351219
fml_lone	.0398106	.0566165	0.703	0.482	-.0711802	.1508014
fam_siz	-.0001187	.005805	-0.020	0.984	-.0114988	.0112614
nf	-.2478435	.0661972	-3.744	0.000	-.3776164	-.1180707
pei	-.0254419	.0954381	-0.267	0.790	-.2125385	.1616547
ns	-.1977897	.039518	-5.005	0.000	-.2752607	-.1203188
nb	-.2526865	.0472889	-5.343	0.000	-.3453916	-.1599815
pq	-.1224998	.0169743	-7.217	0.000	-.1557761	-.0892234
mn	-.1224363	.0338049	-3.622	0.000	-.1887072	-.0561654
sask	-.0073641	.0342131	-0.215	0.830	-.0744354	.0597071
ab	-.0597597	.0211554	-2.825	0.005	-.1012326	-.0182868
bc	.0493757	.0186585	2.646	0.008	.0127976	.0859539
urban	-.0140786	.0163634	-0.860	0.390	-.0461574	.0180001
_cons	12.09509	.0477822	253.130	0.000	12.00142	12.18876

Adj. R squared: 0.0977

Appendix 3: Results of wealth regressions.

Table 7: 0-50th percentile in 1984.
Dependent variable: level of wealth

wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.3498721	.0284788	12.285	0.000	.2940449	.4056994
trninc	.3245659	.0159748	20.317	0.000	.2932503	.3558815
age3044	4.800044	.597768	8.030	0.000	3.628233	5.971855
age4554	5.105988	.8998946	5.674	0.000	3.341914	6.870062
age5564	8.164914	.982049	8.314	0.000	6.239792	10.09004
age65p	9.338456	.7893162	11.831	0.000	7.79115	10.88576
medu_uni	.7416383	.8328225	0.891	0.373	-.8909532	2.37423
fml_lone	-4.002508	1.103774	-3.626	0.000	-6.166249	-1.838767
fam_siz	.3091336	.2441315	1.266	0.205	-.1694401	.7877073
nf	6.606709	1.811327	3.647	0.000	3.055944	10.15747
pei	.0574538	3.733711	0.015	0.988	-7.261784	7.376691
ns	2.896578	1.365837	2.121	0.034	.2191122	5.574044
nb	3.689811	1.440602	2.561	0.010	.8657813	6.51384
pq	.7272698	.6107081	1.191	0.234	-.4699084	1.924448
mn	.2369354	1.287487	0.184	0.854	-2.286941	2.760812
sask	.3068983	1.374993	0.223	0.823	-2.388516	3.002312
ab	-1.00578	.8629956	-1.165	0.244	-2.69752	.6859602
bc	-1.956155	.823638	-2.375	0.018	-3.570742	-.3415681
urban	-5.747106	.7582843	-7.579	0.000	-7.233579	-4.260632
_cons	3.23627	1.137766	2.844	0.004	1.005894	5.466647

Adj. R squared: 0.1394

Table 8: 0-50th percentile in 1999.
Dependent variable: level of wealth

wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.4708346	.0420344	11.201	0.000	.3884351	.5532341
trninc	.3918934	.0183124	21.400	0.000	.3559958	.4277909
age3044	8.353278	.714494	11.691	0.000	6.952663	9.753892
age4554	10.2766	.9067375	11.334	0.000	8.49913	12.05406
age5564	10.37684	1.150686	9.018	0.000	8.121162	12.63251
age65p	12.71457	.9588784	13.260	0.000	10.83489	14.59425
medu_uni	1.221919	.7909522	1.545	0.122	-.3285753	2.772413
fml_lone	-.7080581	1.231748	-0.575	0.565	-3.122639	1.706522
fam_siz	-1.044826	.3067843	-3.406	0.001	-1.646212	-.4434407
nf	4.233907	1.977445	2.141	0.032	.3575447	8.110269
pei	.3940717	4.074959	0.097	0.923	-7.594022	8.382166
ns	2.528739	1.582115	1.598	0.110	-.5726633	5.630141
nb	2.811627	1.747158	1.609	0.108	-.6133072	6.23656
pq	3.191743	.7270417	4.390	0.000	1.766532	4.616955
mn	3.473622	1.494306	2.325	0.020	.5443525	6.402892
sask	4.725507	1.669887	2.830	0.005	1.452047	7.998968
ab	3.903427	1.048232	3.724	0.000	1.848589	5.958264
bc	-.0245937	.8941237	-0.028	0.978	-1.777334	1.728147
urban	-9.712621	.8490927	-11.439	0.000	-11.37709	-8.048155
_cons	.1748549	1.544271	0.113	0.910	-2.852361	3.202071

Adj. R squared: 0.1363

Appendix 3: Results of wealth regressions.

Table 9: 60-95th percentile in 1984.
Dependent variable: level of wealth

wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.7585538	.1543251	4.915	0.000	.4560082	1.061099
trninc	.8870953	.0557887	15.901	0.000	.7777248	.9964658
age3044	-5.49289	4.857183	-1.131	0.258	-15.01512	4.02934
age4554	18.51379	5.059911	3.659	0.000	8.594129	28.43346
age5564	18.99201	5.170389	3.673	0.000	8.855756	29.12826
age65p	3.394992	5.261731	0.645	0.519	-6.920332	13.71032
medu_uni	11.01735	4.181518	2.635	0.008	2.819723	19.21498
fml_lone	3.664457	9.618286	0.381	0.703	-15.19164	22.52056
fam_siz	.3713991	1.021527	0.364	0.716	-1.631246	2.374044
nf	-39.6938	9.875729	-4.019	0.000	-59.0546	-20.333
pei	5.738772	18.441	0.311	0.756	-30.41376	41.8913
ns	-27.4935	7.228239	-3.804	0.000	-41.66405	-13.32295
nb	-35.34047	8.900744	-3.971	0.000	-52.78987	-17.89107
pq	-19.62594	3.214991	-6.105	0.000	-25.92875	-13.32313
mn	-7.327738	5.917775	-1.238	0.216	-18.9292	4.273722
sask	10.08098	6.197644	1.627	0.104	-2.069147	22.23111
ab	4.394626	4.518646	0.973	0.331	-4.463921	13.25317
bc	13.17606	3.642176	3.618	0.000	6.035785	20.31634
urban	-17.44947	3.481268	-5.012	0.000	-24.27429	-10.62464
_cons	154.6713	8.680679	17.818	0.000	137.6533	171.6893

Adj. R squared: 0.0977

Table 10: 60-95th percentile in 1999.
Dependent variable: level of wealth

wealth	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
pminc	.8034397	.1702235	4.720	0.000	.4697342	1.137145
trninc	.8763218	.0703692	12.453	0.000	.7383703	1.014273
age3044	-10.13622	9.927928	-1.021	0.307	-29.59889	9.326456
age4554	19.80937	10.06287	1.969	0.049	.0821578	39.53659
age5564	42.8498	10.49937	4.081	0.000	22.26688	63.43273
age65p	18.1848	10.2974	1.766	0.077	-2.002196	38.37179
medu_uni	26.57886	4.613436	5.761	0.000	17.5347	35.62302
fml_lone	8.274136	15.12798	0.547	0.584	-21.38269	37.93096
fam_siz	.1834521	1.551098	0.118	0.906	-2.857314	3.224219
nf	-60.18116	17.68796	-3.402	0.001	-94.85657	-25.50576
pei	-1.554441	25.50115	-0.061	0.951	-51.5468	48.43792
ns	-49.12499	10.55924	-4.652	0.000	-69.82529	-28.42468
nb	-59.92769	12.63565	-4.743	0.000	-84.69856	-35.15681
pq	-29.45826	4.535551	-6.495	0.000	-38.34973	-20.56678
mn	-30.33054	9.032685	-3.358	0.001	-48.03818	-12.6229
sask	2.90914	9.141767	0.318	0.750	-15.01235	20.83063
ab	-12.45633	5.65273	-2.204	0.028	-23.53792	-1.374737
bc	15.03432	4.98558	3.016	0.003	5.260608	24.80803
urban	-4.69943	4.37231	-1.075	0.283	-13.27089	3.87203
_cons	194.5973	12.76743	15.242	0.000	169.568	219.6265

Adj. R squared: 0.0873

Appendix 4 - Table 1: Decomposition of overall wealth inequality by wealth component, 1984 and 1999 - top 1% of family units excluded.

I. 1984	(1) Gt	(2) Gkt	(3) Skt	(4) Rkt	(5) Ckt (2)*(3)*(4)	(6) Ckt/Gt %
Wealth component						
Assets						
Deposits, non-RRSP	-	0.762	0.126	0.723	0.070	10.8
Stocks, bonds and mutual funds, non-RRSP	-	0.909	0.062	0.767	0.044	6.7
RRSPs / LIRAs	-	0.889	0.050	0.749	0.033	5.1
Other investments or financial assets, non-RRSP	-	0.968	0.026	0.727	0.018	2.9
Principal residence	-	0.621	0.567	0.793	0.279	43.2
Real estate other than principal residence	-	0.917	0.123	0.722	0.082	12.6
Vehicles	-	0.607	0.076	0.511	0.024	3.6
Other assets	-	0.988	0.002	0.557	0.001	0.2
Business equity	-	0.957	0.163	0.879	0.137	21.2
Debts						
Mortgage on principal residence	-	0.832	0.118	0.249	0.024	-3.8
Other debt	-	0.826	0.078	0.263	0.017	-2.6
Total	0.646	-	-	-	-	100.0

II. 1999	(1) Gt	(2) Gkt	(3) Skt	(4) Rkt	(5) Ckt (2)*(3)*(4)	(6) Ckt/Gt %
Wealth component						
Assets						
Deposits, non-RRSP	-	0.821	0.089	0.742	0.054	8.0
Stocks, bonds and mutual funds, non-RRSP	-	0.932	0.086	0.849	0.068	10.0
RRSPs / LIRAs	-	0.813	0.178	0.809	0.117	17.4
Other investments or financial assets, non-RRSP	-	0.961	0.018	0.695	0.012	1.8
Principal residence	-	0.596	0.613	0.793	0.290	43.0
Real estate other than principal residence	-	0.926	0.114	0.733	0.077	11.5
Vehicles	-	0.630	0.071	0.574	0.026	3.8
Other assets	-	0.990	0.002	0.693	0.001	0.2
Business equity	-	0.990	0.092	0.844	0.077	11.4
Debts						
Mortgage on principal residence	-	0.792	0.177	0.229	0.032	-4.8
Other debt	-	0.785	0.086	0.233	0.016	-2.3
Total	0.674	-	-	-	-	100.0

Source: Authors' calculations from the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999.
- See text for definition of variables.

Appendix 4 - Table 2: Decomposition of overall wealth inequality by wealth component, 1984 and 1999 - top 5% of family units excluded.

I. 1984	(1) Gt	(2) Gkt	(3) Skt	(4) Rkt	(5) Ckt (2)*(3)*(4)	(6) Ckt/Gt %
Wealth component						
Assets						
Deposits, non-RRSP	-	0.752	0.141	0.707	0.075	12.4
Stocks, bonds and mutual funds, non-RRSP	-	0.901	0.057	0.714	0.037	6.1
RRSPs / LIRAs	-	0.888	0.050	0.722	0.032	5.4
Other investments or financial assets, non-RRSP	-	0.966	0.020	0.603	0.012	2.0
Principal residence	-	0.615	0.661	0.787	0.320	52.9
Real estate other than principal residence	-	0.915	0.120	0.670	0.073	12.1
Vehicles	-	0.605	0.092	0.499	0.028	4.6
Other assets	-	0.988	0.002	0.459	0.001	0.2
Business equity	-	0.965	0.096	0.776	0.072	11.9
Debts						
Mortgage on principal residence	-	0.831	0.151	0.268	0.034	-5.6
Other debt	-	0.813	0.089	0.167	0.012	-2.0
Total	0.604	-	-	-	-	100.0

II. 1999	(1) Gt	(2) Gkt	(3) Skt	(4) Rkt	(5) Ckt (2)*(3)*(4)	(6) Ckt/Gt %
Wealth component						
Assets						
Deposits, non-RRSP	-	0.801	0.091	0.696	0.051	8.0
Stocks, bonds and mutual funds, non-RRSP	-	0.921	0.061	0.761	0.043	6.7
RRSPs / LIRAs	-	0.797	0.177	0.766	0.108	17.0
Other investments or financial assets, non-RRSP	-	0.960	0.017	0.613	0.010	1.6
Principal residence	-	0.594	0.731	0.782	0.340	53.4
Real estate other than principal residence	-	0.927	0.106	0.662	0.065	10.2
Vehicles	-	0.627	0.086	0.547	0.029	4.6
Other assets	-	0.990	0.001	0.527	0.001	0.1
Business equity	-	1.018	0.062	0.757	0.048	7.6
Debts						
Mortgage on principal residence	-	0.787	0.229	0.246	0.044	-7.0
Other debt	-	0.773	0.104	0.170	0.014	-2.1
Total	0.637	-	-	-	-	100.0

Source: Authors' calculations from the Assets and Debts Survey of 1984 and the Survey of Financial Security of 1999.
- See text for definition of variables.

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