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Income Trajectories of High Income Canadians 1982-2010

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Abstract

The recent rise in the incomes of Canadians at the top of the income distribution is well documented, but the reasons for this rise are not fully understood. What is certain is that the rising income shares are accompanied by changing individual income trajectories over time. This paper uses a longitudinal administrative database to explore the mobility patterns of high income Canadians. Using tax data with large sample sizes allows an examination of the highest income earners and the paper emphasizes statistics on the top 5%, 1%, 0.1% and 0.01% of tax filers.

Specifically the analysis is concerned with locating changes to the income mobility patterns of high income Candians over time. The paper examines the year over year transitions to and from high income as well as the duration of high income earners at the top over a five year period. We find a slight increase in the income stability of high income Canadians and a corresponding decline in the proportion of all filers who make it to the high end at some point during a fixed time period.

Friedman has hypothesized that higher incomes represent a return for higher risk. Given the recent rise in income shares we might expect to see higher variability in those incomes. The paper compares the growth rate and variability of individual income trajectories to see if an increase in income growth is accompanied by an increase in variability. We find that while the growth rate in incomes follows economic cycles the variability in these trajectories is much more consistent over time.

Introduction

Over the past decade income inequality has risen in Canada with income shares rising especially rapidly for the top 5% of incomes (Heisz, 2007). Unlike increases in income inequality in the 1970's, the latest increase is concentrated at the upper end of the income distribution (Murphy, Roberts and Wolfson 2007, Saez and Veall 2005 and 2007, Veall 2012).

In a review of 25 years of income inequality in Canada, Osberg argues that "the key issue to explain in Canada is the 'pulling away' of the very top end of the income distribution, particularly since the mid-90s" (Osberg 2008). Some researchers have argued that this recent increase at the top is driven by the removal of social norms regarding pay inequality (Piketty, 2006). Others believe that the growth remains consistent with theories of skill biased technological change, superstars, greater scale and their interaction (Kaplan, 2007). There is a further question whether changes in taxation rules have affected the way in which high income Canadians are compensated for their work by their employers or the ways in which the self-employed or investors structure their income. Underlying any of these and many other explanations are the individual income trajectories of high income individuals, that is, their income mobility.

In a 2003 study of top incomes in Canada, Saez and Veall briefly examined whether the increases in high incomes were accompanied by increased mobility and found that mobility at the top is modest and that there was virtually no change since 1982(Saez & Veall, 2003, Veall, 2012). However, Friedman and Savage have argued that choice amongst different occupations is a choice between different degrees of uncertainty and risk (Friedman and Savage, 1948). Occupations vary as to their level of anticipated return with 'riskier' jobs providing a higher rate of return or income. Thus if we observe a higher rate of return (higher incomes) then consistent with Friedman we would also expect higher 'risk' or variability in those incomes. This paper addresses the Friedman hypothesis, albeit partially, by examining the relationships among average levels of income, the trend in the growth of incomes, and their variability.

This study extends the Saez and Veal mobility analysis and asks if patterns of income receipt are different for the very rich now than in the past? Are the trajectories of high income earners any steeper? Is there more variability now than in the past? We use longitudinal administrative tax data to describe and explore changes in the income trajectories of the high income population, based on the actual trajectories of high income earners over a 29 year period.

The paper begins with a brief description of the data sources and methods for examining income mobility. We then document the rising shares of income in Canada followed by an examination of some transition probabilities. Lastly the paper presents the results of two techniques to describe the changes in the trend and variability of individual income trajectories, extending the work from Saez and Veall. The paper concludes with a short summary and suggestions for future directions.

Data Sources and Methods

In order to study high income trajectories a longitudinal dataset is required with sufficient sample size to identify the very highest incomes. This study makes use of 29 years of data in the Longitudinal Administrative Databank (LAD) at Statistics Canada. This is a 20% longitudinally linked sample of income tax records from 1982 through 2010. The annual sample sizes are large with over five million filers in 2010.

Because the LAD is based on individuals who filed a tax return, the population does not fully represent the entire Canadian population[1]. In 1982 78% of Canadians age 15 or over filed a tax return. By 2010 this rate had risen to almost 90%. At the same time the female labour force participation rate rose from 52% to 62% which would have resulted in a number of new filers. In addition, the increase in filing behaviour was affected by the requirement to file a tax return in order to receive certain income tested government transfers such as the sales tax credit from 1986. While these trends will affect the relative rise in income shares (the increase in the shares would have likely been smaller if the proportion of tax filers had been constant through that period[2]), it is expected that this should not significantly affect the trajectories of the highest income Canadians (who would have been filing tax returns in any case).

Throughout the paper we primarily use total income including capital gains. While the composition of total income is one important factor in the rise of top income shares (Saez and Veall, 2003), high income earners usually have multiple sources of income as well as the ability to structure and time the receipt of that income to minimize taxes. In that we are looking at overall income mobility this study focuses on the variability in total income. Our definition of income is not identical to the total income found on the tax form as our purpose is to examine the economic well-being of filers and not their tax liability or personal tax base. As such we have used actual capital gains and actual dividends instead of the taxable version of these variables[3].

The paper splits the income distribution into a number of different quantiles. We make frequent reference to the top 1, the top 0.1 and the top 0.01. These refer to the 1% of filers with the highest incomes, the top $1/10^{th}$ of 1% of filers, and the top $1/100^{th}$ of 1% of filers. This latter group contains about 2,500 filers in 2010 for which the LAD has a sample of nearly 510 indicating the sample sizes are still large for these very high income quantiles. We do not specify the income levels associated with membership in these

[1] The LAD starts with a population of filers and then imputes spouses and dependants, many with zero incomes. In 2010 the LAD covered an estimated 97% of the population. However this analysis restricts itself to filers who actually filed a tax return.

[2] We simulated the impact of a 12% increase in filers with zero incomes on the 1982 LAD and this increased the income share of the top 5% of filers by 1.5 percentage points and the share of the top 1% of filers by 0.5 percentage points.

[3] The definition of income on LAD reflects the definition of income appropriate to the filing of income taxes and does vary slightly over time as income items are added or removed from the tax form. The main difference is in the addition of several transfer payments related to the benefit determination of various transfer programs. The variables included in our definition of income for any given year may be found in Appendix B.

groups as these have been documented (Murphy, Roberts, and Wolfson, 2007) and are available from Statistics Canada[4].

In the course of analysis this paper slices the 29 years of data using four different time periods; 1 year, 2 years, 5 years, and 12 years. We begin by using a one year (cross-sectional) period to document the rising shares of income. The 2 year periods are then used to examine year-over-year patterns of mobility. This section is followed by a look at five year panels to describe longer term patterns of entry and duration at the high end of the income distribution. The final section uses 12 year panels to examine the trajectories of high income Canadians.

The sample selection varies somewhat depending on the panel length. In all cases we have excluded information for deceased filers in the year of their death. Also, while the LAD creates imputed records for non-filing spouses and dependants these records are excluded from this analysis of individual tax filers. Other exclusions are mentioned in the relevant sections[5].

Several methods have been applied to the LAD to study the growth in high incomes. In their study of the evolution of high incomes in Canada, Saez and Veall (2005) asked if there was a concurrent increase in mobility with the rising income shares. They also examined the probability of remaining in the top 0.1 income group for one, two and three years. This paper will use similar techniques to explore changes in mobility at the high end of the income spectrum.

The study will also use a technique similar to the one used by Mirer in 1974 when he examined income mobility using the first years of the Panel Study of Income Dynamics. (Mirer, 1974). He used a basic log linear regression to estimate for each family a growth trend and an estimate of variability and examined these across a measure of permanent income. That early study found income variability followed a U shaped pattern by income level. The approach of describing the trend growth and variability around this trend income growth will be used to characterize trajectories.

Rising shares of incomes

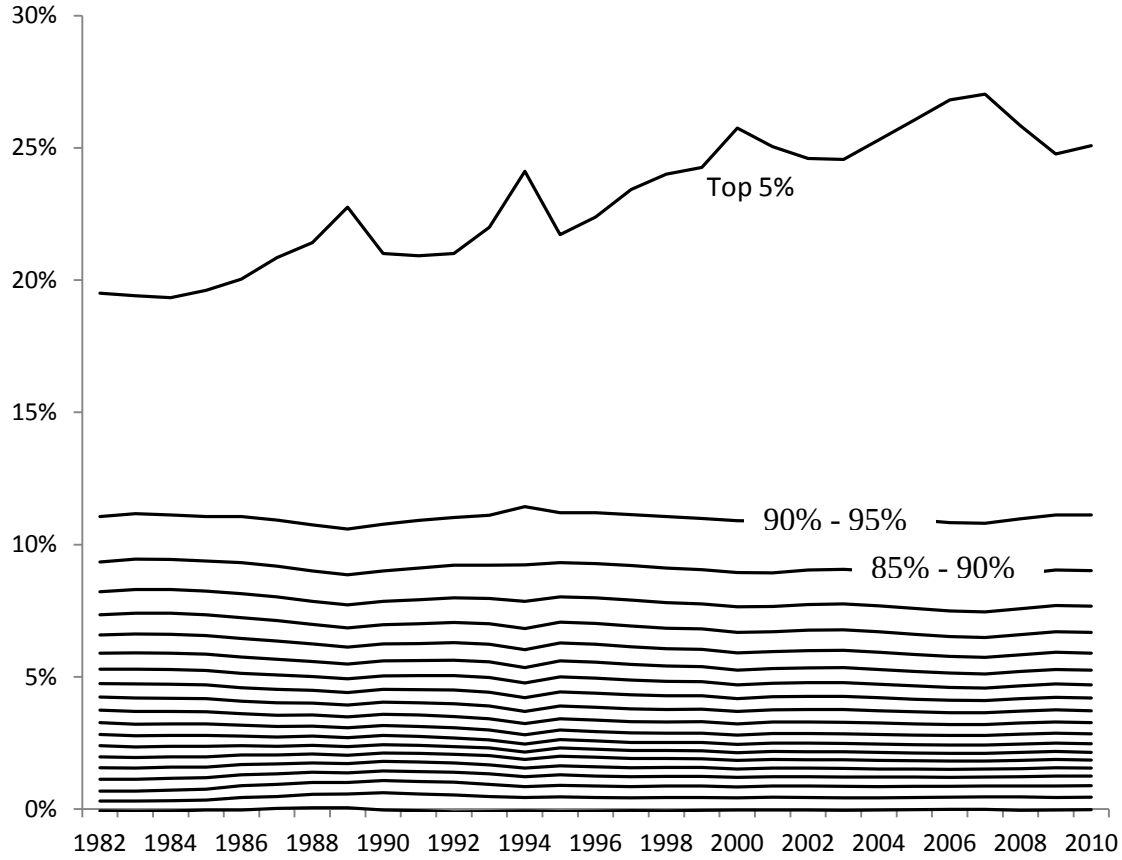
As we noted earlier, the rise in income shares at the high end of the income distribution has been well documented. Based on an analysis of quintiles, survey based distributional statistics have shown the increased income shares to be limited to the top 20% with all other quintile groups experiencing declining or steady shares of income (Statistics Canada, 2007). More detailed analysis using tax data have shown that the increase of the

[4] Estimates of high income tax filers can be found free of charge in CANSIM table 204-0001, High income trends of tax filers in Canada, provinces, territories and census metropolitan areas (CMA), national thresholds

[5] Appendix C contains a table showing the sample sizes using each of the different panel lengths.

last 25 years is occurring much higher in the income distribution, mainly for the top 1% of tax filers (Saez & Veall 2003, Murphy, Roberts and Wolfson 2007). Figure 1 below shows the total income shares by vingtile.

Figure 1: Total Income Shares by Total Income Vingtile and Year



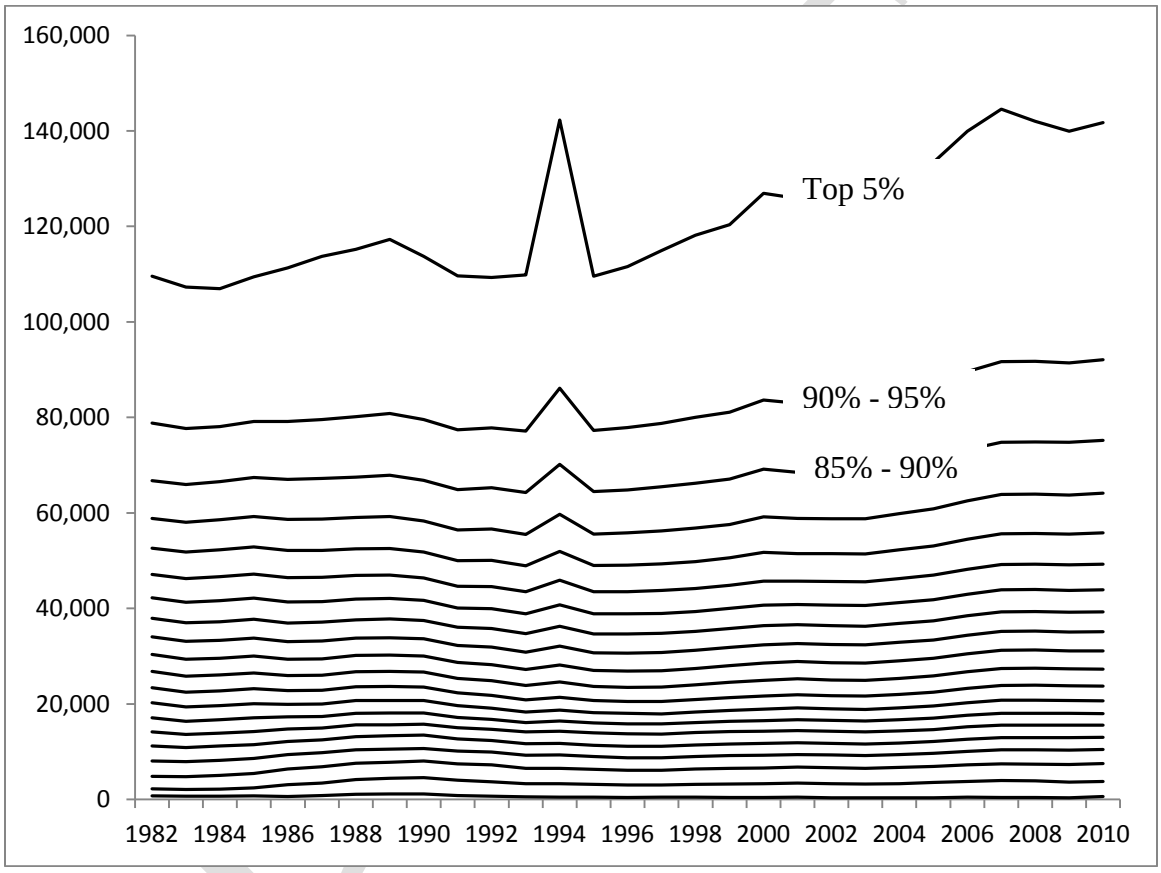
Source: Statistics Canada, Special Tabulations from the LAD.

Figure 1 divides the population of all filers into twenty equal sized groups, one for each total income vingtile or five percent of the population. All lines are relatively flat though there is some increase in the lowest vingtiles and some decline in the middle vingtiles. The top most line represents the share of top vingtile and increases from below 20% in 1985 to over 27% in 2005, but then declining to 25% in 2010.

There are four peaks for individuals in the top 5% (1989, 1994, 2000, and 2007). The 1989 peak occurred prior to the 1991 recession while the 2000 peak was just before the stock market readjustment of 2001. The 1994 peak is caused by a surge in capital gains income. The year 1994 was the last year of the $100,000 lifetime capital gains exemption and many filers sold capital holdings in order to crystallize their capital gains and take advantage of a tax provision that was ending. The 2007 peak preceded the most recent recession.

While income shares have been fairly stable in all vingtiles except the top one, median income has risen (mostly after 1994) in the top five vingtiles, as can be seen from figure 2 below. The peak in 1994 due to the increase in capital gains can be observed in almost half of the distribution. There are also increases in the median income in the bottom six vingtiles, even though they are more difficult to see because of the scale. Caution has to be used however when examining the lowest vingtiles because of the differences in filing rates.

Figure 2: Median Total Income by Total Income Vingtile and Year, Constant 2010 Dollars

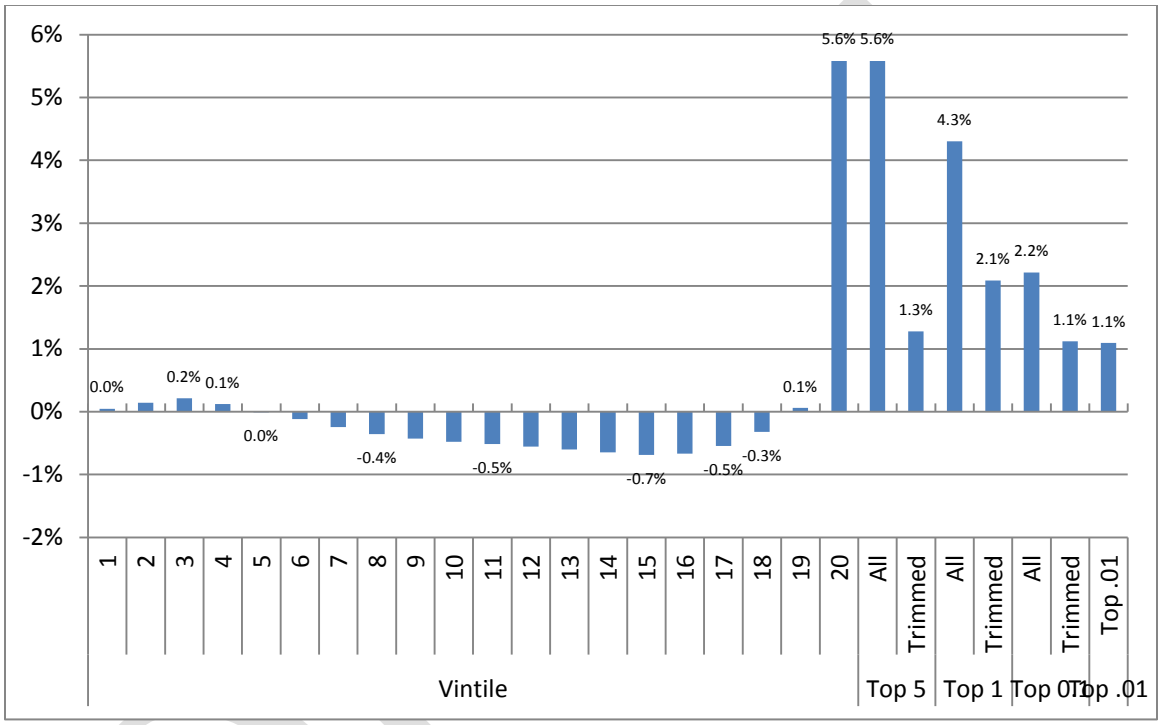


Source: Statistics Canada, Special Tabulations from the LAD.

As Saez and Veall (2005) had noted, the rise in income shares is dominated by a large growth concentrated mostly in the top 1% of the distribution. Figure 3 shows the absolute difference in income shares between 1982 and 2010. The vertical axis shows the actual difference while the horizontal axis is broken up into various quantile groups. The first 20 bars correspond to the 20 vingtiles in figure 1 above. We can see a slight increase in shares for the first three vingtiles accompainied by a declining in shares in the subsequent 16 vingtiles, while finally the share of the top vingtile increases by 5.6%.

The change in income share within each quantile group at the top of the income distribution has been decomposed into two groups; for example the "Top 5 All" bar represents all filers in the Top 5 while the "Top 5 Trimmed" bar represents the increase of income shares among the people in the top 95% to 99% – that is, the top 5% trimmed or exclusive of the next highest category, which in this case is the top 1%. It can be seen that the increase in the 95% to 99% is much smaller (at 1.3%) than the increase observed in the top 1% (which grew by 4.3%).

Figure 3: Absolute Change in Income Shares for Various Total Income Quantiles Between 1982 and 2010

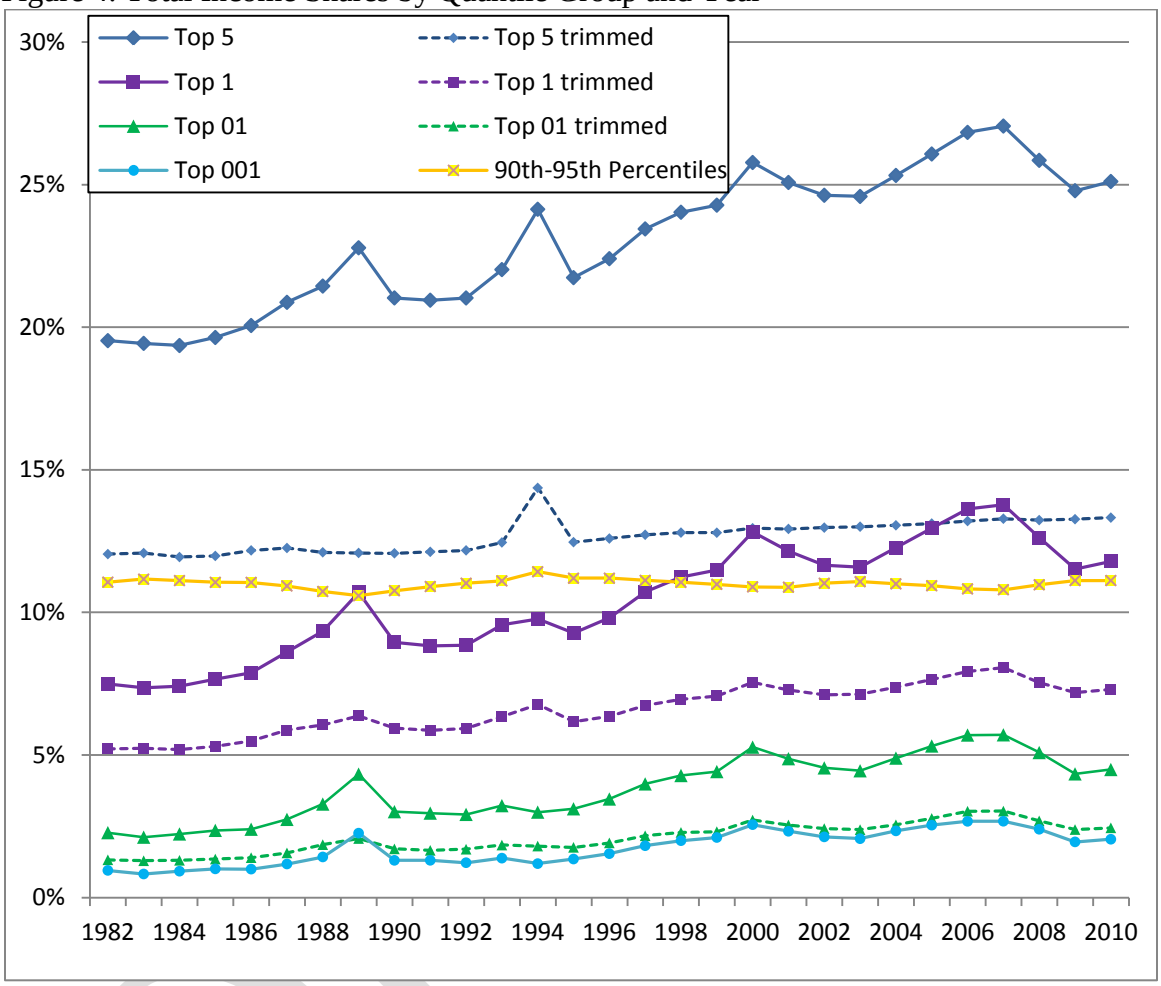


Source: Statistics Canada, Special Tabulations from the LAD.

Similarly the "Top 1" group excluding the "Top 0.1" group increased by 2.1% whereas with the top 01 included the top 1 grew by 4.3%. The trimmed top 0.1% of filers accounted for 1.1% of the overall increase while the top .01group as a whole accounted for 2.2%. In other words almost 40% of the entire increase in the top 5 was due to the top 0.1% of filers, and another 38% due to the top 1% of filers.

The 1982 and 2010 reference points reflect a trend that is fairly continuous (with a slightly steeper increase of the shares in the 1990's than in the 1980's), as can be seen from figure 4. Figure 4 is similar to Figure 1 but the top of the distribution has been decomposed to show the shares for the highest quantiles and trimmed groups. The top 5% line is the same as in Figure 1. The growth in the trimmed top 5 is much smaller. The pulling away at the high end, in terms of income shares, is primarily being driven by increases to the top 1% of the population.

Figure 4: Total Income Shares by Quantile Group and Year



Source: Statistics Canada, Special Tabulations from the LAD.

Also apparent in the chart are three separate growth periods from 1984-1989, 1992-2000 and 2004-2007. All three of these are followed by a sharp drop due to the 1991 recession, the 2000 slowdown, and the financial crisis of 2007-2008. The growth period from 1992-2000 did have the capital gains blip in 1994. The importance of economic cycles must be kept in mind when examining our later results using panels of various lengths.

Annual Transitions to and from high income

The income shares presented so far are repeated annual cross-sectional estimates. But the study of income mobility now requires the longitudinal nature of the LAD. To begin our exploration of income mobility we examined the year-over-year, (referred to earlier as 2 year panels) mobility of filers into and out of the high income group. If income shares are rising and there is indeed a higher risk associated with higher incomes then we

may expect to see an increase in the proportion of high income filers who experience a sharp drop in their incomes (or a sharp rise).

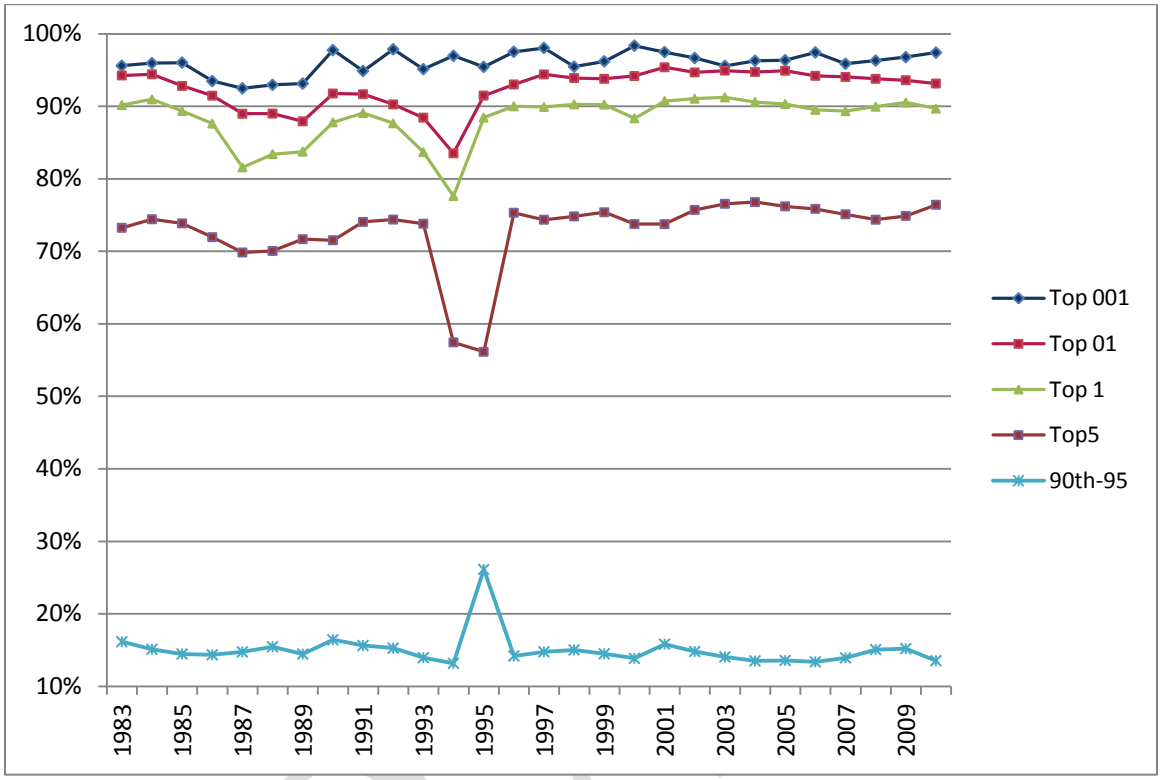
Saez and Veall (2005) calculated the probability of remaining in the top 0.1% from one year to the next and found that since 1990 roughly 60% of filers remained in the top 0.1%. The requirement for staying in the top 0.1% of filers is fairly high. It required an income of over $804,800 to be in that group in 2010. Because many high income filers face significant variation in their incomes, we have used instead the cut-off for the top 5% of Canadians. Thus rather than asking what proportion of the highest income group remained in that same group, we have asked "of all filers who made it to the top 5% in any given year, what part of the income distribution did they come from the year before"[6].

As can be seen from figures 5A, between 70% and 80% of the top vingtile in a given year were in that same vingtile in the previous year despite variations. Ignoring the spike in 1994, between 13 and 16% of the filers in the top vingtile in one year came from the 19th vingtile the year before. In total about 88% of filers in the top vingtile came from within the top decile the year before. The percentage of the top 5 coming from in the top decile is relatively constant over time. However quite recently there are fewer filers in the 19th vingtile rising to the top 5 and a corresponding increase in the proportion of top 5 filers staying put.

Since the mid 1990's there has been a very slight increase in the proportion of people in the top 0.01%, the top 0.1% and the top 1% who stay in the top quintile in the next year.

[6] Filers with zero or negative incomes are classified in the bottom percentile.

Figure 5A: Distribution of the top vingtile, by income quantile in the previous year

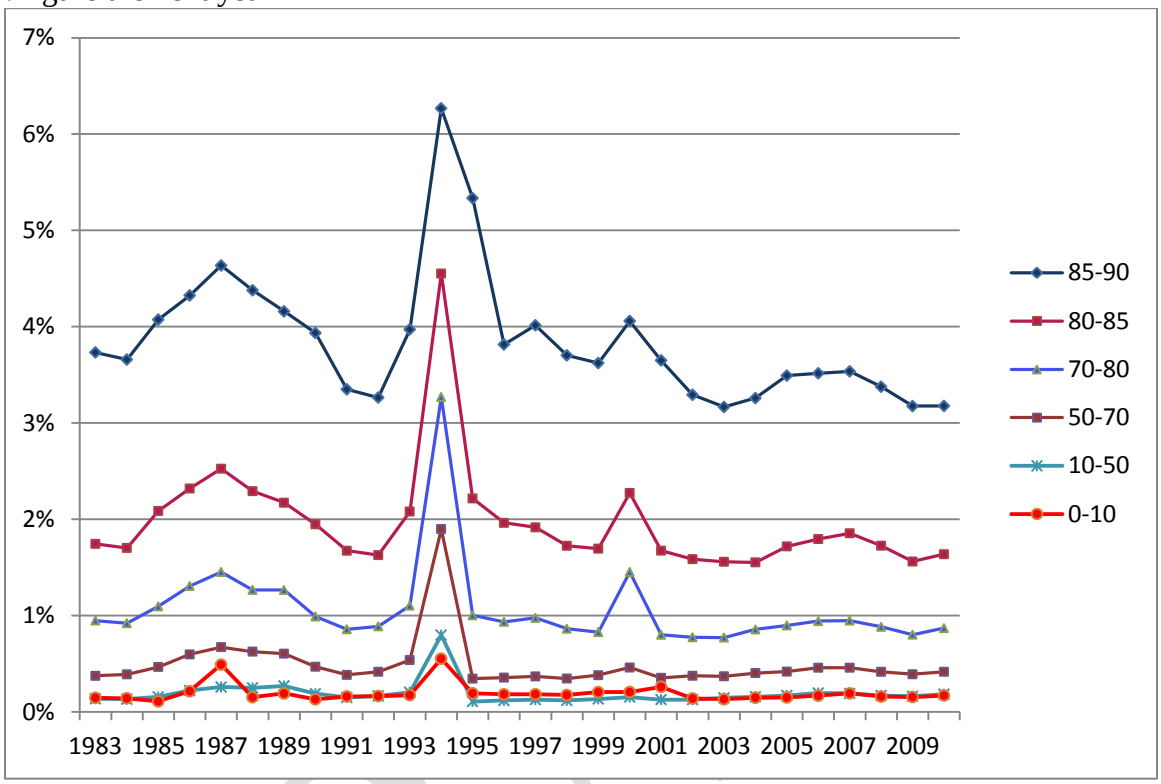


Source: Source: Statistics Canada, Special Tabulations from the LAD.

Figure 5B shows the corresponding mobility for individuals in the bottom deciles in the previous years. Approximately 4% of filers in the 85th-90th percentiles moved into the top vingtile in the subsequent year. This drops to about 1% of filers who move from the third highest decile (70th-80th percentiles) to the top 5%. Despite fluctuations caused by economic cycles these levels seem roughly stable over time though there is a slight downward trend after the early 90s. The trough/spike in 1994 is again caused by the change in the taxation of lifetime capital gains.

The next two lines by level of income show results for percentiles 50-70 and 10-50 respectively. Both lines show less than 0.5% of the filers in these groups made it to the top 5% the following year. However the poorest filers (those in the first decile 0-10 group) also presented a slight proportion of filers transitioning to the top 5%. Thus a small number of filers are continually moving from the bottom decile to the Top 5% each year. It is interesting that this proportion dropped in 2002 and has remained relatively stable at the same lower level through 2010. It is also worth noting that approximately 0.5% of filers in the 0-10 percentiles moved up to the top 5% during high points in the economic cycle in the late 1980s and in 1994 the last year of the lifetime capital gains exemption for individuals.

Figure 5B: Percentage of tax filers in the nine lowest deciles who moved to the highest vingtile the next year



Source: Source: Statistics Canada, Special Tabulations from the LAD.

Five Year Panels

Year over year transitions fail to capture the longer term trajectories of individual filers. For example some filers may experience only one year's interruption in an otherwise smooth trend. As a way of examining any changes to the ease of moving into and remaining in the top vingtile, figures 6A and 6B show first the proportions of filers who were ever in the top 5% for a fixed time span, and then the proportions staying in the top 5% for all years in a five year period.

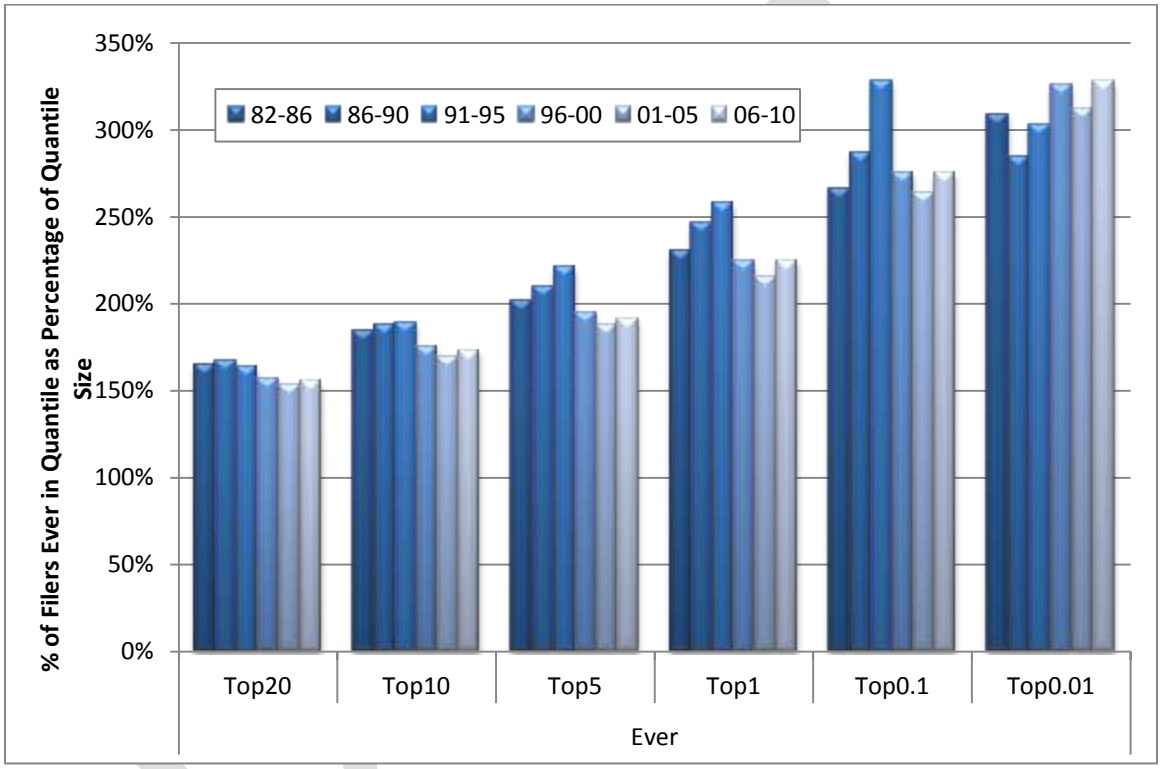
We first selected all filers who had filed a tax return in at least one year in a five year period and who had reported non-zero income for at least one year. From this population we identified those filers who had been in the top 20%, 10%, 5%, 1% and 0.1% of filers in at least one year. These are labelled "Ever". We also identified those filers who remained in the top group(s) for the entire five year period and labelled them "always".

The six sets of bars correspond to a sequence of ever smaller top quantile income groups. Each bar within these sets represents the results for a single five-year panel with these bars are arranged chronologically. The height of each bar represents the proportion of

filers within their quantile group that experienced either one year (Figure 6A) or all years (Figure 6B) in that group.

In order to display the wide range of values on the same chart we have normalized these percentages according to the quantile size. Thus if the exact same filers were in the top quintile for all five years (no-mobility) then the percentage who "ever" reached the top 20 would be 20% -- and that expressed as a percentage of the size of the top 20 would be 100%. The actual percentage of filers who were ever in the top 20 was somewhat over 30% -- or as seen in Figure 6A, 150% of the "no-mobility" value of 20%.

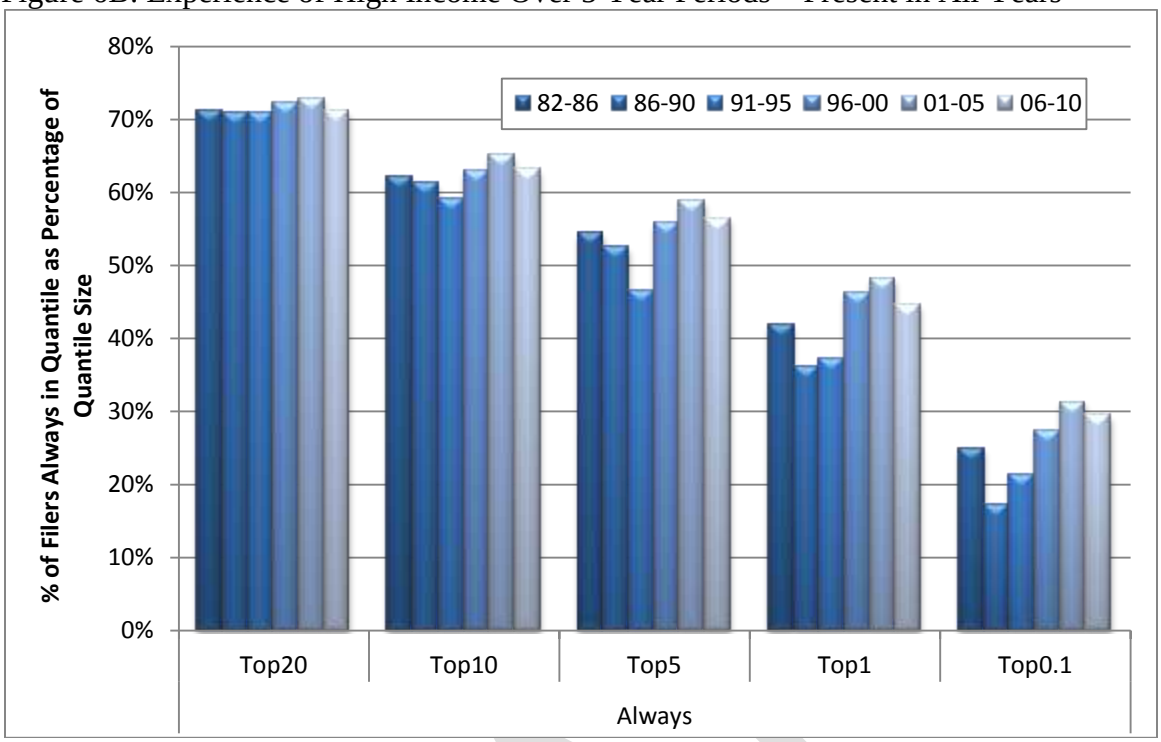
Figure 6A: Experience of High Income Over 5 Year Periods – Present in at Least One Year



Source: Source: Statistics Canada, Special Tabulations from the LAD.

As Figure 6A illustrates, the higher up the income scale the greater is the variability in the membership of the quantile group. Thus while an additional 50% of filers made it to the top 20 than if membership in the top 20 had remained static, there are up to 3 times the number of filers making it to the top 0.1%. This indicates considerable mobility for the highest quantile groups, and is consistent with the findings from the two year panels. Since 1986-1990 the proportion of filers ever making it to the top 20 has steadily declined, followed by slight recoveries in 2006-2010, albeit to a limited degree. For higher income quantiles this shift towards a more stable group of filers starts five years later and is somewhat more pronounced.

Figure 6B: Experience of High Income Over 5 Year Periods – Present in All Years



Source: Source: Statistics Canada, Special Tabulations from the LAD.

Figure 6B shows the corresponding results for the "always in the top quantile" groups, and as expected the vertical axis percentages are now below 100%. Somewhat less than 15% of all filers spent the entire 5 year period in the top 20 group – or about 70% of the 20% we would expect if there were no mobility at all. Overall, the more rarified the income level, the smaller the proportion of income tax filers who have incomes above that threshold for a 5 year stretch. While about two-thirds of those in the top quintile or decile remain in that income group for five years at a time, roughly one-third or fewer of those in the top 1% or top 0.1% remain above these higher thresholds.

Looking more closely at the temporal patterns for each quantile group, there was a drop in persistence of high income from the 1982-1986 period, but then generally increases up to the 2001-2005 period, then followed by a small decline in the 2006 to 2010 period.

Income Trajectories

The five year panels just shown have been used to extend the methodology of Saez and Veall (2005)who used one, two and three year periods. We now turn to characterize the individual trajectories of high income filers in more detail. We have chosen 12 year periods for this analysis and the choice is somewhat arbitrary. Too short a panel length

would introduce more variability in permanent incomes. Twelve year panels have sufficient data points for the selected techniques.

Two methodologies were used to characterize the growth and variability of individual income trajectories. One method is the same as that used by Mirer (1974?); the other is a non-parametric method. Since they are conceptually similar, they serve as a consistency check for the robustness of our results.

Both methods involve characterizing each individual income tax filer's income trajectory by three attributes: the average level, trend growth, and variability of the individual income streams in the 12 years of a given panel. In order to assess the effects of economic cycles on the estimates, six overlapping 12 year panels were created and estimates were produced for each panel. The panels are as follows:

1984-1995
1987-1998
1990-2001
1993-2004
1996-2007
1999-2010

Many filers do not file an income tax return for all years. In addition, a number of filers report negative or zero incomes. As these represent actual filing patterns, we have included these records. However, and unlike the earlier panels, whenever income is negative or zero, it has been set to $1. To reduce the impact of filers just entering or exiting the tax system (youth and retirement) we have removed all filers who had less than two observations in the first six years or last six years of the panel.

To calculate the average or "permanent" income level, used for both methods, we classify filers according to their quantile of aggregate constant dollar income over the 12 year period. The calculation method then differs for the trend and variability attributes according to the method.

The first method used looks at the trends using two median incomes; the median income in the first six years of a given panel and the median income for the last six years of the panel[7]. An average annual real growth rate is calculated for each individual as follows:

$$Trend = EXP\left[\frac{Log(MedL) - Log(MedF)}{6}\right] - 1$$

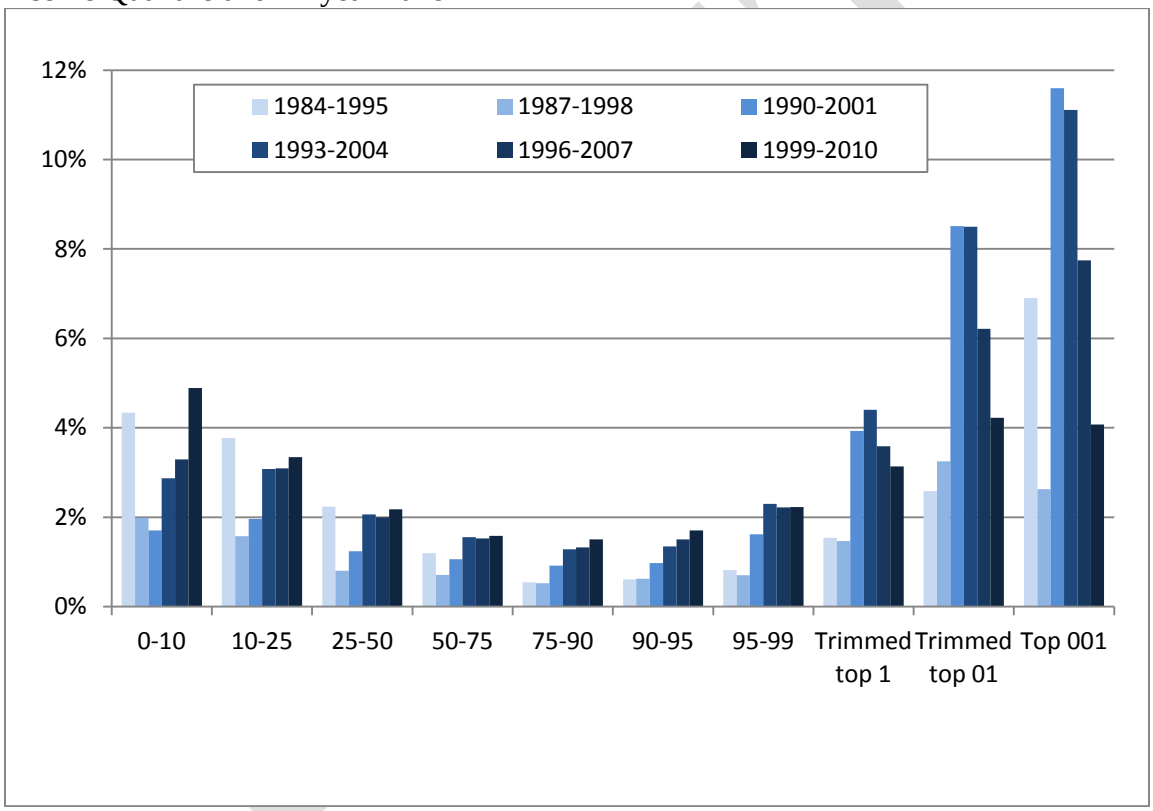
Where: MedF=Median income of first six years of panel
MedL=Median income in last six years of panel

[7] Where a filer has an even number of years of valid data (2, 4, 6, 8, 10, 12) the median is calculated as the average of the two middle values.

The variability indicator for an individual's income trajectory is calculated by first centering the Trend on the 12 year median income and calculating predicted values assuming a smooth log-linear trajectory covering all of the 12 years. We then sum the absolute differences between the actual and predicted values and express this quantity as a ratio of the individual's median income over the 12 year period. This method will be labeled Method A. The trend results for Method A are presented in Figure 7 while the variability results are in Figure 8.

The horizontal axis in Figure 7 divides the population by percentile groups while the vertical axis gives an estimate of the average annual growth rate. Each quantile group has six bars, one for each panel displayed chronologically.

Figure 7: Method A Trend Annual Income Growth Rate (%) Indicator by Permanent Income Quantile and 12-year Panel



Source: Source: Statistics Canada, Special Tabulations from the LAD.

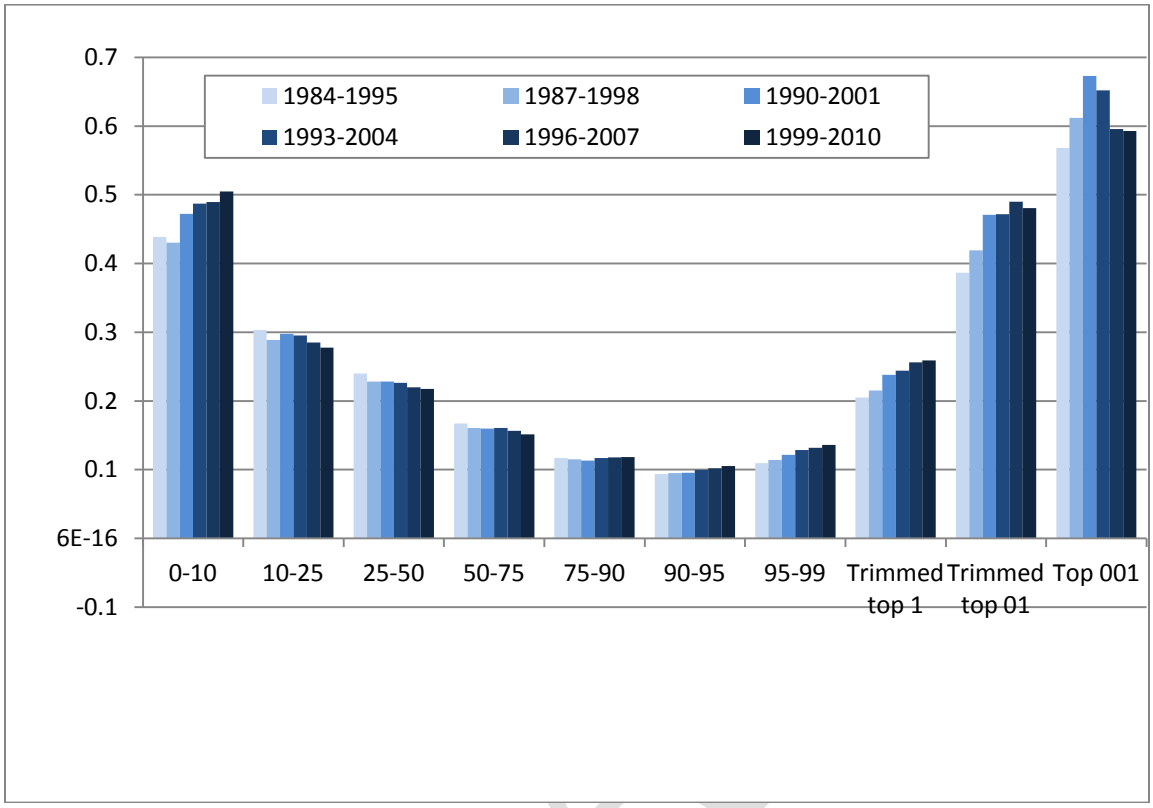
As found by Mirer 35 years ago in the US, there is a general U shaped curve to income trajectories with the strongest growth occurring for the two tails of the distribution. Consistent with the finding that the growth in top shares was driven by the top 1% it can also be seen that the growth rates are similar from the 25th through 99th percentiles. Above the 99th percentile the growth rates increase with each subsequently smaller and higher income quantile group.

Another feature of Figure 7 is the high growth for the very highest incomes. Most of the quantiles had real annual income growth rates lower than two percent across the panels. Filers in the first decile showed slightly higher growth rates at between three and four percent. Filers in the trimmed top 0.1% and top 0.01% groups had much stronger growth in incomes. The relation of these rates is most clear at the high end where the two periods of highest growth are associated with the steepest trajectories -- that is, the period spanning 1990-2004. These growth rates are thus heavily influenced by economic cycles and are quite variable. It is possible, for example, that the high-tech boom of the late 90's drove the growth rate for the top 0.01% group.

It is worth noting that the last three panels displayed rising income growth in all the income groups expect the trimmed top 5 group. The downward growth was more evident in the trimmed top 1%, trimmed top 0.1% and the top 0.01% groups.

The variability of the Method A trends is shown in Figure 8. We observe the same U shaped pattern over income groups as we saw with the trend growth rates. For all quantile groups the levels of variability are more consistent across panels than are the growth rates. The first decile and the top 0.01 group displayed large income fluctuations than other quantiles, Both the trimmed top 1 and the trimmed top 0.1 have somewhat higher variability in the most recent two panels while the variability of the top 0.01 fell after upward variations in growth for all other panels.

Figure 8: Method A Variability Indicator by Permanent Income Quantile and 12-year Panel



Source: Source: Statistics Canada, Special Tabulations from the LAD.

The second method, Method B, is drawn from Thad Mirer's (1974) early work with the Panel Survey of Income Dynamics. This is a more conventional log linear regression of individual incomes over time to a measure of permanent income.

$$\log y_i(t) = \log x_i + t \times \log(1 + g_i) + u_i$$

or $\log y_i = \alpha_i + \beta_i \times t + u_i$

Fitting this trend line to the data separately for each individual filer provides estimates of the three attributes of the i^{th} tax filer's income trajectory:

$\hat{\alpha}_i$ is permanent income level (when t = 0),

$\hat{\beta}_i$ is a measure of the income trend growth rate, ($\beta_i \cong g_i$ for small g_i), and

$\hat{\sigma}_{u_i}$ is the measure of income variability.

Figure 9 presents the trend results for the 24 million individual-level regressions (six panels times about 4 million filers) using the same structure as the chart for Figure 7. Overall, the results are very similar to Method A. However, Method B shows more "bouncing around" than method A. Intuitively, this is not surprising, since Method A uses non-parametric indicators (trimmed means and absolute differences rather than untrimmed means and squared differences) that are intrinsically more robust. For example, Method B in figure 9 also shows that the top three income groups all experienced declining income growth rates in the last three time panels.

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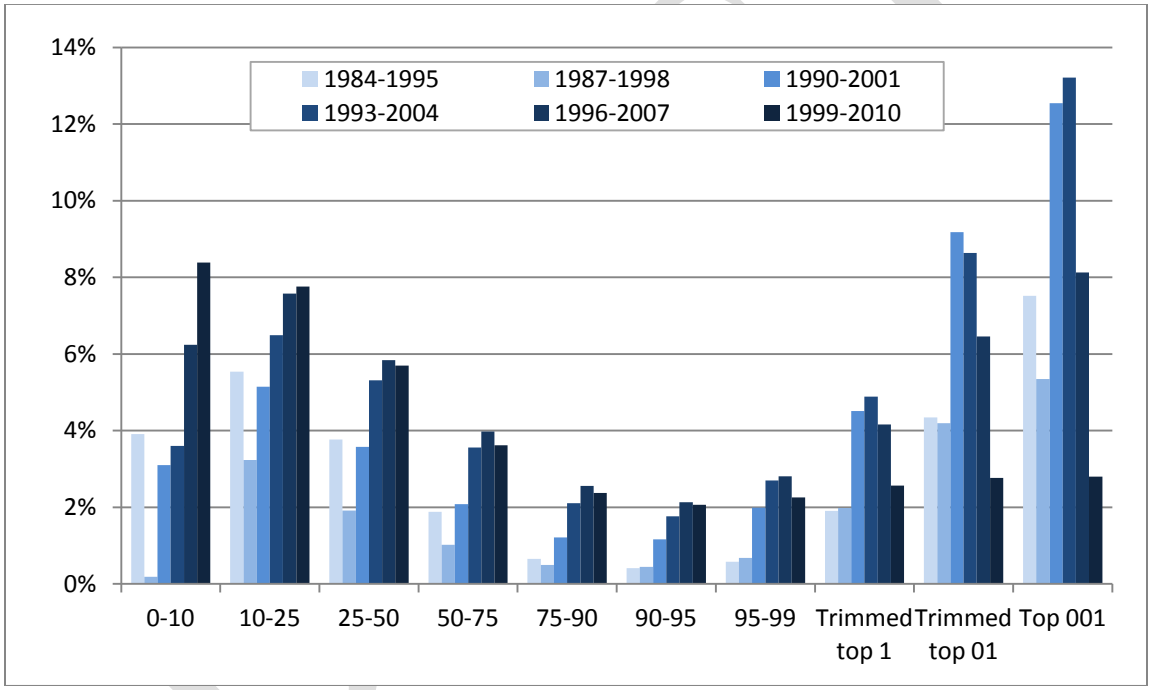
Figure 9: Method B Trend Annual Real Income Growth (%) Indicator by Permanent Income Quantile and 12-year Panel



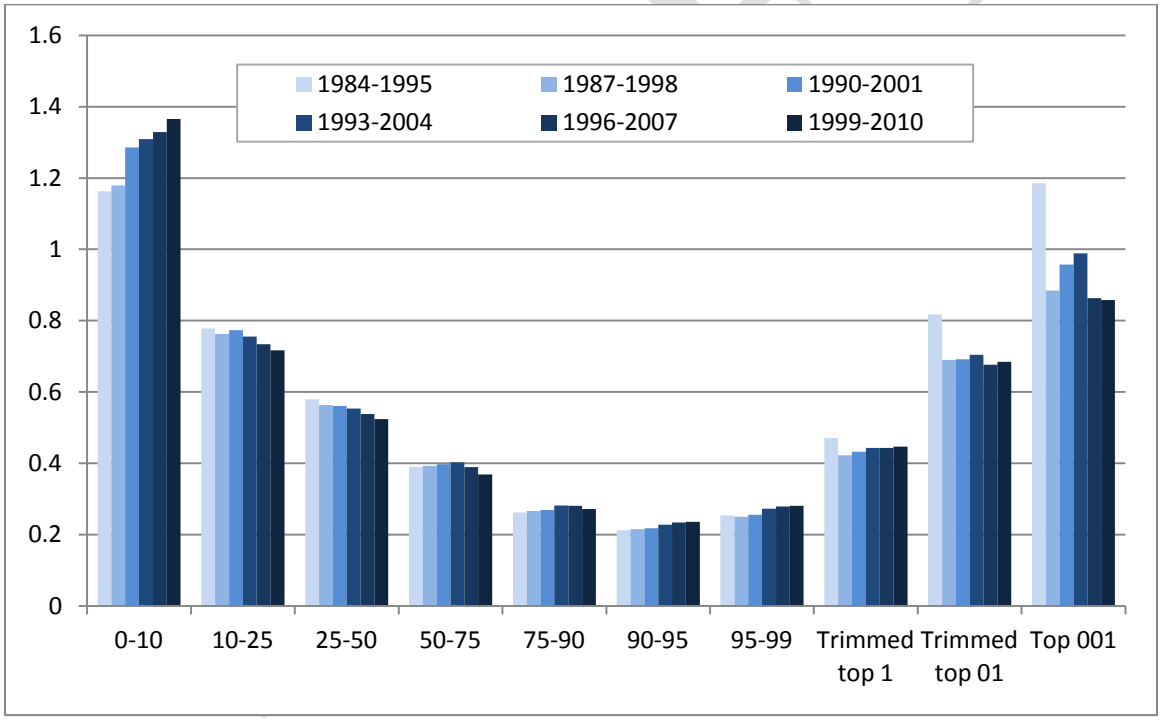
Source: Source: Statistics Canada, Special Tabulations from the LAD.

The highest growth rates for the 50th-99th percentiles occurred in 1996-2007 during a period of almost constant year over year gains in the labour force participation rate while the lowest growth rate occurred in 1987-1998 with a steadily declining participation rate. The higher income quantiles do not reflect this trend under either method and in fact the final panel 1999-2010 had one of the lowest if not lowest rates of growth. There are however small discrepancies between the two methods. For example Method B tends to have a jump between 1987-1998 and 1990-2001 while the jump is more evident in the highest income groups and not shown in the lowest decile under Method A. One possible reason is that Method B is more sensitive to the presence of zero incomes, and there are relatively more zero incomes in the earlier panel.

The variability trends under Method B are shown in Figure 10. Again, there is a very pronounced U shaped pattern, with the highest variability in the top and bottom income groups. Interestingly, Method B shows the variability in the bottom decile higher than in any of the other income groups. Indeed, the variability indicators for the groups comprising the bottom half of the income spectrum are all higher than those for the top 5% and top 1%.

Looking across the time panels, except for the two tails of the distribution, all other quantiles show stable indicators of variability. The highest income groups show a larger variability in the 1984-1995 panel, which may partly reflects the 1994 capital gain surge. For the top 01 and top 001 group the variability barely moves between 1987-1998 and 1990-2001 while the growth more than doubles. Between 1996-2007 and 1999-2010 the growth indicator drops by more than 50% where the variability shifts only slightly.

Figure 10: Method B Variability Indicator by Permanent Income Quantile and 12-year Panel



Source: Source: Statistics Canada, Special Tabulations from the LAD.

Summary

This paper has used 29 years of longitudinal income tax data to examine changes in the patterns of income mobility, with a focus on those with the highest incomes.

We first examined the growth in income shares and, consistent with earlier research, find that growth is largely limited to the top 5% which in turn has been driven largely by increases to the incomes of the top 1% of income recipients in Canada. The 0.1% of filers with the highest incomes accounted for close to half of the growth in incomes of the top 5% of filers. Further we note that this trend has been occurring relatively smoothly since the early 1980s despite significant macro-economic fluctuations.

An examination of transition probabilities over two year periods into high income showed that there is a marginal increase in the stability of the high income population on a year-over-year basis but that this stability is only slightly higher than the early 1980s. There is also a small proportion of the poorest decile of filers who move to the top 5% of filers in any given year and proportionally the bottom decile provides more of these than the 3rd through 7th deciles. It is not clear whether this can be attributed to tax behaviours. However, far fewer filers are experiencing this jump since 2000.

The slight increase in stability was also found over longer periods of time. We examined the proportion of filers who remained in the high income group over five year periods and found a slight increase in the proportion of high income filers who remained at the top of the distribution. There was also a drop in the proportion of filers who were ever in the top of the income distribution in the last ten years. Thus fewer filers moved into the highest income ranges and those who did tended to stay there slightly longer in the last ten years than in the previous 19 years. This suggests less income mobility at the very top of the income distribution in recent years.

Lastly we examined the actual income trajectories of filers over a chronological series of overlapping 12 year panels. We characterized each of over 4 million tax filers' actual income trajectories focusing on three key attributes: their average or "permanent" levels, their trend real annual growth rates, and their variabilities around these trends. This was done for a series of 12 year periods, using two alternate methods. The second method, Method B, following Mirer (1974), used a standard log-linear regression. The first method, Method A was non-parametric based on trimmed means and absolute differences. The use of two methods assured that our results would be robust to the approach taken to construct the level, trend, and variability indicators.

Perhaps the most intriguing result is the pattern of income variability by income group. Friedman and Savage (1948) argued that those with the highest incomes in some sense deserved such incomes because the occupations associated with very high incomes were inherently more risky than those paying less. However, our empirical results indicate that this may be wrong. Those in the lowest income groups experience higher income variability that those even in the top 1%. Our data support the notion that those at the bottom of the income spectrum form a group that has recently been called the "precariat" – to describe the precarious nature of their labour force attachment and hence incomes. The precariat have consistently had, over the past three decades, more highly variable incomes, in relative terms, than the top 1%.

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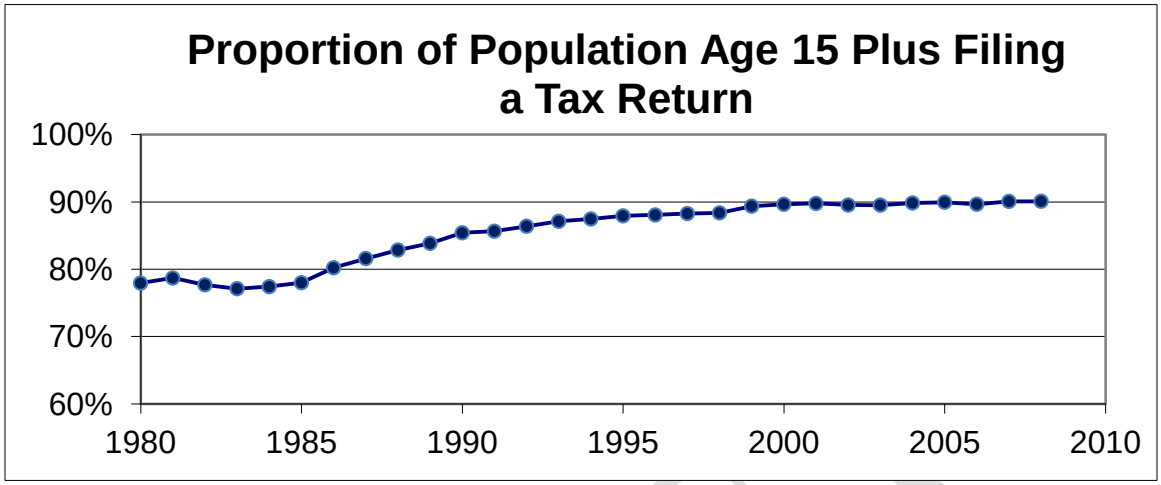
Appendix A



Source: Author's calculations based on Statistics Canada's CANSIM Table 051-0001 and Canada Revenue Agency's Final Taxation Statistics.

Appendix B: Income Definitions

Total Income Defiition

	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03-10
WAGES																						
Total earnings from T4 slips	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Other employment income	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
SELF-EMPLOYMENT																						
Net self-employment income	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
INVESTMENT																						
Dividends - Actual	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Interest and Other investment income	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Limited partnership income	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Rental income, Net	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
RRSP income of individuals	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Capital gains/losses - Actual	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
PENSIONS																						
Pension and superannuation income	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
OTHER INCOME																						
Other income	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Alimony or separation allowances	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
TRANSFERS																						
Old Age Security Pension	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Canada/Quebec Pension Plan	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Employment insurance	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Goods and services tax credit[1]					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Provincial refundable tax credits	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Family Benefits[2]	x	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x	x	x	x	x
Non-taxable Income[1]					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Child tax Credit[3]	x	x	x	x	x	x	x	x	x	x	x											
Child tax Benefits[3]												x	x	x	x	x	x	x	x	x	x	x

[1]Variable did not exist until 1986

[2]No information was provided from Québec in 1993

[3]The Child tax Benefits replaced the Child tax Credit

Appendix C: Sample sizes, exclusions and variable treatment for various panels

000s of filers

	Cross Sectional Results			Two Year	Five-Year Panels						Twelve-Year Panels					
Year	LAD	Imputed/	Filers	Usable	1	2	3	4	5	6	1	2	3	4	5	6
1982	3,227	201	3,026													
1983	3,237	206	3,030	2,849												
1984	3,272	210	3,062	2,859	2,500						4,822					
1985	3,309	219	3,090	2,876												
1986	3,510	225	3,286	2,949												
1987	3,566	232	3,334	3,084							minus	5,116				
1988	3,663	231	3,432	3,146		2,735										
1989	3,797	230	3,568	3,268												
1990	3,918	238	3,680	3,378							less than	minus	5,412			
1991	3,973	227	3,746	3,488												
1992	4,051	213	3,838	3,578							two years					
1993	4,167	208	3,960	3,692			3,274							5,652		
1994	4,230	210	4,019	3,795							of income		minus			
1995	4,291	202	4,088	3,855												
1996	4,338	202	4,136	3,907							in the first				5,908	
1997	4,397	194	4,203	3,955												
1998	4,450	184	4,267	4,012				3,578			and last					
1999	4,534	177	4,357	4,085												6,131
2000	4,611	183	4,428	4,158							six years					
2001	4,695	158	4,537	4,251												
2002	4,731	160	4,571	4,330												
2003	4,778	147	4,631	4,372					3,942							
2004	4,843	140	4,703	4,434												
2005	4,894	125	4,769	4,503												
2006	4,962	134	4,828	4,557												
2007	5,029	117	4,912	4,617												
2008	5,107	123	4,985	4,699						4,205						
2009	5,159	127	5,032	4,763												
2010	5,206	134	5,072	4,801												4,560
Drop imputed persons and deceased filers																
	No		Yes	Yes	Yes						Yes					
Drop non-filers missing in all years of panel																
	Yes		Yes	Yes	Yes						Yes					
Drop first and last two years of income in pa																
	No		No	No	No						Yes					
Convert income <= 0 to 1																
	No		No	No	No						Yes					