CROSS-NATIONAL DIFFERENCES IN INCOME MOBILITY: EVIDENCE FROM CANADA, THE UNITED STATES, GREAT BRITAIN AND GERMANY

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Using a standardized dataset, this paper compares the differences in income mobility among four countries—Canada, the United States, Great Britain and Germany—during the 1990s and early 2000s. The results suggest that, in general, there exist diverse levels of income mobility across the four countries. Although the precise magnitudes of the differences are sensitive to the measurement method used, incomes in Britain are by far the most mobile. Our findings also reveal country-specific driving forces that underlie income mobility. The stabilizing effects of government transfers are most pronounced in Canada. In Germany, it is the progressive tax system that offsets earnings variations and results in smaller changes in longitudinal incomes. Moreover, we also discover that demographic factors provided only limited explanation of differences in income mobility.

1. Introduction

The degree of income mobility is an important aspect of how societies function. It describes the ability of people to move up or down the economic ladder, either within a limited lifetime horizon or across generations. It also determines the extent to which inequality in the short term translates into inequality over the long term, which reveals information about whether we are moving toward a bifurcated society. If inequality reflects discrimination against certain groups or results from cultural, ethnic or family backgrounds, it is likely that mobility—measured over a long term—will be constrained.

While it is important to look at the dynamic aspect of income distributions, there has been an increasing demand for comparative studies. The estimation of cross-national equivalent measures provides a meaningful way to evaluate relative degree of income mobility in a given country. It offers better assessments to comprehend the international differences in income inequality found in the cross-sectional literature. The comparison of alternative social states also arouses great interest for a better understanding of the structure of mobility and its underlying transition mechanisms as the ability of movement is intimately linked to state, labor market and social structure embedded in society. Countries with a high level

of market fluidity can be contrasted with countries where market stratifications are distinct. Also, two societies that exhibit similar levels of mobility may contrast greatly in underlying forces that drive mobility processes. A higher degree of rigidity in income distribution may be a result of market inefficiency (lack of opportunity) in one country, while a result of generous welfare (stability) in the other. The comparative analysis is relevant to gain insights into the role of different transition mechanisms.

With the increasing availability of longitudinal datasets around the globe, cross-national assessments in earnings or income mobility have emerged over the past decades, as seen, for example, in Burkhauser and Poupore (1997), OECD (1997), Burkhauser *et al.* (1997), Aaberge *et al.* (2002) and Gangl (2005).[1] These studies generally revolve around a question about whether there exists a positive relationship between inequality and mobility. Using the U.S. sample as a benchmark, these studies show that the pattern of income mobility seems to be quite similar across counties, despite apparent differences in institutional and social backgrounds. They also conclude that mobility in the United States is not as high as commonly perceived, and in consequence the United States remains a country with a greater degree of permanent inequality. In addition, the empirical evidence reveals quite different dynamic processes across countries. For instance, the transitory variance of incomes in the United States is found to be higher relative to European counterparts (Burkhauser and Poupore, 1997; Gangl, 2005). Cross-national distinctions are even more striking in movements at the two extremes of the income distributions, such as poverty dynamics (e.g. Duncan *et al.*, 1993), which is closely related to the role of differences in market and institutions. Studies also find that no consensus ordering arises from the comparisons of income mobility between countries; their rankings appear to be quite sensitive to mobility definitions and measures used (Aaberge *et al.*, 2002).

Despite the received empirical evidence, many have emphasized that the relatively scant comparative literature permits no conclusive cross-national differences, in either the level or structure of income mobility; these results may be specific for particular country comparisons or time periods (Gangl, 2005). This is particularly the case for existing literature in which the scope of comparisons is often restricted to the United States and, comparatively speaking, more homogeneous Western European states. The extent of cross-national differences in income mobility can gain more insights when new countries with distinct national characteristics are included in the analysis. Moreover, previous comparisons on this subject still face sufficient challenge from the lack of homogenous data sources (e.g. Aaberge *et al.*, 2002).

For these reasons, the current paper adds to the existing comparative literature by encompassing Canada and using a relatively new harmonized dataset, the Cross-National Equivalent Files (CNEF), which also include the longitudinal data from three other countries—the United States, Great Britain, and Germany—for the period of the 1990s to the early 2000s.[2] The use of a standardized dataset

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[1]See also Zaidi *et al.* (2005) and Ayala and Sastre (2002) for studies not involved with comparisons to the United States.

[2]Duncan *et al.* (1993), OECD (2001) and Valletta (2006) are the only other comparative studies that included Canadian data, but they all focus on poverty dynamics.

increases the comparability, particularly in defining income variables, and it makes results more reliable. By using data up to the early 2000s, this paper moreover is able to update results from earlier comparative research for selected countries. The inclusion of the Canadian sample is of interest and may offer better understanding about the transition mechanisms than conventional U.S.–Europe comparisons. For instance, given the fact that labor markets are highly integrated between the United States and Canada, the roles of welfare states may be highlighted if income mobility differs substantially between the two countries. In addition, concern for Canadian mobility has acquired increasing attention in recent years. Income (post-tax/transfer) inequality in Canada had not increased over the 1970s and 1980s, despite the fact that the period was usually marked by a rapid growth in market inequality. This pattern, however, started to digress in the 1990s as family income inequality rose for the first time in many decades, settling at an even higher level in the 2000s. Such a phenomenon of diminishing social equality, together with an unprecedented growing diversity in Canadian populations, begs the question about the continuing ability of Canadians to sustain their standards of living and the prospect for moving upward.[3]

The objective of this paper is to assess the scope of income mobility from a comparative perspective and to examine whether there are noticeable differences in mobility among countries. If any, what are the underlying forces that propel differences? This is done by applying a broad range of indices, including relative and absolute aspects of mobility, as well as movement captured by linking cross-sectional inequality, to the distribution of longer-term incomes. The factors that determine transition are analyzed by means of different decomposition exercises, highlighting the roles of government income transfers and demographic stratifications, respectively. We place an emphasis on family income in this paper. This aspect of mobility is especially important because it recognizes that economic mobility generally occurs within the context of families. Economic well-being over time is therefore better monitored in this context than placing a reliance solely on the result of individuals acting as lone, economic agents.

The results show that there exist diverse levels of income mobility across the four countries under examination. Magnitudes of differences, however, are quite sensitive to the measurements used, and no unambiguous country ordering is found. In general, income mobility is higher in Britain over this period, regardless of the measurement method used. The United States has stronger movements in

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[3]Note that there are also a fair amount of mobility studies in Canada; most are based on tax-linked datasets with exclusive focus on earnings. See Kennedy (1989), Morissette and Berube (1996), Baker and Solon (2003), and Morissette and Ostrovsky (2005) for studies on earnings mobility; see Corak and Heisz (1999) and Corak (2006) for intergenerational earnings mobility. For studies that used non-tax-linked data, see Drolet and Morissette (2000) who used the Survey of Labour and Income Dynamics (SLID) to investigate upward mobility for low-paid workers; Aydemir et al. (forthcoming) used census data to examine intergenerational earnings mobility among immigrants. Nevertheless, Canadian research on family income mobility remains relatively scant. In part, it is due to the fact that the tax files that are widely used in earnings studies cannot clearly identify the contributions of some welfare income in the earlier years. It is also due to the challenge of forming family status in the tax files as this requires matching individuals according to their income tax return, with the imputation of non-filing family members, where appropriate. A few studies that analyzed family-income mobility all focused on poverty dynamics; see, for example, Finnie and Sweetman (2003).

absolute income than elsewhere, but it is accompanied by higher mobility in both upward and downward directions. Germany has the lowest annual income inequality among the nations, yet its mobility is also low. Income mobility in Canada is largely associated with transitory changes over this period, which suggests a higher long-term inequality. The forces that determine mobility also differ considerably across nations. Government transfers play an important role in buffering household-income changes, and the stabilizing effects are more pronounced in Canada. In addition, the exploration of within-group mobility suggests that a large proportion of mobility is governed by unobserved heterogeneities, particularly in Canada and Germany.

The remainder of this paper is organized as follows. The next section briefly describes the CNEF and the definition of income. Section 3 offers evidence of income mobility across countries, by various indicators. In Section 4 we examine determinants that underlie transition. The final section summarizes and concludes.

2. The Cross-National Equivalent Files Data and the Definition of Income

The comparative analysis in this paper draws data from a relatively new, standardized dataset, the Cross-National Equivalent Files (CNEF). This dataset is constructed in a project with international joint efforts administered at Cornell University. The files include multiple waves of longitudinal data from four countries: the Canadian Survey of Labour and Income Dynamics (SLID), the U.S. Panel Study of Income Dynamics (PSID), the British Household and Panel Survey (BHPS) and the Germany Socio-Economic Panel (GSOEP). The CNEF brings together comparably defined variables from these surveys into a single datafile that can be used independently or in tandem with the original survey data. A key contribution of the CNEF is that it provides a set of constructed variables that are not immediately available on the original datasets. These variables include imputed (in some datasets) pre- and post-government household income, estimates of annual assets, transfers, and taxes paid at household level, as well as household composition variables needed to construct equivalence scales.[4]

To provide a complete picture of income mobility for the population, the samples are meant to be representative of all individuals, including children, the elderly and non-working people. Household net incomes (after transfers and taxes) are adjusted with an equivalence scale—the square root of household size—to take into account the economic scales associated with household size. Each individual is therefore assigned an equivalent income, which can be referred to as disposable income available to each household member, under the assumption of equal sharing. Data from the early 1990s to the most recent available year for each

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[4]Notice that post-government household annual incomes that are used throughout the study are not from imputation in SLID and PSID. However, about 20–25 percent of values in this variable for the period analyzed were imputed in GSOEP. The proportion of imputation is even higher (40–60 percent) in BHPS. See Burkhauser *et al.* (2001) for a detailed description of the CNEF data.

country are used.[5] Notice that although Canadian SLID is available from 1993 to 2003, the longitudinal analysis with these data, however, is limited to six years. This is a result of its unique sampling design. SLID consists of two overlapping samples, each of which is followed for only six years, with the last three years of the older panel overlapping with the first three years of the newer panel. Therefore, the SLID sample in this study includes three panel cohorts (1993 to 1998, 1996 to 2001 and 1999 to 2003), with a maximum six years of records observed for the first two cohorts and a maximum of five years for the third cohort.[6] The data are adjusted for inflation (using CPI indices) to each country's own 2001 currency, and then are converted to Canadian dollars using the Purchasing Power Parity (PPP).

Appendix Table A1 summarizes the unweighted observations. Sample attrition appears to be high for countries with a longer panel. The BHPS, for example, lost 54 percent of the sample from the first (1991) to the last (2002) wave. To compensate for the lost sample, the last year of the longitudinal weights are used. Since some inequality or mobility indices are very sensitive to outliers, and measurement errors would likely have occurred among these observations, we eliminate people who had equivalent income less than 1 percentile or above 99 percentile in any year over the period analyzed. The final column shows the full balanced panel with treatment of outliers. The dropping rate due to trimming is between 4.5 and 9.0 percent, depending on the country.

Also note that some of the analyses in the paper are based on the maximum possible sample for the period, or sub-period, in question. For example, the five-year mobility rates (from a transition matrix) are derived from a sample of individuals presented both in the first and the last years, rather than from individuals in all five years. For concern of panel attrition, the use of the maximum sample ensures that we have more observations for sub-group analysis in the paper. However, it also implies that year-to-year mobility measured for different pairs of years will be based on somewhat different samples.

3. The Extent of Income Mobility Across Nations

There is usually little consensus on measuring income mobility in the literature. Generally, it is concerned with the scope of movement of a given individual through the distribution of income over time, by either relating one's current income position to one's past position (relative mobility) or by comparing changes in one's income levels (absolute mobility). It is also concerned with its role as an equalizer of long-term inequality. In this section, we first offer evidence of income mobility in both the relative and absolute senses. We then explore mobility, by

[5]Data are from the 2005 CNEF release. At this time, the panels in our samples include years from 1993 to 2003 for Canada, from 1992 to 2003 for Germany, from 1991 to 2002 for Great Britain, and from 1991 to 1997, 1999 and 2001 for the United States (starting from 1997, PSID is surveyed bi-annually). It should be noted that our analysis in the paper compares *income* year, which usually refers to one year prior to the *survey* year (except for SLID). That is, in PSID sample it refers to income years 1990–96, 1998, and 2000. In GSOEP it refers to 1991–2002. In BHPS, the income year does not refer to the usual calendar year; it refers to a 12-month period prior to the interview date (September 1). Thus, the annual 1991 income, for example, refers to total income between September 1, 1990 and September 1, 1991.

[6]We excluded observations from the fourth cohort, which started in year 2002, due to their relatively short panels (i.e. two years at the time of study).
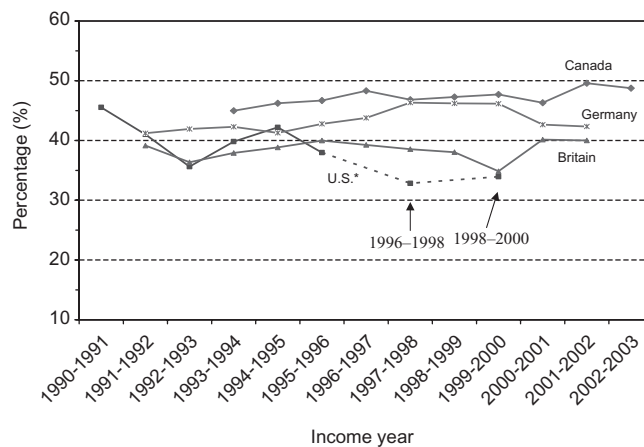
Figure 1. Percentage Staying in the Same Income Decile (two-year immobility ratio)

Note: *Starting in 1997 the U.S. PSID is surveyed bi-annually. Hence, the final two data points for the United States refer to two-year immobility rates for 1996–98 and 1998–2000, respectively.

Data source: CNEF 2005 release. Maximum possible samples are used (see text).

linking cross-sectional inequality to the distribution of longer-term incomes. The forces that propel movement are examined in the following section.

Relative Mobility

A simple way to summarize how much mobility there is in each country is by analyzing the association between an individual's position in the income distribution at any given two years. Based on the diagonal elements of the transition matrices, Figure 1 shows the percentage of individuals staying in the same income decile (also known as immobility ratio) from a given year to one year later. First, it suggests that there is a considerable amount of changes in relative income over one year. Overall, more than 50 percent of people in each nation moved away from their original decile group in the next year during this period. It also, however, shows marked differences across nations and also across years of observation. Canada stands out as having the highest two-year immobility rates of other nations considered here: about 45–50 percent of the sample remains in the same decile of the income distribution between years throughout the period of study. Germany appears to have a similar mobility pattern to Canada's, with slightly lower immobility ratios. Incomes in Britain, on the other hand, are most mobile, while the pattern for the United States shows a slight downward trend in immobility rate over this period.

Variations in short-term mobility may, however, reflect differences in macroeconomic conditions or in the workings of the welfare state across countries. It is thus more pertinent to look at longer-term mobility for which individuals in a fairly equal society should be able to move in the long run, regardless of whatever temporary constraints they faced. For this reason, we show immobility rates over
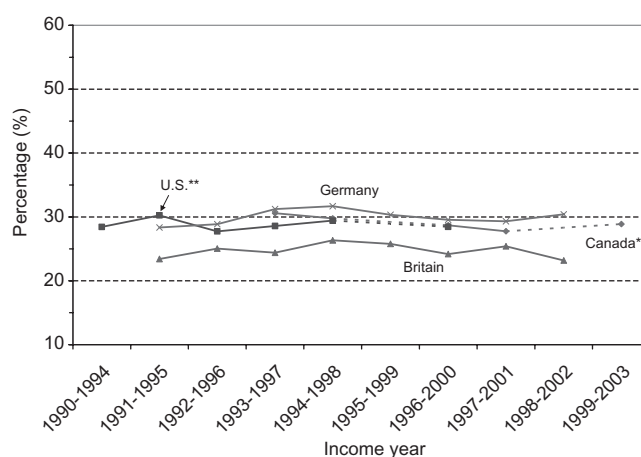
Figure 2. Percentage Staying in the Same Income Decile (5-year immobility ratio)

Notes:
*In Canada, data for periods 1995–99 and 1998–2002 (dashed line) are not available.
**In the U.S., data for period 1995–99 (dashed line) are not available.
Data source: CNEF 2005 release. Maximum possible samples are used (see text).

five-year periods in Figure 2. As expected, mobility increased noticeably across the board: about 70 percent or more of the population in each country moved away from their original decile group in five years. Cross-national difference also becomes less apparent—in both levels and patterns over time—when a longer time period is taken.[7]

Can they differ in the direction of movement? Figure 3 further shows the extent of mobility associated with upward income movement. In general, five-year upward mobility is relatively similar across nations: about 35–40 percent of the population in each of these countries moved up at least one income decile in five years over this period. In addition, although one country may have relative higher upward mobility than another in some years, no country really dominates another throughout the period. The cross-national difference is always within 5 percentage points in any year. In sum, the findings of this subsection suggest a high degree of similarity in relative income mobility across nations.

Absolute Mobility

It is conceivable that simply comparing changes in economic positions over time disregards absolute movements in incomes. For instance, individuals who made a great income movement within a decile bracket are considered less mobile compared with those who made a small increment in income but did make it across an income bracket. Also, individuals in a society with strong economic growth may experience large income movement without altering their relative economic positions. Thus, to compare whether an economy exhibits more income mobility

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[7]The same exercise (not shown) is repeated by looking at movements between quintiles instead of decile groups. Although immobility ratios vary by the choice of income group, the cross-national patterns of income mobility remain very similar.
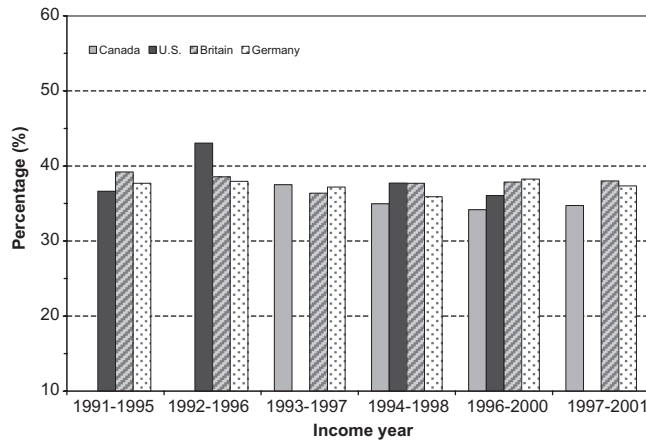
Figure 3. Percentage Moving Up At Least One Income Decile (5-year upward mobility),
Selected Years

Data source: CNEF 2005 release.

than another, it needs also to consider the variations of total income movement that takes place in the society. Fields and Ok (1996, 1999) have devised a measure to gauge such absolute mobility. Following them, the measure of aggregate income movement between the base year income (x) and the final year income (y) can be written as:

$$(1) \qquad m(x,y) = \frac{1}{n}\sum_{i=1}^{n} |\log x_i - \log y_i|$$

where m is a measure of per capita dollar movement in a population of size n, and it can be interpreted as the mean percentage income changes between these two years.

One important feature of (1) is that total mobility is decomposable into two sources: one that reflects income changes due to economic growth or contraction; and the other that reflects income changes due to transfer of income among individuals, holding the mean constant. Consider a growing economy, $\sum_{i=1}^{n}\log y_i \geq \sum_{i=1}^{n}\log x_i$, with L the set of individuals whose income declined over time ($i \in L : x_i > y_i$). Equation (1) can therefore be broken down as:

$$(2) \qquad \begin{aligned} m(x,y) &= M_R + M_T \\ &= \frac{1}{n}\sum_{i=1}^{n}(\log y_i - \log x_i) + \frac{2}{n}\sum_{i \in L}(\log x_i - \log y_i). \end{aligned}$$

M_R is the mean change of income over time, which reflects the total mobility due to economic growth and M_T is total mobility due to transfer of income between losers and winners. It is multiplied by two because any loss of income by a loser is gained by a winner. The equation for a shrinking economy $\sum_{i=1}^{n}\log y_i < \sum_{i=1}^{n}\log x_i$ can also be defined analogously.

TABLE 1

Decomposition of Log-Income Movement (mid- and long-term)

Income Year	Canada			United States			Britain			Germany		
		as % of m			as % of m			as % of m			as % of m	
	m	M_R	M_T	m	M_R	M_T	m	M_R	M_T	m	M_R	M_T
Mid-term (5-year)												
1990–94	–	–	–	0.364	9.3	90.7	–	–	–	–	–	–
1991–95	–	–	–	0.347	1.0*	99.0	0.406	4.0*	96.0	0.268	4.6	95.4
1992–96	–	–	–	0.385	18.0*	82.0	0.375	18.6*	81.4	0.268	0.2*	99.8
1993–97	0.298	6.8*	93.2	–	–	–	0.392	22.5*	77.5	0.254	1.8	98.2
1994–98	0.297	22.7*	77.3	0.392	17.2*	82.8	0.373	14.9*	85.1	0.258	12.1*	87.9
1995–99	–	–	–	–	–	–	0.408	22.6*	77.4	0.276	19.5*	80.5
1996–2000	0.319	35.0*	65.0	0.444	30.0*	70.0	0.388	26.9*	73.1	0.269	23.7*	76.3
1997–2001	0.332	39.7*	60.3	–	–	–	0.374	46.5*	53.5	0.275	20.0*	80.0
1998–2002	–	–	–	–	–	–	0.416	30.0*	70.0	0.270	24.9*	75.1
1999–2003	0.317	26.6*	73.4	–	–	–	–	–	–	–	–	–
Long-term (10-year)												
1991–2000	–	–	–	0.455	31.0*	69.0	0.481	36.8*	63.2	0.327	15.0*	85.0
1992–2001	–	–	–	–	–	–	0.461	53.5*	46.5	0.342	13.7*	86.3
1993–2002	–	–	–	–	–	–	0.511	36.4*	63.6	0.354	20.6*	79.4

Note: *Denotes a growing economy.
Data source: CNEF 2005 release. Maximum possible samples are used (see text). Log-income movement is a mobility index that assesses the aggregate fluctuations of individual incomes through time (see Fields and Ok, 1996).

Estimates of the mobility index m and the contributions of mobility for dual components (M_R and M_T) are reported in Table 1, based on five-year income movement. As noted, m measures the average income change as a percentage of the mean base-year income. Given that the mean equivalent income in Canada was $27,485 in 1993 (in 2001 dollars), an estimate of 0.298 for the 1993–97 period would indicate that the average income change for Canadians is about $8,191 ($27,485 × 0.298) over these years.[8]

Overall, the cross-national pattern of absolute five-year movement m resembles that of relative mobility, as in Figure 1 that income mobility is smaller and less variable through time in Canada and Germany, than is otherwise found for the United States and Britain. For instance, mean percentage changes in income in Britain were as large as 37–42 percent for any given five-year period over the 1990s. The comparable figures are about 25 percent for Germany. It is also interesting that, for all countries, most income movement is accounted for by people moving up or down within the income distribution over this period (i.e. transfers of income). Economic growth/contraction is generally less important in determining mobility. Nevertheless, this component played an increasing role, contributing to about 25–40 percent of total income changes during the late 1990s.

However, contrary to the findings of five-year relative (decile) movement in Figure 2, cross-national differences remain. In the 1996–2000 period, for example, the United States ranks first in mean percentage changes in income (0.444), followed by Britain (0.388) and Canada (0.319), with Germany at the bottom (0.269).

[8]It is worth noting that m is scale invariance (see Fields and Ok, 1999) so that its value will not be changed regardless of the Purchase Power Parity conversion.

Transfer of income is still the driving force of total movement during this period, while economic growth is responsible for an increasing share—about one quarter to one third of total mobility—over this period. The finding suggests that the measures of relative mobility disguise important cross-national differences in absolute income influx.

In addition, a considerable increase in five-year income mobility is shown for the U.S. sample—an increase of 22.0 percent (from 0.364 to 0.444)—between the 1990–94 and the 1996–2000 periods. This is a pattern that has not been seen in relative mobility. Not surprisingly, economic growth accounts for most of the rising U.S. mobility in the late 1990s. The growth component (M_R) increased from 0.034 (0.364 × 0.093) in 1990–94 to 0.133 (0.444 × 0.30) in 1996–2000, while the transfer component (M_T) changed only slightly over this period. Nevertheless, such an upward trend in mobility was not observed in other countries.

When starting and ending years are expanded to become 10 years apart (the bottom portion of Table 3), mobility continues to grow, particularly for Britain. Mean percentage changes in income over the 1991–2000 period, for example, were about 48.1 percent for Britain. The comparable figures were 45.5 and 32.7 percent for the United States and Germany, respectively. Overall, transfer of income is still the driving force of long-term income movement. Income growth, nonetheless, played a relatively important part in total mobility for the United States and Britain. For Canada, the picture of long-range income mobility is not clear, due to the short panel. Nevertheless, it shows that five-year Canadian mobility is about the same level as the 10-year German mobility. It is reasonable to infer that 10-year mobility in Canada may be as high, possibly higher, than the German level.

To put these findings into a broader international perspective, we compare results with Ayala and Sastre (2002). They also estimate the Fields and Ok mobility index as above for five European countries using the European Community Household Panel (ECHP). Their five-year (1993–97) mobility estimates are 0.373 for the U.K., 0.309 for Germany, 0.250 for France, 0.360 for Italy and 0.390 for Spain, which may be compared with our estimates of 0.298 for Canada, 0.392 for the United States (1994–98), 0.392 for Britain, and 0.254 for Germany. Interestingly, despite the fact that there exist obvious differences in markets and states across nations, four of the seven countries considered here—the United States, Italy, U.K./Britain, and Spain—appear to have quite similar mobility. France and Germany stand out as having the least mobility in the group, while Canada lies between the two extremes but is more prone to lie toward the lower end.

The Fields and Ok mobility index can further be modified to yield a directional movement interpretation that might be useful to determine the welfare implications of income movement (Fields and Ok, 1999; Fields, 2000). The technique, in what follows, has the similar criterion of stochastic dominance in the literature.[9] This is done by re-estimating equation (1) in real log-dollars change without taking the absolute value and then array population from the most negative income change to the most positive. This is simply the cumulative density function (CDF) of the change distribution. One distribution is said to

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[9]On stochastic dominance, see Hadar and Russell (1969); see also Atkinson (1987) for application to poverty and welfare dominance.
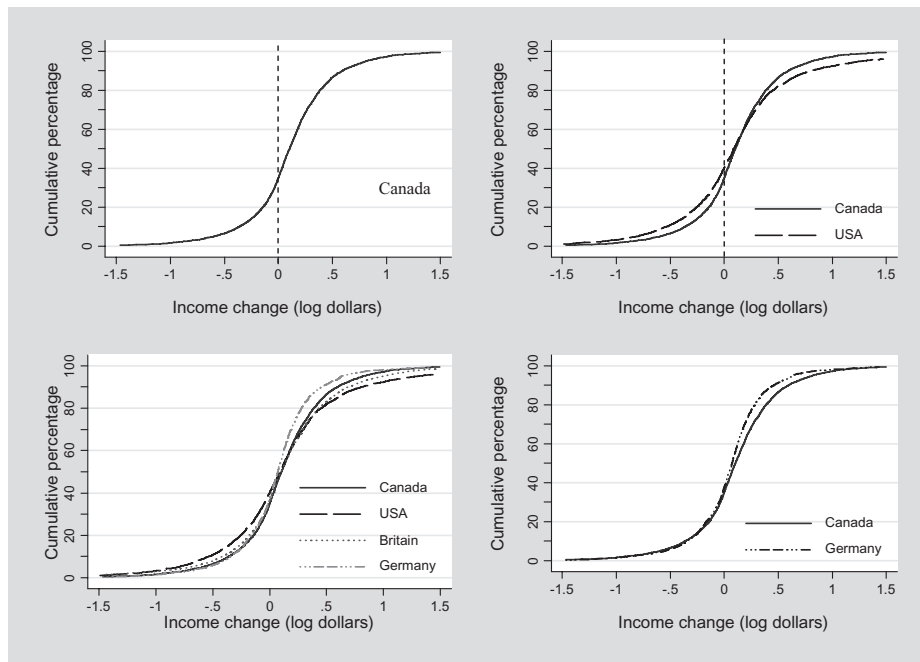
Figure 4. Directional 5-Year Income Movement (1996–2000)
Data source: CNEF 2005 release.

stochastically dominate another if the percentage of people below any given income change amount is smaller in the first situation than in the second. Graphically, this means that a more equal distribution is one that lies everywhere below or to the right of another.

In Figure 4 we compare changes in directional income movements across nations over a common five-year period (1996–2000). We first illustrate the Canadian sample in the upper-left corner of Figure 4. It shows that about 34 percent of Canadians experienced income loss in the period from 1996 to 2000, while the other 66 percent experienced upward mobility. Adding the U.S. distribution (upper-right graph), it shows that a greater percentage of the population in the United States experienced downward movement during the same period. However, the two CDFs cross, with Canadian distribution dominating at the lower end, and the U.S. distribution dominating at the upper end. It suggests that those who lost money had lost less in Canada than in the United States, while those who gained in fact had gained more in the United States than in Canada. Indeed, we find that no single country stochastically dominates the others (lower-left graph). In general, German and Canadian distributions dominate at the lower end of the change distribution, while the U.S. distribution dominates at the upper end. The finding suggests that despite the fact that five-year income movement over the 1996–2000 period is much higher in the United States than in other countries, mobility in the United States is not necessarily more advantageous. If there is any pattern of dominance, it is fair to note that Canada demonstrates a better income

movement (better in the sense of stochastic dominance) than Germany (lower-right graph) at the upper end without being dominated at the lower end of the change distribution.

Income Mobility and Long-Term Inequality

In addition to quantifying the movement of given individuals through the distribution of income over time, a large number of studies seek to measure mobility by relating between inequality in any given year and in the longer period observed.[10] The relationship can be formulated by Shorrocks (1978):

$$(3) \qquad M = 1 - R = 1 - \frac{I(y)}{\sum_t \omega_t I(y_t)}$$

where y_t represents the vector of individual income ($y_1, y_2, \ldots, y_n$) in year t, ω_t indicates the share of aggregate income in year t over a T year period, and $I(y_t)$ be the inequality index (e.g. Gini or Generalized Entropy indices) of the distribution. Similarly y denotes the vector of average T-period income with inequality $I(y)$. R may be interpreted as a measure of income rigidity. The mobility index (M) lies between zero and one, indexing from complete rigidity to perfect mobility. This index thus gives the amount by which inequality decreases as the study period is prolonged. Hence, an M equal to 0.2 indicates that only 20 percent of the average inequality estimated in each of the single years will be smoothed out over the entire period. In other words, a great share (four fifths) of cross-sectional inequality is considered "permanent." Shorrocks' measure, therefore, provides a way to gauge the degree of *long-run* or *lifetime* income inequality, which has a similar interpretation to the covariance structure approach—a procedure that decomposes the total variance into the transitory and permanent components—that is commonly employed in studies of earnings dynamics.

To illustrate, we first present how inequality has declined when a longer accounting period is used in the left panel of Appendix Table A2, based on four different inequality measures.[11] Focusing on mean log deviation, GE(0), it is clear that the United States has the higher inequality (0.20) in the starting period 1993, followed by Britain (0.13), Canada (0.11), and Germany (0.10). When averaging income over the subsequent years, long-term inequality falls as the accounting period is extended, with a different degree across countries. Inequality over a six-year period (1993–98), for instance, dropped about 1.7 percentage points in Canada, 6.2 for the United States (1993–96, 1998, 2000), 4.7 for Britain, and 2.7 for Germany.

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[10]See, for example, Jarvis and Jenkins (1998), Buchinsky and Hunt (1999) and Ramos (1999) for specific country analysis; and Burkhauser and Poupore (1997), Aaberge *et al.* (2002), Zaidi *et al.* (2005), Gangl (2005) and Ayala and Sastre (2002) for cross-national studies.

[11]They are, accordingly, three GE indices and Gini coefficient. The notions of GE(n) are members of the Generalized Entropy (GE(n)) family of inequality indices, with larger values of n corresponding to greater sensitivity to income differences at the top of the income distribution; the Gini coefficient is known to be relatively sensitive to income differences in the middle of the distribution.

The corresponding mobility (*M*), which captures by the reduction in longitudinal inequality, as in equation (3), is presented in the right panel of the table. The United States shows noticeable mobility over this period but it was not strong enough to offset high annual inequality; long-term inequality in the United States is still the highest among the nations. One remarkable finding in the table is that Britain, despite having a higher initial inequality than Canada and Germany, has turned its long-term inequality to below the Canadian measure and converged to the German level when the accounting period is extended to 10 years (1993–2002), which suggests stronger mobility. Canada stands out in having the lowest mobility in this regard. As a result, its long-term inequality (over the 1993–98 period) has become higher than those of Germany and Britain despite Canada having a similar or even lower initial inequality. Nevertheless, long-term inequality in Canada is still far below the U.S. measure.

Overall, the patterns of cross-national differences do not change, regardless of the inequality measure used. It is, however, noteworthy that the speed of mobility exhibits sensitivity to the choice of indices. Mobility happened to be stronger for the bottom- and top-sensitive indices (i.e. GE0 and GE2), but less obvious for the middle-sensitive index (i.e. GE1 or Gini). In Canada, for example, Shorrocks's mobility over the 1993–98 period is about 0.20 for GE(0) measure, but only 0.09 for Gini. This suggests that mobility is much greater at the tails of the distribution, particularly at the lower end.

The sequence of mobility in Appendix Table A2 can be plotted (against time) to construct *mobility profiles* to display the share of permanent inequality across various time periods. We illustrate this in Figure 5 using Shorrocks's GE(0) mobility index. A flat profile (*M* = 0) indicates a completely immobile society in which all annual inequality is permanent. This is more like the case of Canada, for which the
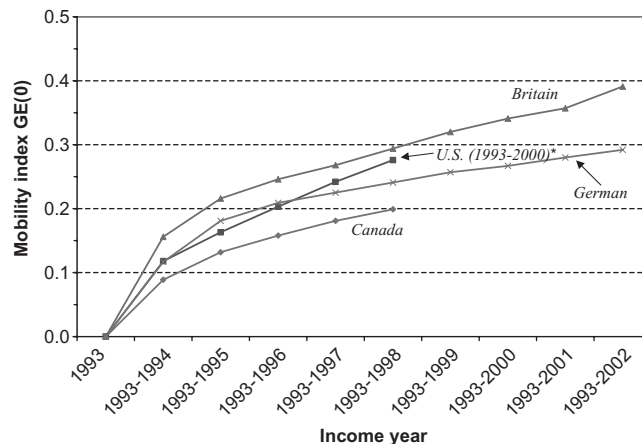

Figure 5. Mobility Profiles, Mean Log Deviation (GE(0))

Notes:
*For the U.S. data, 1993–97 refers to income average from 1993 to 1996 and 1998; 1993–98 refers to income average from 1993 to 1996, 1998 and 2000.
Data source: CNEF 2005 release. Individuals present in all years (see also Table 4).

speed of mobility rises initially but levels off relatively quickly. Thus, Canadians may experience transitory fluctuations in their income during this period, but much of their annual inequality observed will persist and, therefore, is permanent over time. On the other hand, a steeper profile that shows a smooth increase as the time horizon is extended indicates a structure of a rather mobile society in which all individuals receive the similar total long-term or lifetime income. The measure of cross-sectional inequality therefore overstates long-term inequality. This can be best illustrated by the British profile, as its curve lies above that of other countries throughout the whole period, with an upward trend in mobility even over a 10-year period (0.16 over two years, 0.27 over five years, and 0.39 over 10 years). The comparable figures for the German sample are 0.12, 0.23, and 0.29, respectively. Strong mobility in Britain over this period thus greatly mitigates concern about long-term inequality.

It is of interest that the United States and Germany exhibit very similar mobility profiles over the first five time periods observed. The pattern, however, starts to diverge when incomes are averaged over six years. It is possible that the divergence at the last point of the U.S. curve is a result of the inclusion of the year 2000—a year of expansion in the U.S. economy. If income changes that occurred in this particular year were mainly driven by transitory fluctuations, then both the U.S. and German curves would be expected to converge again when more time periods are observed. It is worth noting that our U.S./German results do not reconcile with Burkhauser and Poupore (1997), who also constructed mobility profile for these two countries, but for an earlier period.[12] They show that the U.S. curve is always below that of West Germany from 1983 to 1988. Their estimate of six-year mobility (1983–88) using the GE(0) index is 0.19 for the United States and 0.26 for *West Germany*, which may be compared with our estimate of 0.28 for the United States and 0.24 for the *reunified Germany*.[13] This suggests that income mobility has increased considerably in the United States between the 1980s and 1990s, while it declined in Germany. Whether such a decline in German mobility related to pooling both West and East German samples in our study requires further investigation.

To place our estimates in a broader context, we compare our results with Gangl (2005), who also computed Shorrocks's index for 11 European countries and the United States over a similar period (Figure 6).[14] Despite using a different dataset and sample criteria, our estimates for the United States and Germany fall into the range of his results, while the number for Britain is relatively higher compared with his ECHP sample that covers the whole of the United Kingdom. This generally suggests that income mobility (as measured by inequality reduction) is by no means especially large in the United States as is commonly perceived. Canada, nevertheless, find herself among the low-mobility countries.

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[12]Burkhauser and Poupore (1997) compared rigidity index R, which equals $1 - M$.

[13]Such discrepancy is also found in Theil GE(1) index, which was 0.14 (United States) and 0.24 (Germany) in Burkhauser and Poupore's study compared with 0.25 and 0.21, respectively, in our results.

[14]Gangl (2005) draws data from the European Community Household Panel (ECHP) 1994 to 1999 and from the Panel Study of Income Dynamics (PSID) 1992 to 1997 for the United States, with a focus on population aged 25–55 only.
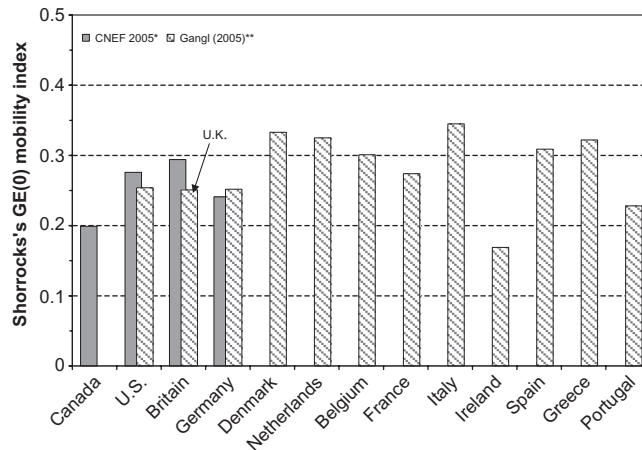
Figure 6. Cross-National Differences in Income Mobility Over 6-Year Period

Notes:
*Period 1993–98 (1993 to 1996, 1998 and 2000 for the United States); all populations.
**ECHP period 1994–99 (PSID 1992 to 1997 for the United States); population aged 22–55.
Data source: CNEF 2005 (Table 4 in the text) and Gangl (2005), table 1.

4. The Determinants of Mobility

In this section we go beyond the mobility indicators to explore the underlying forces that propel income variability. One important element that may condition mobility is the institutional parameters, such as the generosity of social benefits or the progressive tax system. Analysis of this would require disaggregating mobility index by various income sources. Another factor which has the potential to determine income variations is the characteristics of population—a demographic process. We address these two issues separately in the following.

The Role of Government Incomes

We follow Jenkins (2000) to decompose the variance of longitudinal income into various income sources to understand the extent to which a component, particularly government incomes, contributes a greater share to income variability. According to Jenkins, let y_i^k denote the income of individual i from source k, and let total household income $y_i = \sum_k y_i^k$. Hence, for each individual, the variance of total income over T-year period is:

$$(4) \qquad Var(y) = \sigma_y^2 = \sum_k \sigma_k^2 + \sum_{j \neq k} \sum_k \rho_{jk} \sigma_j \sigma_k$$

where ρ_{jk} is the correlation coefficient between income component y^j and y^k, and σ_k is the longitudinal standard deviation of component k. The proportion of total variability contributed by component k can be expressed as $\sigma_{ky}^2 = Cov(y^k, y)$, which can further be standardized as given by:

$$(5) \qquad s_k^2(\sigma^2) = \frac{\sigma_{ky}^2}{\sigma_y^2} = \frac{Cov(y^k, y)}{Var(y)},$$

and the sum of these equals to one, $\sum_k s_k^2(\sigma^2) = 1$. The measure of s_k^* (also known as the β coefficient) is therefore the slope coefficient computed from a mini-regression using T observations for each person.

We decompose the variation of longitudinal income into six different sources, as reported in Table 2. Generally, in all countries household head's earnings is the source that makes the largest contribution to total income variation over the 1993–98 period.[15] In the United States, for example, about 70 percent of longitudinal income variability can be attributed to this source; the comparable figures are 66 percent in Germany, 55 percent in Canada and 43 percent in Britain. Such cross-national divergences, however, may simply reflect differences in income share of this source. In fact, the relative contribution to overall mobility of this source (as expressed by a ratio of variability to its income share) is quite similar across nations We can also interpret this variability as the household head's earnings mobility if there were no change in household head during this period. This is most likely the case for German data, as nearly 73 percent of its sample experienced no change in household head during the 1993–98 period. However, it is less true for other countries, as such percentages are lower (about 60 percent), suggesting that the employment sphere, such as job stability, is not the full story to explain longitudinal variation in household income. Events such as family formation/separation may also play crucial roles in determining income mobility.

Income from secondary earnings (spouse and other household members) contributes a considerable effect to total income variability. In Britain, for instance, this source (44.3 percent) is as important as the household head's earnings (43.1 percent) in driving longitudinal income variation. Unstable work patterns of secondary earners, as well as household events, are possible reasons to cause fluctuations of this component. By looking at both income share and variability, Table 2 suggests that secondary earnings is the least stable source of income because in all countries it only accounts for approximately 21 percent of income share, while it contributes a significant proportion (39–53 percent) to longitudinal income variation, with Germany being at the upper extreme. With respect to assets and private transfers, this component appears to be more volatile in the United States (20 percent). It is, however, not exceptional in other countries, particularly in Germany.

The important factor that leads to cross-national differences in variability is income from public transfers. In general, this source acts as a compensatory role in income variability. For instance, public transfers in Canada make up about 23.4 percent of income share but they only contribute to 6.0 percent of total income variation. It indicates that the transfer system in Canada contributes to buffering household income changes, due to other more volatile components. Such a stabilizing effect, however, is not uniform across nations. Canada appears to have a relatively large compensatory effort for this source among nations (with a

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[15]"Head" refers to the highest earners (regardless of gender) in the household.

TABLE 2

INCOME SOURCES CONTRIBUTE TO TOTAL HOUSEHOLD INCOME AND LONGITUDINAL VARIABILITY,* YEARS 1993–98

Percentage (%) Contribution of Each Income Component to Total Income Share and Longitudinal Variability

Income Source	Canada (1993–98)		United States[1] (1993–96, 1998, 2000)		Britain (1993–98)		Germany (1993–98)	
	Share	Variability	Share	Variability	Share	Variability	Share	Variability
Earnings (head)[2]	63.1	55.3	83.4	70.1	51.3	43.1	75.0	66.3
Earnings (spouse of head)	15.0	28.7	17.1	28.2	11.2	18.2	14.4	30.6
Earnings (other)	5.9	19.7	4.1	8.4	11.3	26.1	7.3	20.7
Asset/private transfer	11.9	14.7	10.3	19.5	10.5	13.3	5.3	9.6
Public transfer	23.4	6.0	9.9	4.7	32.0	22.3	30.6	19.4
Taxes	−19.4	−24.3	−24.8	−30.9	−16.4	−22.8	−32.6	−46.6
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
% of individuals experienced no change in household head during this period	58.0		59.4		62.5		72.8	
Number of persons	24,044		7,282		8,677		11,068	

Notes: *CNEF 2005 release. Sample includes persons presented in all years during specified period. Figures are weighted using the last year of longitudinal weights in each survey. Share entries are calculated longitudinally average for each person, and then averaged across the population. Contributions to income variability (known as beta coefficients) are computed from a mini-regression using longitudinal observations, for each person, of each income source on total income, and average across all individuals (see text).

[1]Starting in 1997, the U.S. PSID is surveyed bi-annually. The U.S. sample, therefore, consists of persons presented in all 1993–96, 1998 and 2000 years.

[2]"Head" refers to person (either head or spouse, regardless of gender, as defined in the survey) with the highest labor earnings in the household; earnings from non-head/spouse are classified as "other" earnings.

variability/share ratio equal to 0.26). The effect is less apparent in Germany (with a ratio of 0.63) and in Britain (0.70). In the United States, although the variability/ share ratio is also small (0.47), the source of public transfers is considered less important in variability because it only accounts for a negligible income share.

Finally, the tax component can be considered as a negative income with negative income share. It has the same function as transfers but it works in a way to compensate income variation, particularly for those originating from earnings or capital movements. The variability of the tax source, therefore, very much reflects the progressivism of the tax system in each nation. This can be seen in the German sample for its relatively higher share (−32.6 percent) and variability (−46.6 percent). This implies that the more progressive tax system in Germany likely offsets its sizable earnings variations (as mentioned above) and results in smaller changes in longitudinal income.

In sum, this subsection discovers that income variability over time originating from earnings components is not so different across countries. Divergences in total mobility, however, arise from government instruments (either through transfer or tax systems) in place in each country. It is highlighted that income from public transfers has the largest effect in Canada, while Germany is the country where the tax effect is greatest. This leads to a relatively lower overall mobility than in their U.S. and British counterparts.

The Role of Demographic Factors

Another factor that has the potential to influence income variability is population characteristics. For instance, it is generally believed that income fluctuations are more pronounced among the young and ethnic minorities, while upward mobility is stronger among well educated people. Cross-national variation in mobility hence may simply be driven by differences in demographic forces. To explore this, we follow Buchinsky and Hunt (1999) to decompose total-income mobility into between and within components. Specifically, we partition the population of interest into groups according to different demographic characteristics: age, sex of head, race of head, education of head, and family type.[16] If overall mobility can be explained solely by differences in these characteristics, we would expect that the within component contains only random shocks. In other words, within mobility should approach one (i.e. perfectly mobile) over long-enough horizons. Otherwise, it suggests that the observed characteristics we controlled in the model cannot fully explain mobility; and mobility process may be dominated by unobserved heterogeneities.

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[16]There are four categories for age variable (<18, 18–34, 45–59, and 60+); two for race (White and non-White), three for education (<high school, high school, and >high school); and five family types (senior 60+, single, single parent with children < 18, couple without children, and couple with children < 18). Also note that "race" is not included in the German data. Instead we use sample identifier, which allows us to differentiate three major groups (former West German States, foreign guest-workers, and former East German States) in the German sample.

The decomposition results for both inequality and Shorrocks's mobility measures—based on GE(0)—are presented in Table 3.[17] Partition of the population includes age, sex, race, family type (as characterized in footnote 8), and education. Notice that the British results are presented without the partition of education because this information is absent in the BHPS–CNEF data. In general, the left panel shows that the within component accounts for a large proportion of overall inequality. Inequality is then reduced when the time horizon is extended; and it has stemmed from fairly equal reductions in both the between and within components. The reduction of inequality is captured by a rise in the mobility index in the right panel.[18] As mentioned, if all characteristics of individuals were observed, the within component would contain only random shocks and should converge to one over long enough horizons. Indeed, in all countries the within component rose considerably over time horizon but was still far short of the value one. Observable demographic differences (i.e. age, sex, race, family type and education) appear to have only moderate explanatory capacity in all countries considered here. For instance, the within mobility measure reaches to 0.21 (0.24) over the 1993–98 period for Canada (Germany), and slightly higher to 0.29 for the United States over the nearly alike horizon. The explanatory power is somehow larger in Britain. Without considering education factor, the magnitude of within mobility for Britain has already reached to 0.41 over the 1993–2002 period, compared with 0.32 for Germany (with account for education) over the same period. Nevertheless, the within mobility is still nowhere near one, even when a longer time horizon is observed.

In sum, these findings suggest that demographic factors analyzed in our model only have moderate significance in explaining income mobility. A large proportion of mobility occurs mainly among individuals with the same level of demographic characteristics. Transition mechanism is therefore largely governed by some unobserved heterogeneities that were not controlled here. Such unobserved forces are particularly important in Canada and Germany, and less so in Britain.

5. SUMMARY AND CONCLUSIONS

The aim of this paper has been to assess whether there are noticeable differences in income mobility between countries. If any, what are the underlying forces that propel differences? Our comparative analysis makes an addition to previous literature in two aspects: by using a harmonized international dataset and also by incorporating the Canadian sample. The use of sufficiently comparable cross-country data mitigates the problems of a different treatment in income variables that arise from individual data sources, and thus it makes our results more

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[17]Following Buchinsky and Hunt (1999), we calculate the income of sub-groups based on predicted values using coefficients from an income regression for the whole sample, rather than based on the raw group mean income. This method mitigates the problem of small group sizes.

[18]Unlike overall inequality, total mobility has not been decomposed additively into between and within components. Similar to Buchinsky and Hunt (1999), we present here the mobility measures unweighted by the shares of between and within inequality.

TABLE 3

INEQUALITY AND MOBILITY DECOMPOSITION BY SUBGROUPS, SHORROCKS GE(0) INDEX*

Income Year	Inequality			Mobility			N
	Total (1)	Between (2)	Within (3)	Total (4)	Between (5)	Within (6)	
Canada							
1993	0.109	0.022	0.086				24,044
1993–94	0.101	0.021	0.079	0.089	0.073	0.093	24,044
1993–95	0.096	0.020	0.076	0.132	0.108	0.138	24,044
1993–96	0.094	0.020	0.074	0.158	0.127	0.166	24,044
1993–97	0.093	0.020	0.074	0.181	0.156	0.187	24,044
1993–98	0.092	0.019	0.073	0.199	0.171	0.206	24,044
U.S.							
1993	0.198	0.080	0.118				7,282
1993–94	0.165	0.069	0.096	0.118	0.051	0.161	7,282
1993–95	0.154	0.066	0.088	0.163	0.076	0.218	7,282
1993–96	0.146	0.062	0.083	0.203	0.099	0.266	7,282
1993–96, 1998	0.141	0.059	0.083	0.242	0.159	0.292	7,282
1993–96, 1998, 2000	0.136	0.055	0.081	0.276	0.195	0.322	7,282
Germany							
1993	0.099	0.025	0.074				8,447
1993–1994	0.088	0.024	0.063	0.117	0.057	0.139	8,447
1993–1995	0.081	0.024	0.057	0.181	0.107	0.209	8,447
1993–1996	0.076	0.022	0.055	0.209	0.167	0.224	8,447
1993–1997	0.074	0.020	0.054	0.225	0.214	0.229	8,447
1993–1998	0.072	0.019	0.053	0.241	0.248	0.238	8,447
1993–1999	0.069	0.022	0.047	0.257	0.137	0.303	8,447
1993–2000	0.068	0.022	0.046	0.267	0.147	0.313	8,447
1993–2001	0.067	0.021	0.047	0.280	0.215	0.306	8,447
1993–2002	0.067	0.021	0.046	0.292	0.225	0.319	8,447
*Britain***							
1993	0.133	0.022	0.110				6,035
1993–1994	0.108	0.019	0.089	0.156	0.062	0.174	6,035
1993–1995	0.099	0.017	0.081	0.216	0.107	0.236	6,035
1993–1996	0.093	0.016	0.076	0.246	0.140	0.265	6,035
1993–1997	0.089	0.017	0.072	0.268	0.134	0.293	6,035
1993–1998	0.086	0.014	0.071	0.294	0.240	0.303	6,035
1993–1999	0.082	0.013	0.068	0.320	0.262	0.331	6,035
1993–2000	0.078	0.012	0.066	0.341	0.290	0.350	6,035
1993–2001	0.074	0.012	0.062	0.357	0.286	0.369	6,035
1993–2002	0.071	0.011	0.059	0.391	0.288	0.407	6,035

Notes:

*Between group for the base model is partitioned according to sex of head, family structure (five groups), age (four groups), race of head (White and non-White), and educational attainment (three groups). For German data, the race variable is not available but sample identifier, which differentiates three major groups (former West German States, foreign guest-workers, and former East German States), is included. Subgroup incomes for between-group component are based upon predicted incomes using coefficients from an income regression for the whole population.

**The British results are presented without partition of education in the model due to the absence of educational attainment in BHPS–CNEF data.

Data source: CNEF 2005 release. Inequality and mobility are measured using the mean log deviation GE(0).

credible. Also, the inclusion of the Canadian sample offers an essential reference point for the understanding of distributive processes. The results can be summarized as follows.

First, we show that there exist diverse levels of income mobility across countries, but magnitudes differ depending on the measurement method used. In general, Britain shows the highest degree of income mobility, and this pattern is generally robust to the use of alternative mobility measures. However, consistent with previous studies (e.g. Aaberge *et al.*, 2002), we also find no unequivocal ordering of mobility between countries.

Second, we find that there is no positive relationship between inequality and mobility, which is in line with previous literature. Mobility in the United States is not as high as commonly perceived, and in consequence, the United States remains a country with a greater degree of permanent inequality. We also discover that the ordering of countries by annual income inequality could change when the accounting period is extended. For instance, Britain has a higher initial inequality than Germany, but the ordering reverses when the accounting period is prolonged to 10 years. Permanent inequality is therefore considered smaller in Britain than in Germany over the period.

Third, with respect to forces that underlie income mobility, government transfers play an important role in buffering household income changes due to other more volatile income components, particularly in Canada. In Germany, the more progressive tax system offsets earnings variations and results in smaller changes in longitudinal income. Moreover, we also discover that demographic factors provided only limited explanation of differences in income mobility. The income transition mechanism is largely governed by unobserved heterogeneities, especially in Canada and Germany. This may include unobservable characteristics of individuals such as ability or motivation. However, some omitted factors (such as immigrants, occupations or neighborhood characteristics), for which information was not available for the analysis, may also play a role. For instance, recent immigrants to Canada are known to have a much higher rate in persistent low income (Picot *et al.*, 2007). The fact that we do not control for immigrant status could be one reason for the large unexplained component in the Canadian results.

In addition, it is interesting to note that cross-national differences in mobility may change over time. Using more recent data, we learn that the U.S. and German mobility profiles converged in the 1990s. Burkhauser and Poupore (1997) found that the United States had a flatter profile than Germany during the 1980s. We also show that the convergence was a result of rising U.S. mobility and slightly falling German mobility between these decades. This is consistent with recent work by Daly and Valletta (2008), who also find convergence in the permanent and transitory components between the U.S. and Germany in the 1990s under the covariance approach on earnings. Moreover, they show that inclusion of the East German sample raises measured permanent inequality in Germany. This might suggest that some of the differences between our findings (based on the reunified sample) and those of Burkhauser and Poupore (based on the former West Germany from the 1980s) may be attributed to structural changes, which requires more investigation for future research.

Finally, this paper also offers an overview of recent family income mobility in Canada. The issue is all the more pertinent since there are heightened concerns about the rising family income inequality during the 1990s—for the first time in many decades. It also raises the question about the continuing ability of all Canadians to move up in today's diverse population. Overall, we find that mobility in Canada is relatively lower compared with that in other countries. The low Canadian mobility is intimately linked to state interventions, and hence can be interpreted as a synonym for stability or economic security. Nevertheless, we do discover that Canada stands out in having a greater degree of permanent inequality relative to other nations. Even so, this finding may not be viewed as conclusive because of the shorter panel of the Canadian sample. The equalization effect of mobility to long-term incomes may be more pronounced when a longer period is observed, which requires further investigation.

APPENDIX

TABLE A1

CNEF NUMBER OF UNWEIGHTED OBSERVATIONS*

		Balanced Panel[1]											Longest Balanced Panel W/ Trimming[2]
	Starting Year 1	Years 1–2	Years 1–3	Years 1–4	Years 1–5	Years 1–6	Years 1–7	Years 1–8	Years 1–9	Years 1–10	Years 1–11	Years 1–12	
Canada A (1993–98)	34,468	31,455	28,977	27,583	26,228	25,210							24,083
Canada B (1996–2001)	36,902	34,033	32,117	29,956	27,017	25,573							24,350
Canada C (1999–2003)	36,013	30,538	27,949	25,069	23,188								22,350
U.S. (1991–97, 1999, 2001)	15,196	14,505	13,601	12,884	12,404	11,936	7,761	–	7,322[3]	–	6,864[4]		6,249
U.K. (1991–2002)	13,776	12,203	11,279	10,570	9,948	9,563	9,228	8,892	8,537	8,182	7,678	6,310	5,739
Germany (1992–2003)	15,914	14,851	13,880	13,055	12,309	11,620	10,820	10,196	9,590	8,999	8,415	7,914	7,478

Notes:
*Individuals with positive survey weights.
[1]Individuals presented in each of the years considered.
[2]Individuals whose equivalent income < 1 percentile or >99 percentile in each year were dropped.
[3]Individuals presented in each of the 1991–97 and 1999 PSID survey.
[4]Individuals presented in each of the 1991–97, 1999 and 2002 PSID survey.

TABLE A2

Mobility as Inequality Reduction When the Accounting Period is Extended*

Income Year	Inequality				Mobility				N
	GE(0)	GE(1)	GE(2)	Gini	GE(0)	GE(1)	GE(2)	Gini	
Canada									
1993	0.109	0.102	0.106	0.253					24,044
1993–94	0.101	0.095	0.099	0.245	0.089	0.077	0.077	0.036	24,044
1993–95	0.096	0.091	0.094	0.241	0.132	0.116	0.117	0.056	24,044
1993–96	0.094	0.089	0.092	0.238	0.158	0.141	0.143	0.069	24,044
1993–97	0.093	0.088	0.091	0.237	0.181	0.164	0.167	0.081	24,044
1993–98	0.092	0.088	0.090	0.236	0.199	0.182	0.187	0.091	24,044
U.S.[1]									
1993	0.198	0.177	0.194	0.327					7,282
1993–94	0.165	0.152	0.165	0.306	0.118	0.098	0.106	0.045	7,282
1993–95	0.154	0.143	0.154	0.297	0.163	0.142	0.152	0.068	7,282
1993–96	0.146	0.135	0.145	0.289	0.203	0.178	0.189	0.087	7,282
1993–96, 1998	0.141	0.132	0.141	0.286	0.242	0.215	0.230	0.107	7,282
1993–96, 1998, 2000	0.136	0.127	0.136	0.281	0.276	0.250	0.271	0.126	7,282
Britain									
1993	0.133	0.114	0.114	0.266					6,035
1993–94	0.108	0.098	0.099	0.248	0.156	0.112	0.102	0.050	6,035
1993–95	0.099	0.091	0.093	0.240	0.216	0.167	0.158	0.079	6,035
1993–96	0.093	0.086	0.088	0.233	0.246	0.200	0.193	0.098	6,035
1993–97	0.089	0.083	0.084	0.228	0.268	0.223	0.215	0.110	6,035
1993–98	0.086	0.08	0.081	0.224	0.294	0.247	0.240	0.124	6,035
1993–99	0.082	0.077	0.078	0.220	0.320	0.271	0.264	0.137	6,035
1993–2000	0.078	0.074	0.075	0.215	0.341	0.291	0.284	0.149	6,035
1993–2001	0.074	0.070	0.072	0.210	0.357	0.309	0.302	0.160	6,035
1993–2002	0.071	0.068	0.069	0.206	0.391	0.339	0.329	0.178	6,035
Germany									
1993	0.099	0.093	0.097	0.24					8,447
1993–94	0.088	0.084	0.089	0.23	0.117	0.095	0.089	0.045	8,447
1993–95	0.081	0.078	0.082	0.222	0.181	0.151	0.143	0.074	8,447
1993–96	0.076	0.074	0.078	0.215	0.209	0.178	0.170	0.089	8,447
1993–97	0.074	0.072	0.075	0.212	0.225	0.195	0.186	0.098	8,447
1993–98	0.072	0.070	0.074	0.209	0.241	0.211	0.203	0.109	8,447
1993–99	0.069	0.068	0.071	0.206	0.257	0.228	0.220	0.118	8,447
1993–2000	0.068	0.067	0.070	0.204	0.267	0.237	0.230	0.124	8,447
1993–2001	0.067	0.066	0.069	0.203	0.280	0.252	0.247	0.133	8,447
1993–2002	0.067	0.065	0.068	0.202	0.292	0.266	0.262	0.141	8,447

Notes:

*The Generalized Entropy (GE) family of inequality indices includes the mean log deviation GE(0), Theil index GE(1), and half the coefficient of variation squared GE(2). The larger values of GE(#) correspond to greater sensitivity to income differences at the top of the income distribution.

[1]Starting in 1997 the U.S. PSID is surveyed bi-annually. Hence, the final two rows of the U.S. statistics refer to individuals presented in all 1990–96, 1998 and all 1990–96, 1998 and 2000 income years, respectively.

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