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The Levy Institute Measure of Economic Well-Being: Estimates for Canada, 1999 and 2005*

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ABSTRACT

This report presents estimates of the Levy Institute Measure of Economic Well-Being (LIMEW) for a representative sample of Canadian households in 1999 and 2005. The results indicate that there was only modest growth in the average Canadian household's total command over economic resources in the six years between 1999 and 2005. Although inequality in economic well-being increased slightly over the 1999–2005 period, the LIMEW was more equally distributed across Canadian households than more common income measures (such as after-tax income) in both 1999 and 2005. The median household's economic well-being was lower in Canada than in the United States in both years.

Keywords: Well-being, Inequality, Income, Wealth, Government Expenditure, Household Production, LIMEW, (Canada)

JEL Classifications: D13, D31, D63

The Levy Institute Measure of Economic Well-being: Estimates for Canada, 1999 and 2005¹

I. INTRODUCTION

This report presents estimates of the Levy Institute Measure of Economic Well-being (LIMEW) for a representative sample of Canadian households in 1999 and 2005. The LIMEW is based on a “command over resources” approach to well-being measurement, whereby a household’s “economic well-being” refers to its control over, or access to, goods and services.

In recent years, there has been an explosion of interest in the measurement of economic and social well-being. Recognizing that standard measures like per-capita GDP provide an incomplete picture of welfare in a society, researchers have developed a variety of alternative indexes designed to be more comprehensive in their coverage of the factors that affect well-being. Examples include the Human Development Index (HDI),² Canadian Index of Well-being (CIW),³ the Genuine Progress Indicator (GPI),⁴ and the Legatum Prosperity Index (LPI).⁵

During over a decade of involvement in this area of research, the Centre for the Study of Living Standards (CSLS) has developed its own Index of Economic Well-being (Osberg and Sharpe 2009a; 2009b), and has participated in the construction of other indexes including the CIW (Sharpe and Arsenault 2009). Our participation in the LIMEW project represents the continuation of a longstanding research program for the CSLS.

The LIMEW, developed by the Levy Institute of Bard College, is a comprehensive household-level measure of command over resources. It consists of four components, as shown in Exhibit 1. The first component is base income, which is the sum of wages, salaries, self-

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² See the HDI web site at <http://hdr.undp.org/en>.

³ See the CIW web site at <http://www.ciw.ca/en/Home.aspx>.

⁴ See the GPI web site at <http://www.rprogress.org/index.htm>.

⁵ See the LPI web site at <http://www.prosperity.com>.

employment income, fringe benefits and interpersonal transfers (e.g. child support). Income from property (e.g. dividends and rent received) is not included.

The second component is income from wealth, including both the primary residence and non-home assets. The annual “command over resources” arising from the primary residence is estimated by the imputed yearly rent on the residence net of annual mortgage payments. Household non-home wealth is converted from a stock to a flow using an annuity method.

Exhibit 1: Components of the LIMEW

Line No.	Component
1	Household Earnings
2	Fringe benefits
3	Money income other than earnings
4	Alimony
5	“Other income”
6	Base Income = sum of lines 1-3
7	Annuity from non-home wealth
8	Net imputed rent on housing
9	Income from wealth = sum of lines 7-8
10	Government transfers
11	Public consumption
12	Taxes
13	Federal income tax
14	Provincial income tax
15	Payroll tax
16	Consumption tax
17	Property tax
18	Net Government Expenditure = lines 10 + 11 - 12
19	Household production
20	LIMEW = lines 6+ 9 + 18 + 19

The third component is net government expenditure, which consists of three subcomponents: government cash transfers to households, taxes paid by households, and public consumption. Public consumption is the value of goods and services consumed by government on behalf of households.

The final component of the LIMEW is household production. The value of household production is evaluated using time-use data and a performance index. The sum of the four

components—base income, income from wealth, net government expenditure, and household production—is the total LIMEW.

The Levy Institute has constructed LIMEW estimates for a representative sample of households in the United States for a number of benchmark years. The conceptual basis of the LIMEW and findings for 1959, 1972, 1982, 1989, 2000, and 2004 are discussed in Wolff, Zacharias and Masterson (2009). The Centre for the Study of Living Standards (CSLS) was commissioned to produce comparable estimates for Canada, and those estimates are presented in this report. The motivation for this project is twofold. First, the LIMEW provides a comprehensive measure of economic well-being at the household level. This can be used to analyze both the average level of well-being and its distribution within Canada, both at a point in time and over the 1999-2005 period.⁶ Second, the comparability of the Canadian and US LIMEW estimates allows us to draw comparisons between Canada and the United States in terms of economic well-being. We will also be able to compare the LIMEW to other measures of economic welfare. For instance, the United States currently has both a higher GDP per capita and higher income per capita than Canada.⁷ Does the United States also have a higher average household LIMEW than Canada? Has the growth of the LIMEW differed from that of per-household GDP?

The remainder of this report is structured as follows. Section II describes the sources of the data underlying the LIMEW and outlines the process by which several surveys were statistically matched to generate a synthetic microdata file. In Section III, we describe how the components of the LIMEW were estimated based on the synthetic microdata file. The empirical results are presented in Section IV, and Section V presents a detailed discussion of two components—income from wealth and household production—that experienced significant changes between 1999 and 2005. Section VI summarizes and concludes.

⁶ The CSLS planned to produce Canadian LIMEW estimates for 1992, but the necessary data on household wealth were not available. There was a 16-year gap between the last wealth supplement of the Survey of Consumer Finances (SCF) in 1983 and the introduction of the Survey of Financial Security (SFS) in 1999, which leaves us without a wealth survey within the vicinity of the early 1990s. We considered using the 1999 SFS for the wealth component in a LIMEW for 1992 and adjusting the wealth variables by either the rates of return or the aggregate levels of the National Balance Sheet Accounts for the household and non-profit sector. Both of these approaches were deemed inadequate as there were significant changes between 1992 and 1999 not only in the level of household wealth but also in its distribution.

⁷ Ross and Murray (2010) provide per-capita estimates of eight different national income measures: gross domestic product, net domestic product, gross national product, net national product, gross domestic income, net domestic income, gross national income, and net national income. They show that the US values exceed the Canadian values for all eight measures in per-capita terms.

II. DATA SOURCES AND STATISTICAL MATCHING

The LIMEW is a household-level measure and most of its components are based on microdata from surveys. The exception is the public consumption component, which is based on aggregate public expenditure data and distributed across households according to various criteria. This section describes how the data underlying the LIMEW were collected and prepared for use. As in the case of the United States, the microdata necessary to calculate the income, wealth, and household production components of the LIMEW are not found in any single survey. Thus multiple datasets had to be statistically matched by households or individuals.

A. Data Sources

Exhibit 2 outlines the data sources used in the construction of the Canadian LIMEW estimates. The microdata are drawn from Statistics Canada surveys. The primary sources for demographic information and income variables are the 1999 and 2005 iterations of the Survey of Labor and Income Dynamics (SLID). Data on household assets and debts are drawn from the Survey of Financial Security (SFS) for 1999 and 2005. The General Social Survey (GSS) focused on time use in 1992, 1998, and 2005; the 1998 and 2005 GSS will be our source for information on time spent on household production.

Exhibit 2: Construction of the LIMEW, Canada, 1999 and 2005

Line No.	Component	Source
1	Household Earnings	SLID
2	Fringe benefits	Unpublished Statistics Canada data
3	Money income other than earnings	SLID
4	Alimony	
5	“Other income”	
6	Base Income = sum of lines 1-3	
7	Annuity from non-home wealth	Statistical matching of SLID and SFS
8	Net imputed rent on housing	Statistical matching of SLID and SFS; aligned with SNA aggregate
9	Income from wealth = sum of lines 8-9	
10	Government transfers	SLID data aligned with SNA aggregate
11	Public consumption	SNA and others; see Section III
12	Taxes	
13	Federal income tax	
14	Provincial income tax	SLID data aligned with SNA aggregates
15	Payroll tax	SLID
16	Consumption tax	Statistics Canada Input-Output Commodity Tax Model
17	Property tax	Tax rates from SHS; home ownership from SLID
18	Net Government Expenditure = lines 11 + 12 - 13	
19	Household production	Statistical matching of SLID and GSS
20	Household production = line 19	
21	LIMEW = lines 6 + 9 + 18 + 20	

Notes:

SLID = Survey of Labour and Income Dynamics, SNA = System of National Accounts

SFS = Survey of Financial Security, GSS = General Social Survey

SHS = Survey of Household Spending

B. Statistical Matching

In both years for which we are estimating the LIMEW for Canada, the SLID is considered the base or “recipient” database, while the SFS and GSS serve as “donor” files that augment the recipient file. For each year, two matching processes must be completed: one to match the SLID to the SFS at the household level, and one to match the SLID to the GSS at the individual level. A detailed discussion of matching procedure and the quality of statistical matches can be found in Masterson (2010).

The variables used to align the datasets are chosen for analytic and distributional importance. The variables across which we are most interested in drawing average LIMEW comparisons should be matched so our comparisons are accurate. For example, in the United States researchers are concerned about the relative well-being of races, so race is a key variable. If race were not carefully matched, it would be impossible to accurately compare the difference in the average LIMEW of races. Variables that will be used to distribute LIMEW components across households should be matched so that we do not misallocate LIMEW components across households.

The SLID public use microdata file (PUMF) is actually several files: a census family file, an economic family file, a person file for individuals 16 and older, and a key file for persons of all ages. We mainly used the person file and the key file as data sources, but the economic family file was also used for statistical matching. Most variables of interest are coded at the individual level rather than the household level, but it is easy to generate household-level data by aggregating across individuals within households. Unlike the SLID, the SFS does not collect information on individuals. The 2005 SFS has variables containing characteristics of entire economic families, such as size, number of earners, and total income, as well as key characteristics of the major income recipient, namely age, sex, and education level.⁸

i. Matching the SLID and the SFS

We analyzed the distribution of the variables in the SLID and SFS microdata files to assess the potential for statistical matching. The SFS purposely oversamples affluent families, so only the weighted distributions of variables are expected to have similar distributions to the SLID. Household size, number of earners, region, total income, home ownership status, household type, sex, age and the education level of the major income earner were all aligned for matching. A description of the process for alignment of those variables follows.

In the 2005 SLID household size is top-coded at seven people, but the SFS is top-coded at five. Thus, the SLID household size variable is truncated at five for the purposes of matching with the SFS, but is un-truncated when used to generate an equivalence scale (to adjust for household size). In a manner similar to the household size variable, the variable on the number

⁸ Note that “household” and “economic family” are not synonymous; a household may contain multiple economic families. The SFS is an economic family-level survey. It was matched to the SLID economic family file, and then data were aggregated across economic families within households.

of earners in a household is also top-coded at different levels for each survey. In the SLID the number of earners is top-coded at seven, but the number of earners is top-coded as three in the SFS. Thus, the number of earners variable in the SLID is truncated at three for the purpose of matching.

The public-use 2005 SFS suppresses the province of the household, only giving the region of the household. Therefore, we can only match on a regional basis rather than a provincial basis. The five regions are Quebec; Ontario; and British Columbia; the Atlantic region, composed of the provinces of Newfoundland and Labrador, Nova Scotia, New Brunswick, and Prince Edward Island; and the Prairie region, composed of the provinces of Manitoba, Saskatchewan and Alberta. Due to the lack of a provincial variable in the 2005 SFS, the region will be our primary geographic variable.⁹

The one proxy variable for wealth found in the SLID is homeownership, which can be matched with the homeownership variable in the SFS. Unfortunately, using both weighted and un-weighted statistics, the SFS understates homeownership relative to the SLID. The reason for this is unclear, but may be related to the exact wording of the questions or to sampling error. The most reliable estimate for homeownership is the census, which in 2006 was 68.5 per cent of economic families. The 2005 SLID estimated homeownership at 67.1 per cent, whereas the 2005 SFS estimated homeownership at only 61.9 per cent.

The families are matched by family type according to the following categories: unattached individual, couples living without children under 18, couples living with children under 18, lone parents, and other family types. The SLID contains a more detailed breakdown of family type; although this detailed variable does not exist in the SFS, it is possible to construct it using other variables containing information about the composition of the economic family. These family types are broken down into subtypes. Unattached individuals may be male or female, elderly or non-elderly. A couple can be elderly or non-elderly; it is classified as elderly if the major income earner is 65 years of age or older, and non-elderly otherwise. Elderly couples are classified either as without children or other relatives at home or as part of the “other families” category.

⁹ While it is still possible to analyze the difference in LIMEW between provinces in the same region, the differences may be understated do to a miss-matching of wealth. For example, since we will match on a regional rather than provincial basis, it is possible that the income file of an Albertan family will be matched with the wealth file of a Manitoban family. If Alberta and Manitoba have a different distribution of wealth with respect to income and other matching variables, then the comparison may understate the differences in economic well-being.

Since the SLID does not classify one individual within a family as the head or the major income earner in the economic family file, we needed to use the person-level microdata file to identify the major income earner in order to match the SLID with the SFS. This was done by arranging the data by economic families. Within each family we found the individual with the greatest earnings, and in the case of a tie we designated the male as the head.

The characteristics of sex, age and education of the major income earner were checked for similar distributions in the SLID and SFS. The education of the head-of-household variable in the SFS is not as detailed as the one that can be constructed using individual- and family-level SLID data. Only four categories are given: less than high school, a high school diploma, non-university post-secondary certificate, and a university degree or certificate. Thus, the education categories in the SLID have to be aligned with those found in the SFS. When we reduced the number of education categories in the SLID they were found to have a similar distribution to those in the SFS.

ii. Matching the SLID and the GSS

The GSS has been used for its time use variables. The GSS only collects detailed information about time use (for one particular day) for the individual survey respondent, rather than for the time use patterns of the entire household or family. Thus, the GSS is matched to the person-level SLID file. The matched variables can then be aggregated to the household level. As a practical matter, this means that individuals from different households are statistically matched to be in the same SLID household, albeit households with similar characteristics.

The person-level SLID and the GSS are matched according to individual characteristics—educational attainment, total individual income, and age—as well as some non-individual characteristics that are also available in the GSS, such as family type, region of residence, and total household income.

To facilitate matching, the distribution of the variables in the 2005 GSS was compared with the person-level file from the 2005 SLID. Total income of the respondent, total income of the household, age, sex, and marital status of the respondent, region, household size, home ownership, and education level and main activity of the respondent were all found to have similar distributions using person-level weighting.

C. Summary

The process for constructing the synthetic microdata file can be summarized as follows. The economic family SLID file is augmented by the person-level characteristics of families' major income earners, drawn from the SLID key file and person file. This augmented economic family file is then matched with the SFS file, giving families wealth characteristics. These are converted to household-level characteristics by aggregating across economic families within households.

The person-level SLID file is matched to the GSS file, giving those persons time use characteristics. These characteristics are then converted to household characteristics by aggregating across individuals within SLID households. Combining the two synthetic household-level files yields one synthetic microdata file of households with variables on income, wealth, and time use.

A final note: the 1999 SFS does not contain the gender decompositions of the head of the household, which is unfortunate because it reduces our analytic ability to measure distinctions between the economic well-being of men and women. This is because in the process of statistically matching the 1999 SLID and SFS datasets, we may attribute the wealth of male-headed SFS families to female-headed SLID families and vice-versa. (This is not an issue for 2005, since the 2005 SFS does indicate the sex of the major income earner.) Of course, we will still be matching for other characteristics including income and home value, but considering the importance of gender differences in command over economic resources, it should be kept in mind that our estimates may understate them.

III. ESTIMATING THE LIMEW AND ITS COMPONENTS

This section provides a detailed description of the process by which the components of the LIMEW are estimated using the synthetic microdata files and data from other sources.

A. Base Income

In the construction of the LIMEW, the first element is base income, defined as the sum of earnings, interpersonal transfers, and in-kind compensation from work, which includes employer contributions for health insurance. Earnings and alimony are found in the SLID.

However, in-kind compensation, or fringe benefits, are not included in the SLID. The 1999 and

2005 SLID questionnaire does ask its respondents if their employer offered them supplementary medical insurance, dental insurance, or life/disability insurance. However, these data are not included in the public use microdata files. Sharpe *et al.* (2008) used special request data from Statistics Canada on the value of supplementary labor income in the form of employers' contributions to accident and sickness insurance plans, group term life insurance plans, administrative service contracts (non-insurance benefits (e.g. for health) that are paid by employers and administered by insurance companies), premiums to provincial health plans in Alberta and British Columbia, and non-profit health plans. These totaled \$13,147 million in 1999 and \$20,956 million in 2005 (in current dollars). We will use this data for the aggregate amount of supplementary income.

We attribute benefits to persons based on the size of their workplace and whether they are covered by a collective agreement. The probability of receiving fringe benefits is estimated by workplace size and collective agreement coverage status based on the Workplace and Employee Survey. Benefits are then assigned to SLID workers on the basis of these probabilities. Each worker assigned benefits receives the same value of benefits, and non-workers and those not assigned benefits receive zero benefits.

B. Government Transfers

Cash transfers from the government, such as Social Assistance, Old Age Security, Canada Pension Plan benefits, and Employment Insurance benefits, are identified in the SLID. However, we do not use these numbers directly. We obtain the aggregate value of government transfers to persons from CANSIM and allocate them across SLID individuals according to their shares of total transfer income as reported in the SLID. This ensures that the value of government transfers in our estimates is equal to the total from the national accounts.

Canada has no significant non-cash transfer programs like the Supplemental Nutrition Assistance Program (food stamps program) in the United States. However, a large portion of government health expenditure is considered part of non-cash government transfers in order to be comparable to the U.S. LIMEW.

Given the dramatically different structures of the Canadian and American healthcare systems, the distributional effects of the Canadian national healthcare system are of great interest. However, measuring the distributional effect of Medicare is difficult. Work has been done to estimate the distribution of government spending on healthcare (Gillespie 1980; Manga

1978). Nevertheless, one well-documented healthcare cost pattern is the concentration of expenditures during late-life and end-of-life care.

Health Canada (2001) shows the distribution of government expenditure on healthcare by several expenditure categories and by age and sex. The report divides healthcare expenditure into seven categories: hospitals, other institutions, physicians, other professionals (mainly dentists), drugs, home care services, and other expenditures. We used the proportions of these seven categories in 2000-1 to allocate and distribute health care expenditures in both 1999 and 2005.

Expenditures in the categories of other institutions, home care services and “other expenditures” are considered part of public consumption, and will be discussed in that section. The remaining expenditure categories—hospitals, physicians, other professionals, and drugs—are combined into a single expenditure category and are considered part of non-cash transfers. These expenditures are allocated across households on the basis of the number, age and sex of household members, using the spending shares by age and sex from Health Canada (2001).¹⁰

C. Taxes

When constructing the LIMEW, taxes have to be subtracted from base income. Income taxes and the employee portion of payroll taxes are provided in both years of the SLID, but property taxes and consumption taxes are more difficult to calculate. Payroll taxes in Canada take several forms, some of which are paid in part or in entirety by the employer. We ignore those that are paid entirely by the employer (such as workers compensation). Only the taxes actually paid by members of households need to be subtracted from base income. These taxes consist of three components: the employee proportion of employment insurance (EI); Canadian Pension Plan or Quebec Pension Plan (CPP/QPP) (the Canadian equivalent of Social Security); and public health insurance premiums. All three are found in the 1999 and 2005 SLID.

Information on property taxes is drawn from the Survey of Household Spending (SHS), since it is not available in the SLID or the SFS. Although property taxes are set by municipalities, public use microdata do not reveal the municipalities in which households are located. Because the value of the homes is not included in the SHS, we calculated the average

¹⁰ For example, Health Canada (2001) reports that males aged 45-54 received 5.3 per cent of total public health expenditures, while females aged 35-44 received 5.9 per cent. A household containing three individuals – two males aged 45-54 and one female aged 35-44 – would receive $100 * (0.053 * (2/x) + 0.059 * (1/y))$ per cent of health expenditures in this expenditure category, where x is the total population of males aged 45-54 and y is the total population of females aged 35-44.

property tax rate by region in 2005 by dividing the total amount paid in property taxes by households (from the SHS) by the total value of properties (from the SFS) in each region. In 1999, the SFS has a province variable so we calculated average property tax rates the same way, but by province instead of region.

We define consumption taxes as total commodity taxes, both direct and indirect, at the federal and provincial levels. Federal commodity taxes include custom import duties, excise taxes and duties, and the Goods and Services Tax (GST). Provincial commodity taxes include liquor taxes, profits on liquor commissions, gasoline taxes, amusement taxes, tobacco taxes, and retail sales taxes.

Consumption taxes are not included in any of the surveys. In order to estimate consumption tax rates we requested Statistics Canada to calculate the proportion of income spent on consumption taxes by provinces and disposable income deciles. Statistics Canada calculated this by using the Input-Output Commodity Tax Model associated with their Social Policy Simulation Database and Model (SPSD/M), a microsimulation model used for policy analysis (Statistics Canada 2009a). The commodity tax model calculates the amount households spend on commodity taxes by first calculating the effective tax rate for each tax type and then multiplying the effective tax rate by the amount spent on the category in the database (SPSD).

As noted above, our definition of consumption taxes includes both direct and indirect taxes. Direct taxes are paid during the final purchase of the good and services, whereas indirect taxes are paid at some point in the production process. The commodity tax model assumes all indirect taxes are fully passed on to the consumer.

Using these assumptions Statistics Canada calculated for us the average amount economic families spent on commodities taxes in 1999 and 2005, by disposable income (i.e. after income tax) decile and by province. We then divided these amounts by the average disposable income by deciles and provinces to get the ratio of average tax spent over average income. Then for each household, we multiplied this ratio of average tax spent (in their province and income decile) over average income (in their province and income decile) by household disposable income to obtain the total consumption tax paid by the household.

D. Income from Wealth

The LIMEW includes two categories of income from wealth: home wealth and non-home wealth. Income from home wealth is the imputed annual rent on the household's primary

residence, net of the annuitized value of mortgage debt. Income from non-home wealth is an annuity based on the household's holdings of wealth other than the primary residence. (It may include non-primary housing, if the household owns multiple homes.) We outline how these values are computed, beginning with non-home wealth.

i. Non-Home Wealth

In the LIMEW, non-home wealth, which is a stock, is converted into a flow by calculating a lifetime annuity—the annual payment that would exhaust the value of the asset over the expected remaining lifetime of the asset owner. For a given asset, the lifetime annuity depends on three factors: the current value of the asset, the number of years over which the asset is to be wholly converted to income and the expected annual rate of return on the asset over that time period. We address each of these in turn.

a. Assets and debts: Financial and non-financial non-home wealth is divided into four categories of assets and one category of debts. The asset categories are real estate and business assets, liquid assets, financial assets, and pension assets. Real estate and business assets include all real estate other than the primary residence, as well as business equity. Liquid assets include the value of savings accounts, checking accounts, and term deposits, but exclude liquid assets which are part of registered retirement savings plans (RRSPs). Financial assets include mutual funds, other investment funds, income trusts, domestic and foreign stocks, domestic and foreign shares in companies, saving bonds and other types of bonds, and other types of financial investments. Financial assets that are part of RRSPs are not included.

Pension assets are the sum of registered pension plans, non-registered pensions, and other specialized retirement savings plans. The latter category includes RRSPs, which are analogous to Investment Retirement Accounts (IRAs) in the United States. At 71 or earlier, Canadians must withdraw all funds from their RRSP, convert it to an annuity or convert it to a Registered Retirement Income fund (RRIF). RRIFs are also included in pension assets. Non-registered pension plans include deferred profit sharing plans, executive and foreign pension plans, and annuities.

There are two primary categories of registered pensions: defined benefit and defined contribution. In defined benefit plans, employees pay in a certain amount of their pay into the scheme and the payout they receive after retirement is based on the average salary of a certain

number of the last years they work multiplied by the number of years they work. It is not directly related to the amount they have paid in. Furthermore, as the payout is not based on the returns to investment, the employer bears all the risk. In defined contribution plans, the payouts in retirement are based on the value of payments and interest the payments have accrued. Thus the employee bears the risk. Because defined contribution plans have worth that can be exchanged in the market, they are fungible or marketable wealth. Defined benefit plans do not have the same quality and are thus excluded from the LIMEW definition of wealth. This may understate the level of economic well-being of Canadians relative to Americans. As of January 1, 2006, only 15.7 per cent of Canadians with employer pensions were covered by defined contribution plans (Statistics Canada 2007). This is contrasted with the United States, where defined contribution plans are the norm. It is not possible to identify which households have defined benefit plans and which have defined contributions plans in the SFS.¹¹ In order for our Canadian LIMEW estimates to be fully comparable to the US estimates, a US LIMEW must be calculated to include the value of defined benefit plans.

The debt category is “other debts.” It includes all debts other than the mortgage on the primary residence.

The values of all assets and debts are taken directly from the SFS.

b. Number of years: The annuity is computed based on the number of years that the household is expected to remain in existence. To estimate this, we take the maximum of the remaining life expectancies of the household’s major income earner and his or her spouse (if a spouse exists). The expected number of remaining years of life for an individual is computed using Statistics Canada’s life tables (or actuarial tables), which provide life expectancy estimates by age, sex, and province of residence.

¹¹ The SFS uses a complex procedure to estimate the combined value of defined benefit and defined contribution plans. The procedure is documented in Statistics Canada (2001).

c. Expected rates of return: The final factor needed to compute an annuity is the expected real annual rate of return on the asset over the household’s remaining lifetime. We estimate nominal rates of return by asset category, based on historical nominal rates. As in the US LIMEW, we base historical returns on average rates of return over the 1960-2009 period, although in some instances historical data on rates of return do not extend that far into the past. Using these nominal rates, real rates of return are calculated by the Fisher equation,

$$r = \frac{(1 + r^n)}{(1 + p)} - 1,$$

with r^n being the nominal rate of return and p being the compound annual inflation rate (CPI-based) in Canada over the 1960-2009 period. The nominal and real rates of return used are given in Appendix Table 7.

d. Calculating the annuities: Once the asset values, number of years of remaining household life, and expected annual rates of return by asset- (or debt-) type are obtained, the annuities are estimated according to the following formula:

$$Yearly\ Payments = \frac{r \times Asset}{1 - (1 + r)^{-\max(LifeExpHead, LifeExpSpouse)}}$$

Once the annuity for each class of assets and debts is calculated, the sum of the yearly payments received from assets minus the yearly payments due from debts is the yearly flow of income from non-home wealth.

ii. Home Wealth

The estimation of home wealth is more straightforward. It is the difference between imputed yearly rent on the primary residence and the lifetime annuity of the primary mortgage. The mortgage annuity is computed using the annuity formula described above. Rent is imputed by retrieving the aggregate amount of imputed rent on owner-occupied housing in Canada, available from CANSIM. Aggregate imputed rent is allocated across households according to their shares of the aggregate value of housing (based on the SFS data).

e. Public consumption: Public consumption by households is the most complex component of the LIMEW. It is estimated in three stages. First, aggregate public consumption is estimated with a detailed breakdown by the function of the spending. Second, expenditures within each functional category are attributed in whole or in part to the household sector. Expenditures attributed to the non-household sector (that is, the business sector or the foreign sector) are not included in the LIMEW. In the final stage, the household sector's shares of government consumption in each functional category are distributed across households according to category-specific criteria. Each of these three stages is discussed below. We provide only the most important details here. More details can be found in Appendix 1.

i. Calculating aggregate government expenditure by function: When we attempted to calculate public consumption by households for Canada using an approach similar to that used in the LIMEW of the United States, four main challenges were encountered:

1. The main dataset for government expenditure categorizes spending according to the financial management system (FMS), which does not contain the necessary detail in expenditure subcategories. Thus, either additional data sources or interpolation was required.
2. The presence of intergovernmental spending within government expenditure functions can lead to double counting if not corrected. The guiding principle used was government expenditure should only be counted at the final stage of purchases (of goods and services) by the government.
3. Transfer payments to individuals are also included within the government expenditure function. Since transfers to individuals are counted as income, they would be double-counted in the LIMEW if our public expenditure functions included these as well. Therefore, government transfers to persons must be removed from government expenditure in order to determine public consumption.
4. The government expenditure in the FMS is calculated on a gross basis; that is, the government expenditure includes expenditure on items which are sold to the non-government sector. The SNA reports government expenditure on a net basis by reducing government expenditure by the amount of sales to other sectors. This must be accounted for in our estimates.

These difficulties would not exist if there were Canadian data comparable to the United States' NIPA Table 3.15.5, in which net government expenditure on consumption and capital is broken down by function. However, the data on Canadian government expenditure is either

broken down by expenditure type (*e.g.* on goods on services, fixed capital formation, inventories, transfer payments), as in the case of the National Accounts data, or is described by function (*e.g.* on national defense, roads, education) as in the Financial Management Systems (FMS) data. The FMS data contains categories similar to those in the American NIPA tables, but does not distinguish between spending on goods and services and transfers to individuals, businesses, or other levels of government.

We use the FMS data as our primary source. The categories and subcategories of government expenditure from the FMS form the structure of our functional breakdown of government expenditure. It contains variables on categories of government expenditure for multiple levels of government: consolidated government, Federal-Province-Local, Provincial and Local, Provincial, and Canadian Pension Plan/Quebec Pension Plan. However, the data on provincial and local government expenditure was insufficiently detailed for our purposes. It was augmented with additional data for expenditure on policing, firefighting, and transportation from other series in CANSIM (see Appendix 1).

There exist significant transfers of funds between the different levels of government within Canada. Merely removing the spending category of general inter-governmental transfers would be insufficient because many federal government programs include transfers to lower levels of government, so the presences of these specific-use transfers means double counting would still occur. This is evident by the fact that the sum of total federal expenditure and total provincial and local expenditure exceeds total consolidated government expenditure (by \$52.1 billion in 2005, according to the FMS data.) By taking the difference between consolidated government expenditure and consolidated provincial and local we derived federal government expenditure minus transfers to provincial and local governments.

Another problem we needed to address was the existence of transfer payments to persons. Unfortunately, data on the amounts of transfer payments on a basis fully compatible with the government expenditure data (by function) are not available. The best we could do was use transfers to persons on a provincial economic accounts basis. Unfortunately, this creates an inconsistency as the provincial economic accounts are on a calendar year basis whereas the FMS are on a financial year basis (April 1 to March 31). However, since three out of four quarters are the same it was assumed the level of transfers to persons was the same in the calendar year as in the fiscal year. It was assumed that transfer payments to persons fall entirely within the social services category of government spending.

Finally, the CANSIM data represent gross government expenditures. In order for our estimates to be consistent with the US estimates, we must subtract government sales of goods and services to generate *net* government expenditure data. Since CANSIM does not provide estimates of government sales by expenditure category, we allocate the aggregate sales across the expenditure categories on the basis of the categories' shares of government spending net of intergovernmental and personal transfers. In 2005, sales of goods and services amounted to 4.0 per cent of gross federal government expenditures (net of all transfers) and 12.5 per cent of gross provincial and local government expenditures (net of all transfers).¹²

Exhibit 3: Shares of the Largest Public Consumption Categories, Canada, 1999 and 2005

Expenditure Category	Share (Per Cent)	
	1999	2005
Education	21.0	20.1
Health	19.5	23.7
Protection of Persons and Property	10.2	10.8
Social Services	7.5	6.8
Transportation and Communication	5.5	5.9

After correcting these problems, we derived estimates for combined federal and CPP/QPP government expenditure on goods and services and combined provincial and local government expenditure on goods and services. Throughout the rest of the report, federal expenditure will refer to both federal expenditure and CPP/QPP expenditure on goods and services and provincial expenditure will refer to both provincial and local expenditure on goods and services.

Appendix Tables 1 and 2 present the estimates of aggregate public consumption by expenditure category for 1999 and 2005. In terms of combined federal, provincial and local

¹² Government sales of goods and services include such things as water charges; rents on buildings; sales of used buildings, machines or equipment; airport landing fees; tolls on transportation infrastructure; tuitions; court fees; and fees for government documents (e.g. passports, all licenses other than licenses to operate vehicles or to hunt wildlife). Intergovernmental sales are in principle eliminated through data consolidation in the FMS (Statistics Canada, 2009b). Since we allocate aggregate government sales across spending categories before distributing net government expenditure between the household and non-household sectors, we implicitly assume that the distribution of government sales between the sectors is the same as that of government expenditures. This may be a problematic assumption, but it is unavoidable in the absence of direct information on the distribution of government sales.

spending, the largest expenditure categories are education, health, protection of persons and property, social services, and transportation and communication (Exhibit 3). Education accounted for about 20 per cent of aggregate public consumption in both 1999 and 2005. Health's share was 19.5 per cent in 1999 and 23.7 per cent in 2005. No other category is more than half as large as these two.

ii. Allocating government expenditures to the household sector: Not all government expenditure on goods and services directly benefits households. Some of the benefits of public consumption accrue to the business sector.¹³ In order to isolate the spending that directly benefits households, government expenditure on goods and services is allocated to the household and non-household (*i.e.* business) sectors.

When deciding how to allocate public consumption, our main goal is consistency with previously established LIMEW estimates for the United States. Each category or subcategory was allocated using a method similar to that used in the equivalent category in the United States LIMEW as found in Appendix Table 3. The allocation method for the Canadian estimates is outlined in Appendix Table 4.

The most important expenditure categories are education, health, transportation and communication, and protection of persons and property. Government consumption in health and education are entirely allocated to the household sector (with the exception of a small proportion of health expenditures going to residential care facilities; see below). The allocation of expenditures in transportation and communication and protection of persons and property differs by subcategory. Appendix 1 provides further details on this, as well as on the allocation of the smaller expenditure categories.

¹³ One might argue that public consumption in the business sector indirectly benefits the household sector because households own the businesses. However, these benefits— to the extent that they exist— should enter the LIMEW through increases in household wealth. The inclusion of the public consumption that benefits the business sector would therefore double-count the indirect benefits to the household sector.

iii. Distributing government expenditures across households: We are concerned with not only the level of the benefit of government expenditure to households, but also the distribution of these benefits among households. Thus, public expenditure needs to be distributed across households in the most detailed manner possible with available data. Once again, the CSLS used a procedure similar to that used for the United States LIMEW. We have not explicitly distributed federal government spending by provinces. Federal government spending was distributed within Canada, while provincial governments' spending was distributed within their respective provinces. This means that if an expenditure category is distributed by population, then the distribution of federal spending by provinces is on a per capita basis.

As noted above, education and health are the largest categories of public consumption. We address those two categories here. Look to Appendix 1 for a discussion of the distribution of the remaining spending categories.

In order to be compatible with the U.S. LIMEW, a large portion of government expenditure on health is included in government non-cash transfers. The only components included in public consumption are expenditure on institutions other than hospitals, home care services and "other expenditures." We allocated the share of healthcare spending on "other institutions" to the non-household sector because this represents healthcare spending on individuals in residential care facilities who are not covered in our microdata. Expenditures on home care services are allocated on a per-person basis to the household sector, but only among those aged 65 and over. Finally, we allocated "other expenditures" on a per capita basis to the household sector on the assumption that they represent expenditures on public health.

Only a small proportion of Canadians aged 5 to 18 are not in public school. Those not enrolled in public school are either enrolled in private school, are being home schooled, or have dropped out. For distribution purposes we identified 5,506,812 and 5,491,466 children and adults in elementary and secondary school in 1999 and 2005 respectively in the SLID. (Those aged 5 to 15 are assumed to be in school and those aged 16 to 19 are considered in high school if they reported they were in high school during their reference year.) Administrative data suggests 5,372,733 and 5,212,533 in 1999/2000 respectively 2005/2006 (Statistics Canada, 2008b). Given the figures, we attributed public spending on elementary and secondary school to 97.6 (in 1999) and 94.9 (in 2005) per cent of families with school-aged children based on the number of school-aged children they have. (Children in the remaining households—selected stochastically—are assumed to be either in private school or not in school.)

Government expenditure on post-secondary education expenditure was allocated to economic families by the number of members who have attended a post-secondary institution within that year. Unlike the United States almost all universities within Canada are publically funded. The province of Quebec has its own system of community college-like institutions known as CEGEPs, which are meant to be a bridge between high school and university. They are almost entirely publically funded. There are also private colleges (vocational or technical) as well as public colleges (vocational or technical), but the datasets we use do not contain the variables necessary to distinguish attendance at public or private college.¹⁴

F. Household Production: Economists have not reached a consensus about the correct method for valuing household production. Since it is individuals, not households, who spend time, household production is calculated first on an individual basis and then the value of the production from the individuals within the household is summed to produce the value of the production of the household.

The delineating factor in whether we ought to categorize an activity as household production is whether it can be replaced on the market. Some activities such as cooking and cleaning can obviously be substituted. These activities are known as “core household production.” Another category of household production is procurement activities. This includes shopping for groceries and other shopping. These are included because they are necessary for the running of the household and can be substituted by use of professional shoppers. The third category is care, which includes both childcare and eldercare. There is some ambiguity in the availability of market replacement and the bounds of childcare. Developmental psychology has highlighted the importance of play in a child’s proper development, as well as bonding between the child and his or her primary caregiver, but there are questions as to whether this can be bought on the market.

¹⁴ Another issue is that the permanent residence of an economic family may not be the same province as where a member is receiving an education. As per the Canadian constitution education is in provincial jurisdiction, and thus is funded provincially. So in reality provincial funding may go to a household permanently residing in another province. However, our data do not allow us to identify this, so there is some misallocation of the benefits of post-secondary funding. Anyone attending a post-secondary institution will be assumed to be receiving government funding (even if they are enrolled in a private college) and thus will be allocated government spending of the province in which their economic family resides (even if they are funded by another province). However, the flows of students attending university out of province should largely net out.

Researchers have proposed various ways to value household production. Specific replacement cost, general replacement cost, and replacement wage are the three main approaches found in the literature (Fraumeni 2008). The specific replacement cost approach values the specific activities of household production by the cost that would be required to replace the work by hiring a worker who specializes in that activity. For example, childcare would be evaluated by the cost of hiring a babysitter or nanny, and household cooking would be evaluated by the cost of hiring a cook. Many believe that the use of market wages overstates the value of household production because the household producer is unlikely to be as productive in household production as a specialist worker would be.

Another approach is general replacement cost, which evaluates household production of all categories by the cost of hiring a “general worker” such as a domestic servant. Some believe this understates the value of household production because individuals with a high degree of human capital are more productive over many types of production, including household production.

The third approach is replacement cost. Replacement cost values household production using the implicit wage rate that the worker receives on the formal labor market. This has two problems. First, much of household production is done by those who do not participate in the formal labor market. Second, this ignores the fact that the wage received by individuals in the labor market is what they receive as specialists, and those supposing that people are equally productive in the home may overstate the value of household production.

The compromise used in the LIMEW is the modified general replacement cost approach (Wolff, Zacharias and Masterson 2009). As a base this uses the general replacement cost using the wages of domestic workers in Canada. However, because we realize the different productive capacity of workers, we modify the value of household work by the individual by a performance index. This performance index (p) uses the weighted average of normalized years of schooling,¹⁵ normalized household income, and the normalized time availability of the individual.¹⁶ It is defined as:

¹⁵ Years of schooling is estimated from the categorical educational attainment variable.

¹⁶ Time availability is calculated by subtracting paid work hours from the total available hours in a week. (Twenty-four hours a day minus eight hours of sleep a night; $168-56 = 112$)

$$p = 1 + \frac{\left(\frac{s - \mu_s}{\sigma_s}\right) + \left(\frac{y - \mu_y}{\sigma_y}\right) + \left(\frac{t - \mu_t}{\sigma_t}\right)}{3}$$

where s is the (estimated) years of schooling, y is household pre-tax income, and t is the time availability of the individual. μ_s , μ_y , and μ_t , are the mean of schooling, household income, and time availability, respectively. Similarly, σ_s , σ_y , and σ_t are the standard deviation of schooling, income, and time availability respectively. If any of the sub-indices are not calculable due to non-response, that sub-index is assumed to be zero.

The base household production wage rate is based on an estimate of the hourly wage of domestic employees (occupational group G811: visiting homemakers, housekeepers, and related occupations) from the 2006 census. In the 2006 census, average hours worked per week is 36 and average annual weeks worked is 42.5. So if we multiply these numbers together we obtain an average of 1,530 hours worked a year. We then divide the annual employment income of domestic employees, \$17,944, by 1,530 hours to obtain a wage rate of \$11.73 per hour (in 2005 dollars). Similarly, the 2001 census reveals that domestic employees worked on average 41.8 weeks per year and 35 hours per week. Thus, they worked on average 1,463 hours per year. They earned an average of \$16,336 in employment income in 2000, which implies an hourly wage rate of \$11.17 (in 2000 dollars).

These base wage rates are adjusted by the individual's performance index. However, regardless of how low the performance index for an individual is, there is a floor on the implicit wage of household production at the weighted (by share of labor force) average of provincial minimum wages, which was calculated to be \$6.63 in 1999 and \$7.42 in 2005 (current dollars).

IV. RESULTS: THE LIMEW IN CANADA

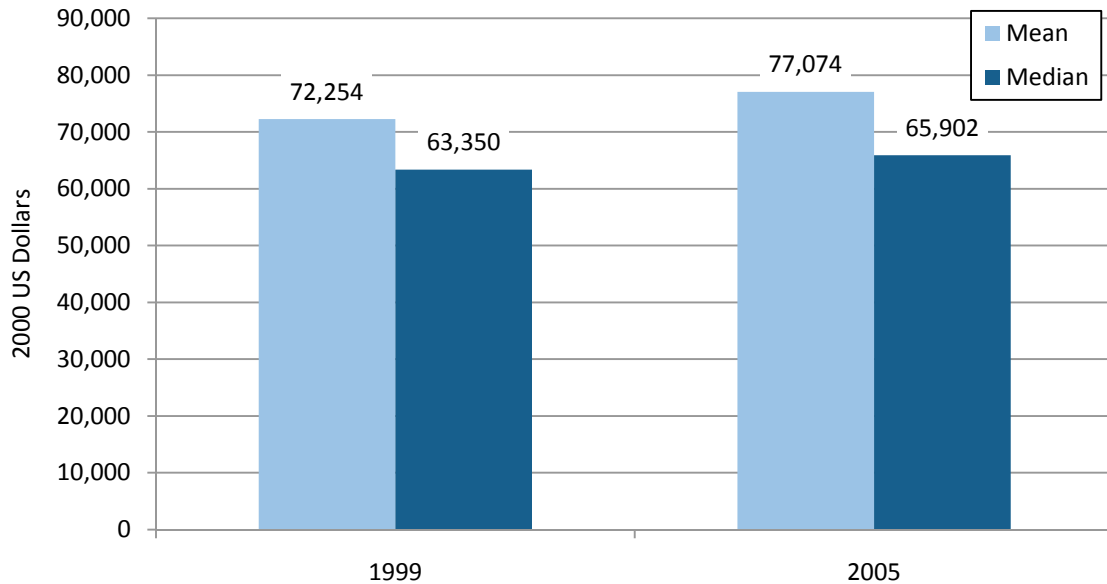
A. Mean and Median Estimates of the LIMEW

i. Composition of the LIMEW

Exhibit 4 provides the mean LIMEW for 1999 and 2005, as well as a breakdown of the mean LIMEW into its components and subcomponents. The mean value of the LIMEW in Canada (in 2000 US dollars) was \$77,074 in 2005, up 1.08 per cent per year from \$72,254 in 1999 (Table 1¹⁷).¹⁸ Chart 1 illustrates these means, as well as the corresponding medians for 1999 and 2005.

¹⁷ All Tables and Appendix Tables are in the Appendix.

Chart 1: Mean and Median LIMEW, Canada, 1999 and 2005



a. Base income: The LIMEW breakdown in Exhibit 4 illustrates the relative importance of each component in overall economic well-being. The largest component is base income. Mean household base income was \$39,984 in 2005 and accounted for 52 per cent of the total LIMEW. Earnings made up 95 per cent of base income in 1999 and 94 per cent in 2005; the other subcomponents of base income are relatively small (Chart 2).

¹⁸ All estimates are in 2000 PPP adjusted US dollars unless otherwise indicated in order to be consistent with the estimates for the United States from the Levy Institute. Current dollar estimates for 1999 and 2005 are converted to 2000 Canadian dollars using the Canadian CPI, then to 2000 US dollars using the 2000 Canada-US personal consumption-based PPP from the OECD (equal to 1.2116).

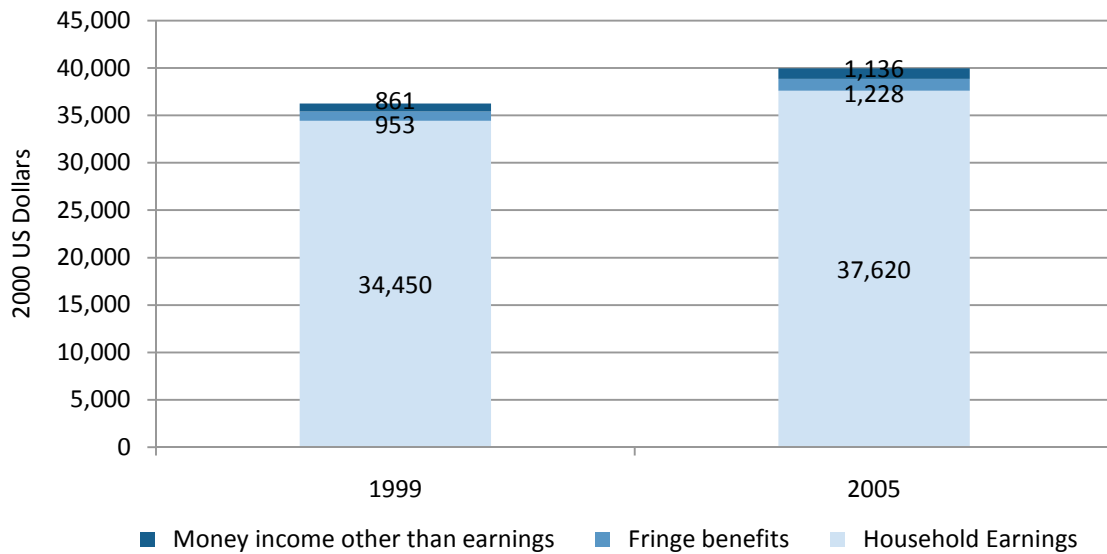
Exhibit 4: Composition of the Mean LIMEW for Canada, 1999 and 2005

Line No.	Component	Mean Value (2000 US Dollars)		Change, 1999-2005 (Per Cent per Year)
		1999	2005	
1	Household Earnings	34,450	37,620	1.48
2	Fringe benefits	953	1,228	4.32
3	Money income other than earnings	861	1,136	4.73
4	Alimony	172	204	2.89
5	"Other income"	689	932	5.16
6	Base Income = sum of lines 1-3	36,264	39,984	1.64
7	Annuity from non-home wealth	6,633	8,542	4.31
8	Net imputed rent on housing	4,628	4,594	-0.12
9	Income from wealth = sum of lines 7-8	11,261	13,136	2.60
10	Government transfers	10,606	11,652	1.58
11	Public consumption	8,473	9,306	1.57
12	Taxes	-17,765	-18,401	0.59
13	Federal income tax	5,984	6,003	0.05
14	Provincial income tax	3,741	3,668	-0.33
15	Payroll tax	1,582	1,764	1.83
16	Consumption tax	4,105	4,390	1.13
17	Property tax	2,353	30,974	53.66
18	Net Government Expenditure = lines 10 + 11 - 12	1,315	2,557	n.a.
19	Household production	23,415	21,397	-1.49
20	LIMEW = lines 6 + 9 + 18 + 19	72,254	77,074	1.08
21	After-tax Income = lines 6 + 10 - 12	24,038	27,244	2.11
22	CDI = lines 20- 19 - 11	40,365	46,371	2.34
23	PFI = lines 20 - 19	48,839	55,677	2.21

Notes:

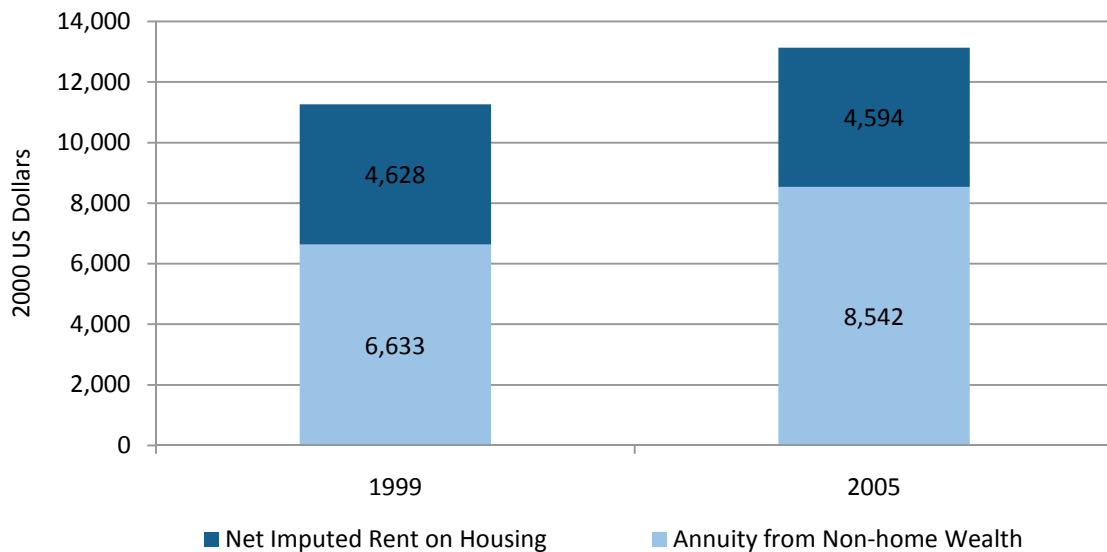
1. After-tax income is base income plus government transfers net of taxes.
2. CDI is comprehensive disposable income. It is equal to the LIMEW less household production and public consumption.
3. PFI is post-fiscal income. It is equal to the LIMEW less household production.

Chart 2: Mean Base Income, Canada, 1999 and 2005



b. Income from wealth: Average imputed income from wealth was \$13,136 in 2005, up 2.60 per cent per year from \$11,261 in 1999 (Chart 3). Income from wealth accounted for 17.0 per cent of mean LIMEW in 2005, up from 15.6 per cent in 1999.

Chart 3: Mean Income from Wealth, Canada, 1999 and 2005

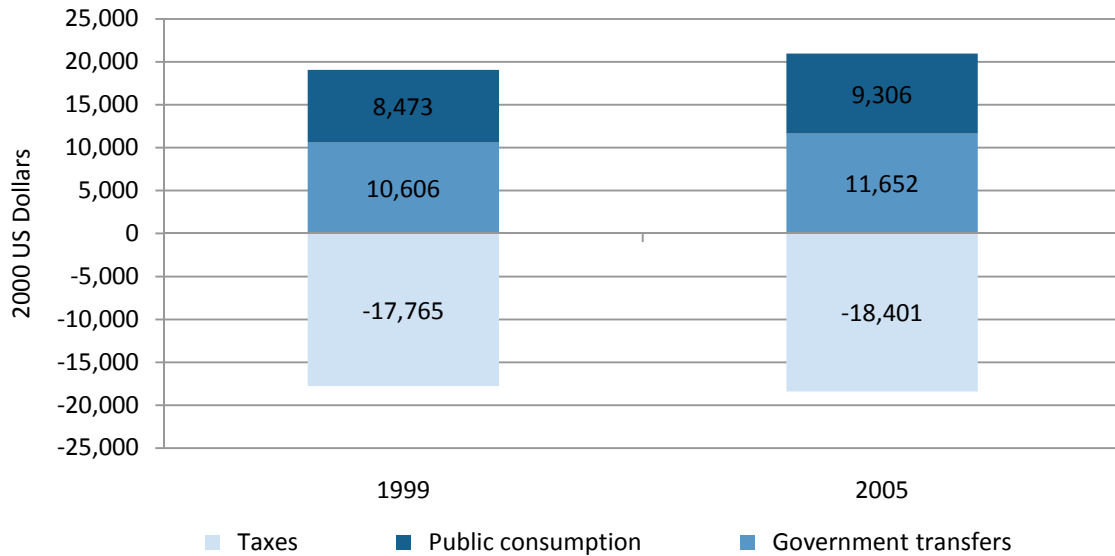


The increase in income from wealth is entirely attributable to the 4.31 per cent annual increase in the non-home wealth annuity from \$6,633 in 1999 to \$8,542 in 2005. Net imputed

rent on the primary residence remained more or less stable, declining 0.12 per cent per year, over the 1999-2005 period.

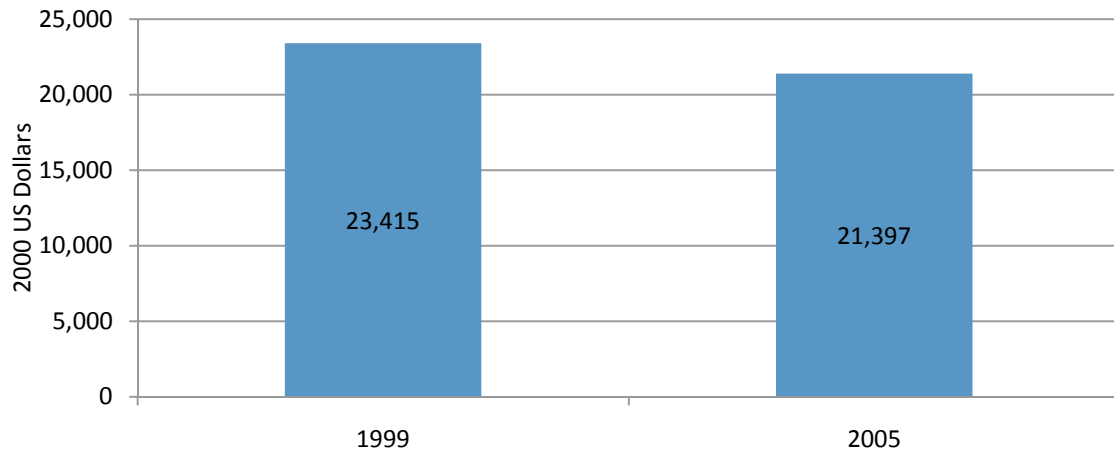
c. Net government expenditure: For the average household, net government expenditure was \$2,557 in 2005, up from \$1,315 in 1999. The benefits of government transfers and public consumption amounted to about \$19,079 in 1999 and \$20,958 in 2005, but were largely offset by taxes (Chart 4). This average masks significant differences in the impact of government across the income distribution, as we show in Section C below.

Chart 4: Mean Net Government Expenditure, Canada, 1999 and 2005



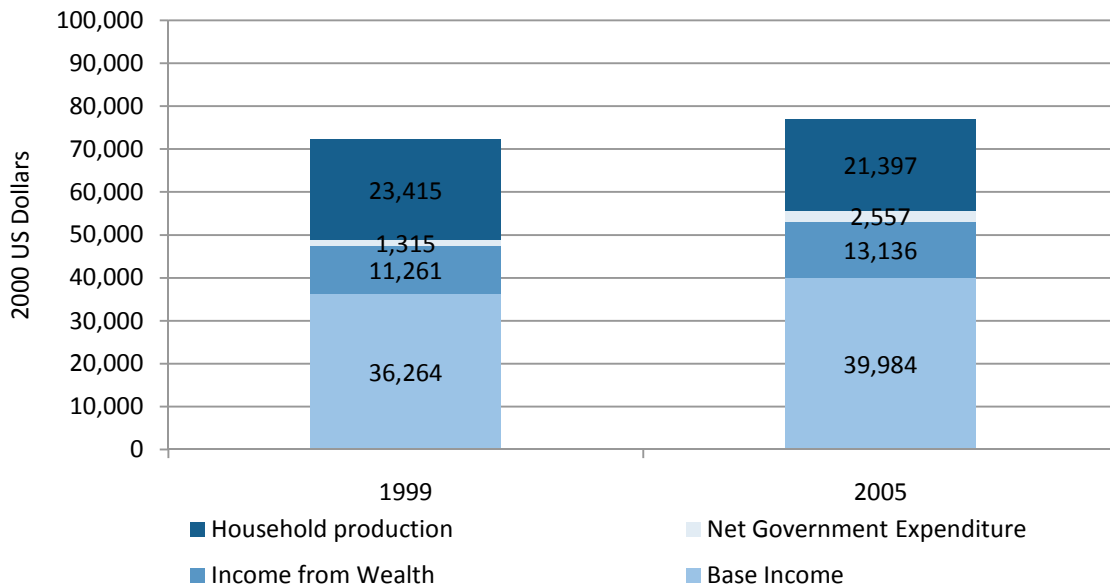
d. Household production: The final component is household production, which was valued at \$21,397 per household in 2005 (Chart 5). This represented a decrease of 1.49 per cent per year from \$23,415 in 1999. The source of this decline is investigated by decomposing household production into the annual number of hours spent on household production by adults, the base replacement wage (the average wage of domestic employees in Canada), and the performance index in section V.B of this report.

Chart 5: Household Production in Canada, 1999 and 2005



e. Summary: The average household in Canada experienced growth of just over 1 per cent per year in its total command over resources (as measured by the LIMEW) over the 1999-2005 period. Significant growth in base income (1.64 per cent per year) and income from non-home wealth (4.31 per cent per year) was offset by a decline in household production (-1.49 per cent per year) (Chart 6). The net impact of the government on the LIMEW was relatively small compared to the other components for the average household in both 1999 and 2005.

Chart 6: LIMEW by Components, Canada, 1999 and 2005



ii. Trends in the LIMEW and Alternative Income Measures: In addition to the LIMEW, Exhibit 4 provides three alternative measures of household income: after-tax income, comprehensive disposable income (CDI), and post-fiscal income (PFI). After-tax income is equal to base income plus government transfers, less taxes. This is a standard household income concept. CDI is equal to the LIMEW less household production and public consumption, while PFI is the LIMEW less household production. Comparing these measures illustrates the impact of different LIMEW components on households' total LIMEW values.

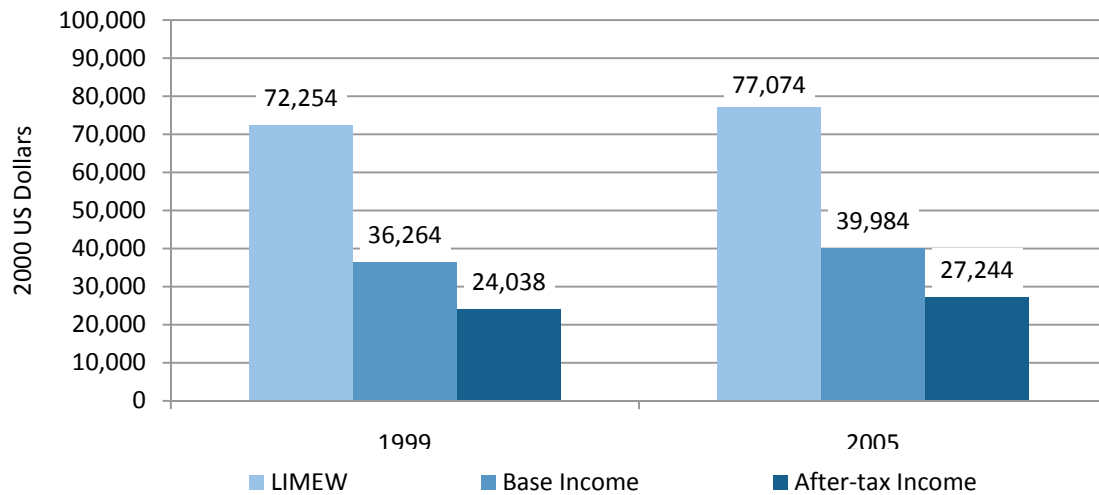
Mean after-tax household income was \$27,244 in 2005, up 2.11 per cent per year from \$24,038 in 1999. This mainly reflects the strong growth of base income. Adding income from wealth yields CDI, which grew 2.34 per cent per year from \$40,365 in 1999 to \$46,371 in 2005. The higher growth rate reflects the increase in income from wealth over the period.

Adding public consumption yields PFI. The growth rate of PFI was 2.21 per cent per year. Growth in public consumption contributed to PFI growth, but the growth rate of PFI was still slightly below that of CDI.

As noted above, the mean LIMEW grew by 1.08 per cent per year over the 1999-2005 period. This was the smallest rate of growth among the four income measures.

The key message that arises from the comparison of these income measures is that the “non-traditional” elements of the LIMEW make a significant difference in how we assess both the level and the growth of households' economic well-being. After-tax income is a common measure of economic well-being, but in 2005, the average household's LIMEW was 283 per cent higher than its after-tax income (Chart 7). By excluding wealth, public consumption and household production, after-tax income drastically understates the level of households' command over resources. After-tax income also *overstates* the rate of growth of command over resources since household production experienced negative growth.

Chart 7: LIMEW and Other Income Measures, 1999 and 2005



Note: After-tax income = base income + government transfers - taxes

iii. Equivalence scale-adjusted LIMEW: Table 1 also reports the LIMEW and its components in equivalent income terms.¹⁹ The use of equivalence scale-adjusted estimates does not affect our key conclusions, although the scale affects the magnitudes and the growth rates of the LIMEW and the other income measures. The fact that the growth rates of the equivalent income measures almost all exceed those of the unadjusted measures suggests that there have been substantial changes in the size or composition of Canadian households.

Table 10 provides the average values of the equivalence scale for five household types, along with the proportion of households that falls into each household type. The data show that between 1999 and 2005, there was a shift in the composition of households away from large households (i.e. those with multiple adults and at least one child under 18) and toward smaller households. The proportion of households with multiple adults and at least one child declined from 28.8 per cent in 1999 to 25.7 per cent in 2005. The proportion of single-parent households with children also fell, from 4.7 per cent in 1999 to 4.2 per cent in 2005. Over the same period, the proportion of households with multiple adults and no children increased from 41.0 per cent to 42.9 per cent, and the proportion of households consisting of a lone adult increased from 25.5 per cent to 27.1 per cent.

The household types with declining shares of the population of households are also the types with the larger average equivalence scale values. Since household income is divided by

¹⁹ The equivalence scale adjusts household income for household size by taking into account the economies of scale in consumption that arise from sharing household costs among two or more people. See Note 7 of Table 1 for a description of the equivalence scale used.

the equivalence scale to generate equivalent income, the shift in the composition of households (from large to small households) explains the faster growth rates of the equivalent income measures relative to their unadjusted counterparts.

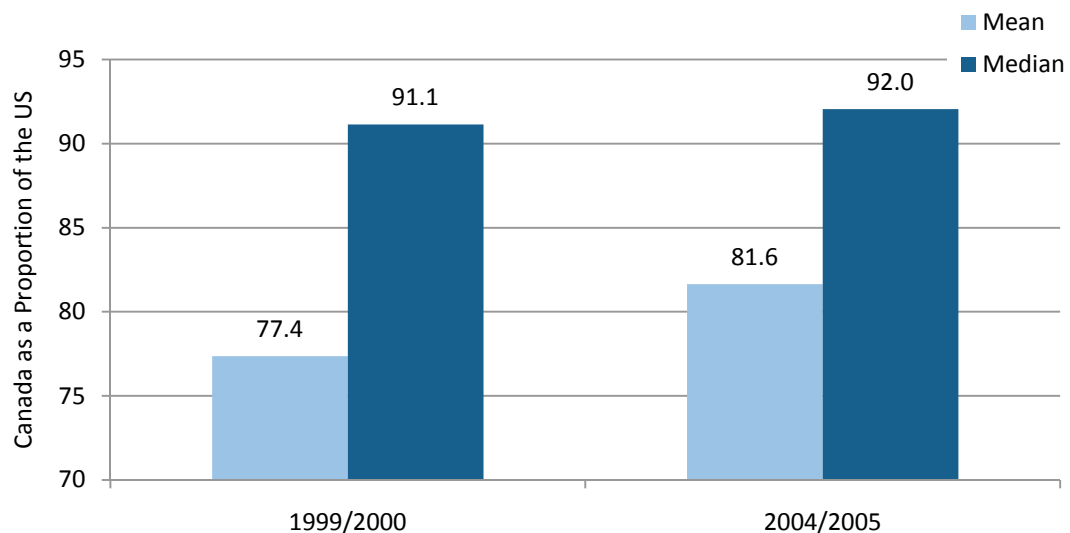
These compositional shifts may reflect the aging of the population. As the “baby boom” generation approaches retirement, the children of that generation are reaching maturity and moving out of their parents’ households. This could explain the compositional shift toward smaller household sizes.

B. Comparison of Canada and the United States by LIMEW

Our Canadian LIMEW estimates were carefully constructed so as to be comparable to the US estimates provided by Wolff *et al.* (2009a). However, this paper reports the recently revised estimates of mean and median LIMEW for the United States provided by the Levy Institute. Although the US estimates are for 2000 and 2004 rather than 1999 and 2005, the years are close enough for comparisons to be meaningful.

The median LIMEW for the United States was \$69,514 in 2000 (in 2000 US dollars), 9.7 per cent higher than the Canadian median LIMEW of \$63,350 in 1999 (Table 2). The US median LIMEW in 2004 was \$71,599, 8.6 per cent higher than the Canadian median of \$65,902 in 2005.

Chart 8: Canadian LIMEW as a Proportion of the US LIMEW



Note: Canadian LIMEW estimates are for 1999 and 2005. US estimates are for 2000 and 2004.

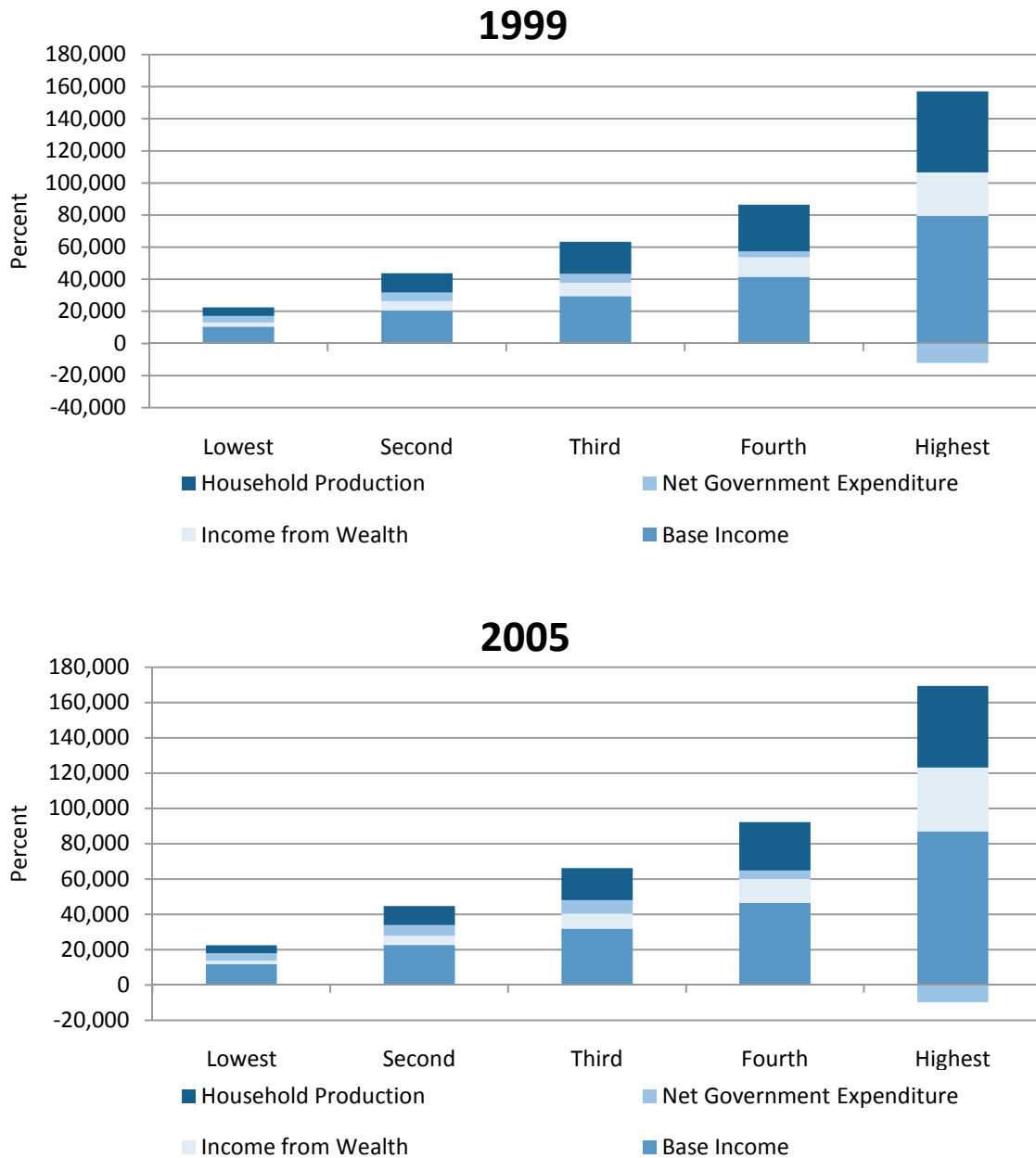
The United States outperformed Canada in terms of PFI and CDI as well. The US-Canada gaps for these two measures were larger in each year than the gap for the LIMEW. The median PFI in the United States exceeded that of Canada by 23.9 per cent in 1999/2000 and by 14.1 per cent in 2004/2005. For CDI, the US median exceeded the Canadian value by 29.5 per cent in 1999/2000 and by 17.5 per cent in 2004/2005. The sizes of these gaps relative to the LIMEW gap reflects the fact that household production forms a larger share of the total LIMEW in Canada (32 per cent in 1999 and 28 per cent in 2005) than it does in the United States (about 21 per cent in both years). It is also clear that part of the US advantage in economic well-being is due to Canada's declining household production; the US-Canada gap closed much more significantly in terms of PFI and CDI than it did for the LIMEW between 1999 and 2005.

C. Composition of the LIMEW by Income Quintile

Table 3 shows the mean LIMEW by LIMEW quintile. The mean LIMEW grew in the bottom quintile between 1999 and 2005 by just 0.02 per cent per year, while the second and third quintiles experienced growth of 0.35 and 0.72 per cent per year, respectively. The top two quintiles experienced more substantial growth in their average LIMEW value over the six years, with growth of 1.07 and 1.62 per cent per year for the fourth and fifth quintile, respectively.

Table 3 also provides a breakdown of the mean LIMEW into its four components by LIMEW quintile. Base income accounted for about half of the LIMEW for all five quintiles in both years, and its share increased between 1999 and 2005 in every quintile but the highest, where it almost imperceptibly decreased. Income from wealth forms a greater share of total LIMEW at the top of the distribution than at the bottom, accounting for 9.3-11.3 per cent of the LIMEW in the bottom quintile to 18.8-22.6 per cent in the top quintile.

Chart 9: Composition of the LIMEW by LIMEW Quintile, Canada, 1999 and 2005



Net government expenditure shows the opposite pattern. The government accounted for 18-19 per cent of the LIMEW for those in the bottom quintile in both 1999 and 2005, while those in the top quintile were net losers from government taxing and spending in both years. This suggests that the fiscal system is, on balance, progressive.

Household production is the second-largest component of the LIMEW after base income, and in general it contributes a larger share of total well-being at the top of the LIMEW

distribution than at the bottom. This is perhaps a counterintuitive result; one might expect to find a negative correlation between household production and other LIMEW components (base income and income from wealth), since richer people can afford to buy goods and services that poorer people have to produce themselves in the home. We explore our household production estimates in more detail in Section V.B below.

Table 3a provides the dollar values of each LIMEW component by income quintile. Base income increased between 1999 and 2005 in every quintile, as did net government expenditure. On the other hand, household production declined over the period in every quintile, while income from wealth decreased in the bottom two quintiles and increased in the top three.

D. LIMEW Inequality

The most common measure of income inequality is the Gini coefficient. In 1999, the Gini for the LIMEW in Canada was 0.340 (Table 4). It increased by 5.04 per cent to 0.357 in 2005. This indicates that inequality in household command over resources increased slightly over the period.²⁰

Zacharias *et al.* (2009) find that the levels and trends of Gini coefficients for the United States are sensitive to the income measure used. Table 4 shows that the same is true for Canada, but only to a limited degree. Base income is by far the most unequally distributed of the five Canadian income measures in Table 4, with Gini coefficients of 0.546 in 1999 and 0.550 in 2005. The levels of the Gini coefficients for the remaining measures fall between those of the LIMEW and base income, ranging from 0.345 to 0.496 in 1999 and from 0.365 to 0.490 in 2005. The LIMEW and PFI showed the largest increases in inequality between 1999 and 2005, while after-tax income became slightly less unequal.

Using equivalent income measures affects the magnitudes of the Gini coefficients but not the direction of the trends. The Gini for the equivalence scale adjusted LIMEW was 0.266 in 1999, and it increased by 7.01 per cent to 0.285 in 2005.

Economic well-being is more equally distributed in Canada than in the United States. According to the latest data provided by the Levy Institute, the US Gini coefficients in 2004 were 0.487 for CDI, 0.453 for PFI, and 0.420 for the LIMEW.

²⁰ For each income measure in Table 4, there is a small proportion of households with negative values. Strictly speaking, the Gini coefficient is not valid when negative values are present in the data, and it may overstate the degree of inequality (Hagerbaumer 1977; Chen *et al.* 1982). Although the number of households having negative values is relatively small, the Gini coefficients reported in this paper should be interpreted with some caution.

Another indicator of economic inequality is the 90/10 ratio; that is, the ratio of the 90th percentile to the 10th percentile.²¹ Table 5 provides the 90th and 10th percentiles and 90/10 ratios for the LIMEW, its components, and the alternative income measures.

In 1999, the 90/10 ratio for the LIMEW in Canada was 5.43. This was the lowest 90/10 ratio among the four income measures (LIMEW, CDI, PFI and after-tax income). Notably, the highest 90/10 ratio among these measures belonged to after-tax income (29.70).

In 2005, the 90/10 ratio for the LIMEW was 5.89. The 8.47 per cent increase in the LIMEW 90/10 ratio between 1999 and 2005 was the largest increase among the income measures. The largest per cent change in the 90/10 ratio occurred in after-tax income, which decreased 44 per cent between 1999 and 2005, but which also had the highest 90/10 ratios in both years.

A third indicator of economic inequality is the share of aggregate income that accrues to each income quintile. Table 6 illustrates this breakdown for the LIMEW, its components, and the alternative income measures in 1999 and 2005. All four of the income measures exhibit substantial inequality, with each quintile of the distribution having a higher share of total income than the quintile below it. That being said, the more comprehensive measures (CDI, PFI and the LIMEW) are more equally distributed across households than after-tax income, the more conventional measure. In terms of the LIMEW, the top quintile had 41.4 per cent of income in 2005, while the bottom quintile had 5.9 per cent. By comparison, the base income component was much more unequally distributed; 53.7 per cent of aggregate base income accrued to the top quintile of households, while -0.1 per cent went to the bottom quintile. The large difference between the distributions of base income and after-tax income suggests that government transfers play a large role in leveling the income distribution. This point is further emphasized by the difference in the distributions of CDI and PFI, as PFI is equal to CDI plus public consumption and PFI is slightly more equal than CDI in terms of quintiles shares.

The shares of the income aggregates accruing to each quintile did not change significantly between 1999 and 2005.

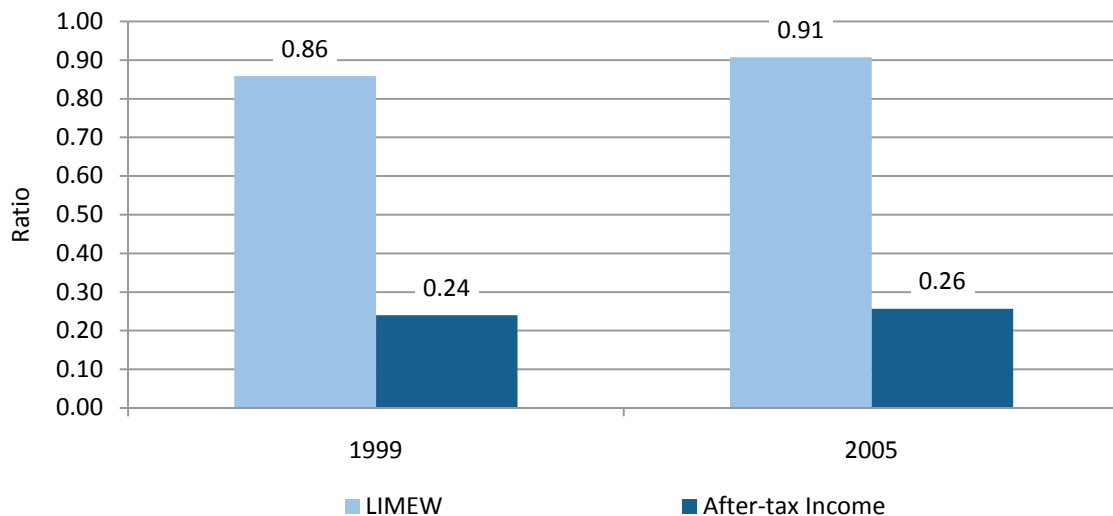
²¹ The 90th (10th) percentile is the value above (below) which only ten per cent of households lie.

E. LIMEW by Age, Education, and Region

An important use of the LIMEW is to analyze disparities between different groups in society. One of the key disparities analyzed by Wolff *et al.* (2009a) was the white/non-white gap. Although racial and ethnic gaps are of interest and concern in Canada, the data do not permit us to run a comparable analysis. However, we can examine other important disparities. In this section, we analyze intergroup LIMEW differences according to three criteria: the age of the household's major income earner, the educational attainment of the major income earner, and the geographic region in which the household is located.

i. LIMEW by the age of the major income earner: One important finding by Wolff *et al.* (2009) was the increase in the LIMEW of elderly Americans (defined as those aged 65 and over) relative to the non-elderly. They found that the ratio of median LIMEW of elderly to non-elderly Americans increased from 0.61 in 1959 to a peak of 0.89 in 2000, then declined slightly to 0.86 in 2004. The ratio of mean LIMEW of elderly over non-elderly tells a similar, but more dramatic, story; it increased from 0.79 in 1959 to a peak of 1.09 in 2000 (meaning the elderly were better off than the non-elderly), then fell back to 0.98 in 2004.

Chart 10: Ratio of LIMEWs and After-tax Incomes of Elderly to Non-Elderly Households, Canada, 1999 and 2005



Tables 7a and 7b contain the mean and median estimates of the Canadian LIMEW, its components, and the other income measures for 1999 and 2005 for six age categories (where a household is categorized based on the age of its major income earner). Almost every measure in

the tables exhibits a similar pattern over the lifecycle. In both years, most measures rise throughout the first fifty years of life, peaking in the 45-54 age category, then decline thereafter. CDI, PFI and LIMEW, however, show a slight increase between ages 55-64 and 65 and older for means and medians in both years, except mean LIMEW in 1999. More striking exceptions to this life cycle pattern are net government expenditure, which shows the opposite pattern, and income from wealth, which is highest among the elderly. These patterns are true whether we use means or medians as our estimates of average well-being.

We do not have a time series dating back as far as the one Wolff *et al.* created for the United States, so we cannot examine long-term trends in the relative well-being of different age groups. Over the six-year time span available to us, there was not much change in the ratio of average elderly to non-elderly well-being according to any of the six income measures. The mean LIMEW in 1999 was \$63,755 among elderly households and \$74,246 among non-elderly ones, for a ratio of 0.86. The mean LIMEW in 2005 was \$71,154 among the elderly and \$78,451 among the non-elderly, for a ratio of 0.91. If we use medians instead, the ratios are 0.86 for 1999 and 0.93 for 2005.

The story is very different if we use equivalent income measures. In 1999, the equivalence scale adjusted mean LIMEW was \$104,386 for the elderly and \$87,610 for the non-elderly, for a ratio of 1.19. The mean LIMEW in 2005 was \$115,446 among the elderly and \$94,301 among the non-elderly, for a ratio of 1.22. If we use median equivalent measures, the ratio is 1.19 and 1.23 for 1999 and 2005 respectively. These ratios imply that the elderly had higher mean and median levels of economic well-being than the non-elderly in both 1999 and 2005. Indeed, according to the mean and median equivalent LIMEW values, the elderly are the most well-off age group in Canada; none of the other groups reported in Tables 7a and 7b have higher equivalent mean or median LIMEW values than those aged 65 and above. This reflects the fact that elderly households have fewer members on average than young households.

The large equivalent LIMEW values for elderly households are driven by government and by the “non-traditional” elements of the LIMEW (wealth, public consumption and household production). The average elderly household has only 10 to 11 per cent of the equivalent base income of the average non-elderly household. The taxes-and-transfers system closes the gap considerably, but based on equivalent after-tax income, the elderly are still worse off than every age group. Income from wealth benefits elderly households more than non-elderly ones, while the impact of public consumption and household production slightly favor

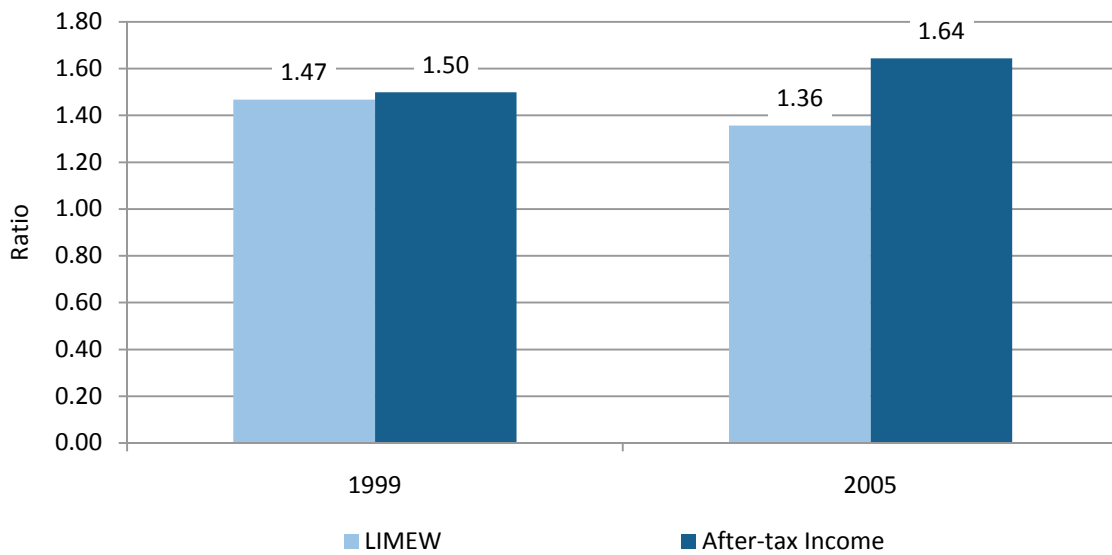
the non-elderly. It is important to note, however, that in terms of net government expenditure—transfers plus public consumption less taxes—the elderly are the only group that benefits. These results highlight the importance of using a comprehensive measure of command over resources.

ii. LIMEW by the education of the major income earner: Wolff *et al.* (2009) also analyzed the relative well-being of those with different levels of education. They found increasing relative well-being for college graduates and decreasing relative well-being for those with less than a high school diploma, high school graduates, and those who attended college but did not graduate.

Tables 8a and 8b present estimates of the mean and median values of the LIMEW and the alternative income measures for four educational attainment categories in Canada: less than high school, high school diploma, non-university post-secondary certificate, and university certificate or degree. Households are categorized on the basis of the educational attainment of the major income earner. The data indicate that households with more well-educated major income earners tend to have greater average command over resources. This no doubt reflects the well-established fact that higher education leads to higher money income. In 1999, the mean LIMEW among university graduates in Canada was \$98,450, while the average for high school non-completers was \$58,811. In 2005, the LIMEW averaged \$98,351 among university graduates and \$62,971 among high school non-completers.

We find no evidence that the LIMEW gap between the well-educated and the least educated Canadians increased over the 1999-2005 period. In fact, the ratio of the mean LIMEW values of university graduates to high school non-completers decreased slightly from 1.67 in 1999 to 1.56 in 2005. The mean LIMEW ratio for university graduates to high school graduates was 1.47 in 1999 and 1.36 in 2005. The ratios of the medians were similar to those of the means in both years.

Chart 11: Ratio of Mean LIMEWs and After-tax Incomes of University Graduate to High School Graduate Headed Households, Canada, 1999 and 2005



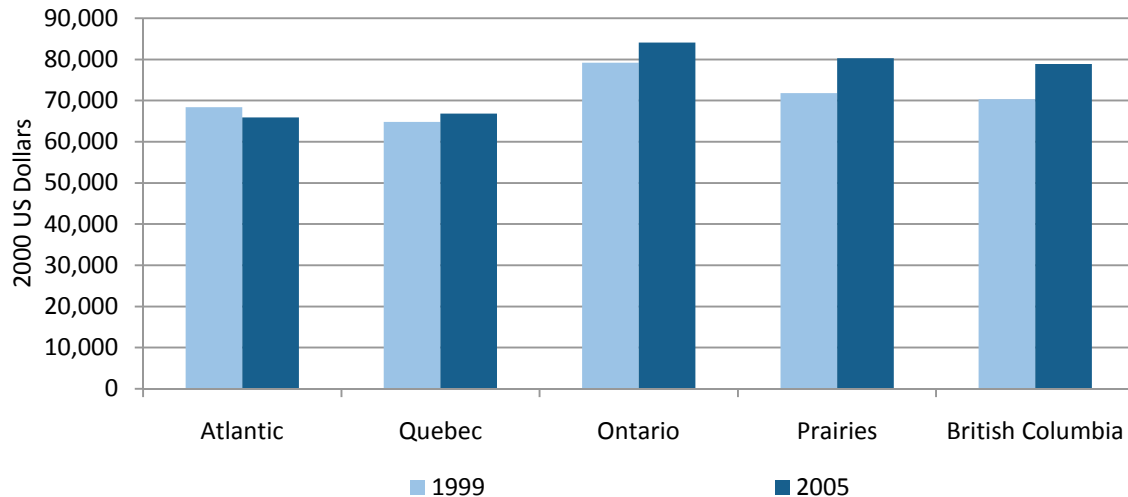
Using equivalence scale adjusted income measures does not alter the story. More well-educated households have higher equivalent LIMEW values than less well-educated ones, and the gap slightly decreased between 1999 and 2005.

Finally, it is worth noting that the comprehensive income measures (CDI, PFI and LIMEW) exhibit smaller gaps between education groups than base income. The mean base income of university graduate households exceeded those of high school non-completers by a factor of 3.8 in 1999 and 3.6 in 2005. As noted above, this reflects the skill premium in the labor market. Moving from base income to after-tax income reduces the gap substantially, which reflects the importance of government transfers in leveling economic well-being across groups.

iii. LIMEW by region: A key issue in the Canadian context is the degree to which economic well-being varies by region. There are large differences across Canadian regions in terms of economic prowess. The resource-based economy in the Prairie region has boomed in recent years, while the Atlantic region has experienced longstanding economic challenges. It is worth asking how these factors influence economic well-being as measured by the LIMEW. We therefore estimate the mean and median values of the LIMEW, its components, and the alternative income measures for five regions: Atlantic Canada, Quebec, Ontario, the Prairies, and British Columbia. Tables 9a and 9b present the results.

Ontario ranked first among the regions in terms of mean LIMEW in both 1999 and 2005, with mean LIMEW values of \$79,182 in 1999 and \$84,123 in 2005. The Prairies ranked second in both years. Quebec had the lowest mean economic well-being in 1999, with a mean LIMEW of \$64,828, but Atlantic Canada had the lowest LIMEW in 2005, at \$65,880.

Chart 12: Mean LIMEW by Region, Canada, 1999 and 2005



The same pattern emerges in terms of median LIMEW values. Ontario ranked first in both years with \$68,639 in 1999 and \$72,644 in 2005. Quebec had the lowest median LIMEW in 1999 (\$57,091), while the Atlantic region ranked last in 2005 (\$57,175).

British Columbia and the Prairies experienced the fastest mean LIMEW growth over the 1999-2005 period: both showed growth of approximately 1.9 per cent per year. Ontario and Quebec also showed positive annual growth of 1.0 and 0.5 per cent per year, respectively. The mean LIMEW declined over the period in Atlantic Canada by 0.62 per cent per year. The decline in Atlantic Canada was mainly attributable to a large decline in income from wealth (the mean fell from \$11,299 in 1999 to \$8,254 in 2005). While the region's mean after-tax income increased slightly over the period, its mean CDI (after-tax income plus income from wealth) fell 0.77 per cent per year from \$38,044 in 1999 to \$36,330 in 2005. No other region experienced a decline in mean CDI over the period.

Our main conclusions do not change if we use the equivalence scale adjusted data. Ontario ranks first among the regions in terms of mean and median economic well-being, while

Quebec and Atlantic Canada rank last. Average well-being increased fastest in the Prairies over the 1999-2005 period, while it declined in Atlantic Canada.

V. FURTHER DISCUSSION OF WEALTH AND HOUSEHOLD PRODUCTION

The key result presented in Section IV is that the average LIMEW among Canadian households only grew modestly during the 1999-2005 period. Base income and income from wealth experienced substantial growth, but it was offset by a decline in household production. In this section, we dig deeper into the income from wealth and household production components in order to explain their changes over this period.

A. Income from Wealth

Mean income from wealth in Canada grew by 2.60 per cent per year over the 1999-2005 period (Exhibit 4). This was attributable to an increase of 4.31 per cent per year in income from non-home wealth. Mean imputed rent on housing was relatively stable over the period, decreasing just 0.12 per cent per year. In contrast, median income from wealth decreased 2.35 per cent per year during this period (Table 1). This decrease in median income from wealth is due to decreases in the median of the non-home wealth annuity (2.6 per cent per year) and in the median net imputed rent on housing (4.6 per cent per year) between 1999 and 2005. Thus, although income from wealth increased on average, this hides substantial variation across households.

As discussed in Section III.D, the non-home wealth annuity depends on three factors: the value and composition of households' non-home asset holdings; the real interest rates on the assets; and the expected remaining lifetime of the household. The real interest rates used in our calculations are based on long-term historical averages and are the same for 1999 and 2005, so the increase in the non-home wealth annuity cannot be attributed to a change in interest rates. We therefore investigate only the other two factors.

All else being equal, the mean non-home wealth annuity would increase if the remaining expected lifetime of the average household decreased. A decrease in expected remaining lifetime would require that the household's asset holdings generate an income stream over a smaller number of years, so the annual income payment arising from those assets would increase. Table 11 shows that the mean remaining lifetime expected for a household did

decrease slightly from 35.7 to 34.8 years between 1999 and 2005. Small decreases in average remaining lifetime were observed for all quintiles of both LIMEW and household income.

It is also worth examining how the size and composition of households' asset holdings contributed to the large increase in the non-home wealth annuity. The average household's non-home assets (net of non-mortgage debt) increased by 6.30 per cent per year from \$155,159 in 1999 to \$223,915 in 2005 (Table 12). Average wealth increased in every non-home asset category, but the largest growth was in real estate and business assets, which grew 10.7 per cent per year, and in non-mortgage debt, which grew 8.73 per cent per year from 1999 to 2005.

B. Household Production

Mean household production in Canada declined by 1.49 per cent per year over the 1999-2005 period (Exhibit 4). If it had maintained its 1999 value, the mean LIMEW in 2005 would have been \$79,092, which is \$2,018 or 2.6 per cent above its actual 2005 value of \$77,074. LIMEW growth over the 1999-2005 period would have been 1.52 per cent per year, rather than 1.08 per cent per year. We also saw, in Section IV.C, that household production contributes more to the economic well-being of high-LIMEW households than low-income households. Household production's large decline and its "top-heavy" distribution are somewhat surprising results that warrant further investigation.

i. Decline of Household Production Over 1999-2005 Period

As discussed in Section III.F, the value of household production is based on three factors: the annual number of hours spent on household production by adults (i.e. those aged 18 and over); the base replacement wage, which is the average wage of domestic employees in Canada; and the performance index, which adjusts the base wage to account for productivity differences across individuals. Changes in any of these factors could explain the decline in mean household production over the 1999-2005 period.

Average hours of household production declined by 0.97 per cent per year, from 2,387 hours in 1999 to 2,251 hours in 2005 (Table 13). This was not attributable to a change in household size. Average hours of household production per adult within the household declined from 1,226 hours to 1,162 hours over the period (Table 13a), and the mean number of adults per household was 1.9 in both 1999 and 2005 (Table 14).

In addition, the imputed hourly value of household production declined from \$9.81 in 1999 to \$9.51 in 2005 (Table 15) (in 2000 dollars). This was entirely due to a decline in the real value of the base wage from \$9.19 in 1999 to \$8.78 in 2005.²² The impact of the performance index on growth in the imputed hourly value of household production was positive. The performance index increased the imputed wage of the average household by 6.8 per cent in 1999 and 8.3 per cent in 2005 (Table 15a).²³

Overall, the decline in household production was driven by declines in both hours of household production and the hourly valuation. Table 16 summarizes the drivers of the 1.49 per cent annual decline in mean household production over the 1999-2005 period. The decline in the real value of the base wage accounted for 0.75 percentage points of the annual decline, while the decline in hours of household production contributed 0.97 percentage points to the decline. The performance index was the only factor that contributed positively to growth of household production over the period (by 0.23 per cent per year).

ii. Inequality in Household Production

As noted in Section IV.C, household production contributes more to the economic well-being of high-LIMEW households than low-income households (Table 3). There are three factors that could explain this inequality in household production across the LIMEW distribution. The first is the fact that household production is a large component of the LIMEW in Canada (30 per cent) and that we would expect households with high household production to be at the top of the LIMEW distribution and vice versa, all else being equal. Second, average household size may be larger at the top of the LIMEW distribution than at the bottom. This would lead to higher average household production (and base income and income from wealth) for those households because they have more people to engage in production. Finally, the performance index increases the imputed hourly value of household production for high-income and high-

²² These correspond to the 1999 and 2005 current Canadian dollar values of \$10.88 and \$11.73 per hour given earlier in the report. Those values were converted to 2000 Canadian dollars using the Canadian CPI, then to 2000 US dollars using the Canada-US personal consumption-based PPP from the OECD. The decline in the real wage reflects the fact that nominal wage growth among Canadian domestic employees did not outpace inflation between 1999 and 2005.

²³ These values are computed by comparing the imputed hourly values in Table 15 with the base wages. As such, they reflect both the performance index itself *and* the imposition of the lower bounds on the imputed hourly wage (at the value of the labor force-weighted average of provincial minimum wages) after the performance index was applied. See the discussion in Section III.F.

education households. This “builds in” a positive correlation between household production and the other large LIMEW components, base income and income from wealth.

To address these issues, we estimate four versions of mean household production for all households and by LIMEW quintiles. Table 17 presents the results. The baseline estimates are the standard estimates that we have already discussed. They use the performance index and do *not* adjust for household size. There is significant inequality in the distribution of these baseline household production estimates across the LIMEW quintiles. The ratio of mean baseline household production in the top and bottom LIMEW quintiles (hereafter called the 80/20 ratio) is 9.2 for 1999 and 10.2 for 2005.

The first alternative measure (Alternative 1) controls for differences in household size by using an equivalence scale (the same scale we have used throughout the report for our equivalent income measures). As expected, the average value of the equivalence scale (which reflects both the size and the composition of households) is larger for high-LIMEW households than for low-LIMEW households (Table 18). As a result, the use of the equivalence scale dramatically reduces inequality in household production. The 80/20 ratio decreases from 9.2 to 5.2 in 1999, and from 10.2 to 5.6 in 2005 (Table 17).

In the second alternative measure (Alternative 2), the performance index is eliminated. Every individual is assigned the same imputed hourly value for his or her household production; namely, the base wage. Alternative 2 does not use an equivalence scale, so comparisons between Alternative 2 and the baseline estimates capture the impact of the performance index on household production inequality. The performance index increases the hourly value of household production in the top LIMEW quintile by 32.3 per cent relative to the base wage in 2005, but decreases the hourly value for bottom-quintile households by 14.0 per cent in that same year (Table 15a).

The Alternative 2 results show a decline in the 80/20 ratio from 9.2 (the baseline) to 6.0 in 1999 and from 10.2 to 7.0 in 2005 (Table 17). This is a somewhat smaller decrease in inequality than that from the equivalence scale.

The third alternative (Alternative 3) shows the combined impact of the adjustment for household size and the performance index. The performance index is not used, but the equivalence scale is. The two adjustments reduce the 80/20 ratio from 9.2 to 3.5 in 1999 and from 10.2 to 4.0 in 2005. In other words, the two adjustments reduce the inequality of household

production across the LIMEW distribution (as measured by the 80/20 ratio) by 61 per cent relative to its baseline level in 2005.

The remaining inequality is partly attributable to the first factor mentioned above. Household production is a substantial component of the LIMEW, and we would expect households with high household production to appear at the top of the LIMEW distribution (and vice versa), all else being equal. We cannot perform a simple adjustment to measure the impact of this selection issue. To provide some idea of its importance, we compute the four household production measures by household pre-tax income quintiles rather than LIMEW quintiles (Table 17a). Since household production is not a component of household pre-tax money income, we would not necessarily expect the inequality of household production across LIMEW quintiles to carry over to household income quintiles. In addition, since PFI is composed of all the same elements as LIMEW except for household production, we also examine inequality of household production across PFI quintiles, in order to more clearly isolate the effect of the selection issue.

Indeed, comparing the baseline estimates from Tables 17 and 17a suggests that the selection issue is a substantial source of observed inequality across the LIMEW distribution. The baseline 80/20 ratio falls from 9.2 to 2.9 in 1999 and from 10.2 to 2.9 in 2005 when we switch to household pre-tax income quintiles. Adjusting for household size and removing the performance index almost entirely eliminates the remainder of the inequality, with Alternative 3 indicating 80/20 ratios of 1.2 in both 1999 and 2005.

The results across PFI quintiles are almost identical (Table 17b). Switching to PFI quintiles from LIMEW quintiles results in a decrease in the baseline 80/20 ratio from 9.2 to 3.2 in 1999, and from 10.2 to 3.4 in 2005. As with household pre-tax income quintiles, Alternative 3 shows almost no inequality. Indeed, the 80/20 ratio of household production across PFI quintiles falls to 1.3 in 1999 and 1.5 in 2005 for this measure of household production.

In order to put the previous discussion into context, it is also worth examining the inequality of these household production estimates across households. The 80/20 ratios calculated for this purpose show similar inequality patterns across household production quintiles as they do across income quintiles (Table 17c). For example, the 80/20 ratio decreases from 26.1 to 13.1 in 1999 when moving from the baseline estimate to Alternative 3, while in 2005 it falls from 46.0 to 22.7.

Furthermore, moving from the baseline estimate to Alternative 1, the Gini index of household production falls from 0.478 to 0.436 in 1999 and 0.511 to 0.474 in 2005 (Table 17c). In contrast to the 80/20 ratio, the Gini index indicates that the performance index has larger effects than the equivalence scale in terms of decreasing inequality in household production, as moving from the baseline to Alternative 2 further lowers the Gini index to 0.420 in 1999 and to 0.456 in 2005. However, just as in the 80/20 ratio, the reduction in inequality from applying the equivalence scale and removing the performance index is also marked in the Gini index, which falls to 0.383 in 1999 and to 0.424 in 2005.

Thus, household production shows not only substantially greater inequality across LIMEW quintiles than other income quintiles, but it also demonstrates significant inequality across households. Additionally, in both cases inequality in household production grows between 1999 and 2005 and the performance index increases the inequality of household production.

It is also interesting to see how the alternative method of valuing production affects the inequality of the LIMEW. Table 19 outlines the results of estimating LIMEW with the alternative household production measures. When no equivalence scale is employed, the standard LIMEW (which includes the performance index) has a Gini index of 0.340 in 1999 and 0.357 in 2005, while the alternative LIMEW (which does not use the performance index) has a Gini index of 0.314 in 1999 and 0.338 in 2005. This difference is driven by the lower inequality observed in estimates of household production that do not use the performance index. Examining the LIMEW estimates that also include the equivalence scale yields the same pattern. In addition, all LIMEW estimates show less inequality than the other income measures considered in Table 19, demonstrating the equalizing effect of any measure of household production.

Moreover, alternative LIMEW estimates make it clear that other, more standard measures of income (such as base income and after-tax income) substantially underestimate the growth in inequality between 1999 and 2005. While base income shows an increase in inequality of 0.82 per cent between these years, LIMEW shows an increase of 5.04 per cent and alternative LIMEW shows an increase of 7.67 per cent. Indeed, equivalence scale adjusted alternative LIMEW shows an increase in inequality of 10.67 per cent, while equivalence scale adjusted base income indicates an increase of just 0.77 per cent between these years. Thus, alternative methods of valuing household production demonstrate not only lower inequality than

the standard LIMEW and other income measures, but also greater growth in inequality between 1999 and 2005.

These results highlight the importance of household size and the performance index. Although cross-household comparisons are sensitive to differences in household size and composition, equivalence scale adjustments are meant to capture economies of scale in consumption, and it is not clear that this same scale can be applied to household production. Therefore, this report has followed Wolff *et al.* (2009) in focusing on unadjusted measures rather than equivalent measures. In terms of the performance index, this section has demonstrated that it builds a substantial degree of inequality into the household production component of the LIMEW. It is worth reconsidering whether or not this is desirable, especially given the crude nature of the performance index and the lack of direct data on individual productivity in household production.

VI. CONCLUSION

The Levy Institute Measure of Economic Well-being (LIMEW) is a comprehensive household-level measure of command over resources. It consists of several components: money income, including earnings and interpersonal transfers; government transfers net of all taxes; imputed annual income from wealth, including owner-occupied housing and non-home assets; the value of government consumption expenditures undertaken on behalf of households; and the value of household production. The LIMEW is one of a number of measures of economic well-being that have been developed in recent years with the aim of expanding the scope of economic well-being beyond the conventional measures such as per-capita GDP.

Our purpose in this report was to produce and present estimates of the LIMEW and its components for a representative sample of Canadian households in the years 1999 and 2005. The estimates were based on several high quality surveys produced by Statistics Canada, augmented by data from other sources (mainly other data produced by Statistics Canada). Care was taken to ensure that the Canadian estimates would be, to the furthest extent possible, comparable with the estimates produced by the Levy Institute for the United States in 2000 and 2004.

The results indicate that there was only modest growth in the average Canadian household's total command over economic resources over the six years between 1999 and 2005. The mean value of the LIMEW in Canada was \$72,254 in 1999 (in 2000 US dollars) and \$77,074 in 2005. Over the 1999-2005 period, the mean LIMEW increased by 1.08 per cent per year. The median values were \$63,350 in 1999 and 65,902 in 2005; increasing 0.66 per cent per year over the 1999-2005 period. Measures that fail to account for wealth, public consumption and household production overstate the growth of economic well-being over the period.

Inequality in household command over resources increased slightly over the 1999-2005 period. Nevertheless, in both 1999 and 2005 the total LIMEW was more equally distributed across Canadian households than more common income measures such as after-tax income.

The average household's command over economic resources was lower in Canada than in the United States in both 1999 and 2005. The median LIMEW for the United States was \$69,514 in 2000 (in 2000 US dollars), 9.7 per cent higher than the Canadian median LIMEW of \$63,350 in 1999. The US median LIMEW in 2004 was \$71,599, 8.6 per cent higher than the Canadian median of \$65,902 in 2005.

There are a number of avenues for future research building on our work. First, a longer Canadian LIMEW time series would be valuable. The fact that we have estimates only for 1999 and 2005 prevents us from using the LIMEW to analyze long-term trends in the economic well-being of Canadian households. Estimates for earlier years would be useful even if they were of markedly lower quality than the 1999 and 2005 estimates.

It would also be useful to compare the LIMEW to other comprehensive indicators of economic well-being. The Index of Economic Well-being (IEWB), developed by the CSLS, encompasses many of the same elements as the LIMEW but uses a very different methodology for aggregating across different factors that affect economic welfare. Interesting comparisons could be drawn between the LIMEW and the IEWB in both empirical and theoretical terms. In empirical terms, do the LIMEW and the IEWB produce the same rankings of countries or of regions within Canada? If not, why?

On theoretical grounds, the two indicators differ along a number of dimensions. The relative weights assigned to different domains of economic well-being are explicitly subjective in the IEWB, while the LIMEW (being a dollar-denominated indicator) assigns "market-determined" weights to its components. What are the strengths and weaknesses of each approach and what impact does the difference have on the results? The IEWB incorporates

several non-monetary factors that influence well-being (e.g. unemployment and economic insecurity). These important factors are not explicitly included in the LIMEW. On the other hand, the LIMEW is arguably more effective than the IEWB in approaching economic well-being from the perspective of individual households. All these differences could have interesting implications for the measurement of economic well-being and could facilitate the improvement of both indicators.

Finally, there remains room for technical improvements in the LIMEW. If possible, defined benefit pension plans should be excluded from household wealth (in order for the Canadian estimates to be consistent with the US estimates). For both Canada and the United States, it is not clear that the use of long-run historical average interest rates for the rates of return on assets is appropriate given the structural changes that have occurred in recent decades (particularly with respect to monetary policy and inflation). Better data for allocating some categories of public expenditure to the household sector and across households (e.g. public expenditure on air transportation) would be desirable. Finally, the approach to the valuation of household production warrants reconsideration. It would be worthwhile to examine further the issue of whether the valuation method should account for the unobservable efficiency and productivity differences among individuals. Even if such differences were to be taken into account, it is worth investigating alternatives to the admittedly crude performance index that is currently used.

REFERENCES

- Applied Research Associates, Inc. 2007. *Estimation of Road Cost Allocation Between Light Vehicles and Heavy Vehicles in Canada*.
- Chawla, R. K. and T. Wannell, 2003. "Property Taxes," *Perspectives on Labour and Income*, pp. 12-19.
- Chen, Chau-Nan, Tien-Wang Tsauro and Tong-Shieng Rhai. 1982. "The Gini Coefficient and Negative Income," *Oxford Economic Papers*, New Series Vol. 34, No. 3, pp. 473-478.
- Fraumeni, B. M. 2008. "Household Production Accounts for Canada, Mexico, and the United States: Methodological Issues, Results, and Recommendations," 30th General Conference of the International Association for Research in Income and Wealth, Portoroz, Slovenia. <http://www.iariw.org/papers/2008/fraumeni.pdf>
- Gillespie, W. I. 1980. *The Redistribution of Income in Canada*. Ottawa: Gage Publishing Limited.
- Hagerbaumer, James B. 1977. "The Gini Concentration Ratio and the Minor Concentration Ratio: A Two-Parameter Index of Inequality," *Review of Economics and Statistics*, Vol. 59, No. 3, pp. 377-379.
- Health Canada 2001. "Health Expenditures in Canada by Age and Sex: 1980-81 to 2000-01," August. http://www.hc-sc.gc.ca/hcs-sss/alt_formats/hpb-dgps/pdf/pubs/2001-exp-dep-1980/2001-exp-dep-1980-eng.pdf.
- Kum, Hyunsub, and Thomas Masterson. 2008. "Statistical Matching Using Propensity Scores: Theory and Application to the Levy Institute Measure of Economic Well-Being." Working Paper 535. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College. http://www.levyinstitute.org/pubs/wp_535.pdf.
- Mackenzie, Hugh, and Richard Shillington 2009. "Canada's Quiet Bargain: The Benefits of Public Spending," Canadian Centre for Policy Alternatives, April. http://www.policyalternatives.ca/sites/default/files/uploads/publications/National_Office_Pubs/2009/Benefits_From_Public_Spending.pdf.
- Manga, P. 1978. *The Income Distribution Effect of Medical Insurance in Ontario*. Toronto: Ontario Economic Council.
- Masterson, Thomas 2010. "Quality of Match for Statistical Matches Used in the 1999 and 2005 LIMEW Estimates for Canada." Working Paper 615. Annandale-on-Hudson, NY: Levy Economics Institute of Bard College. http://www.levyinstitute.org/pubs/wp_615.pdf.
- Osberg, Lars, and Andrew Sharpe 2009a. "New Estimates of the Index of Economic Well-being for Canada and the Provinces, 1981-2008," Centre for the Study of Living Standards Research Report 2009-10, December. <http://www.csls.ca/reports/csls2009-10.pdf>.

- Osberg, Lars, and Andrew Sharpe 2009b. “New Estimates of the Index of Economic Well-being for Selected OECD Countries, 1980-2007,” Centre for the Study of Living Standards Research Report 2009-11, December. <http://www.csls.ca/reports/csls2009-11.pdf>.
- Ross, Chris, and Alexander Murray (2010) “Aggregate Measures of Income and Output in Canada and the United States: Implications for Productivity and Living Standards,” *International Productivity Monitor*, No. 19, Spring, pp. 20-39.
- Sharpe, Andrew, Jean-Francois Arsenault and Peter Harrison 2008. “The Relationship between Labour Productivity and Real Wage Growth in Canada and OECD Countries,” Centre for the Study of Living Standards Research Report 2008-8, December. <http://www.csls.ca/reports/csls2008-8.pdf>.
- Sharpe, Andrew, and Jean-Francois Arsenault 2009. “Living Standards Domain of the Canadian Index of Well-being,” Centre for the Study of Living Standards Research Report 2009-4, June. <http://www.csls.ca/reports/csls2009-4.pdf>.
- Statistics Canada 1999. “A Comparison of the Results of the Survey of Labour and Income Dynamics (SLID) and the Survey of Consumer Finances (SCF) 1993-1997: Update,” Catalogue No. 75F0002MIE-99007. <http://www.statcan.gc.ca/pub/75f0002m/75f0002m1999007-eng.pdf>.
- Statistics Canada 2001. “Survey of Financial Security: Estimating the Value of Employer Pension Plan Benefits—A Discussion Paper,” Catalogue No. 13F0026MIE-01002, February. <http://www.statcan.gc.ca/pub/13f0026m/13f0026m2001002-eng.pdf>.
- Statistics Canada 2007. “Pension plans in Canada,” *The Daily*, June 21.
- Statistics Canada 2008a. “Workplace and Employee Survey Compendium,” Catalogue No. 71-585-X. <http://www.statcan.gc.ca/pub/71-585-x/71-585-x2008001-eng.pdf>.
- Statistics Canada 2008b. “Summary Public School Indicators for the Provinces and Territories, 1999/2000 to 2005/2006,” Catalogue No. 81-595-M—No. 067. <http://www.statcan.gc.ca/pub/81-595-m/81-595-m2008067-eng.pdf>.
- Statistics Canada 2009a. “SPSD/M: Product Overview,” available at: <http://www.statcan.gc.ca/microsimulation/pdf/spsdm-bdmmps-overview-vuedensemble-eng.pdf>.
- Statistics Canada 2009b. “Financial Management System (FMS),” Catalogue No. 68F90023X. <http://www.statcan.gc.ca/pub/68f0023x/68f0023x2006001-eng.pdf>.
- Transport Canada 2007a. “Transportation in Canada: An Overview—Addendum.” <http://www.tc.gc.ca/media/documents/policy/add2007-e.pdf>.
- Transport Canada 2007b. “Estimation of Road Cost Allocation between Light Vehicles and Heavy Vehicles in Canada.”

- U.S. Census Bureau 2001. "Experimental Poverty Measures: 1999," *Current Population Reports*, October. <http://www.census.gov/prod/2001pubs/p60-216.pdf>.
- Veldhuis, Niels, and Michael Walker 2006. "Tax Facts 14," The Fraser Institute. http://www.fraserinstitute.org/commerce.web/product_files/TaxFacts14.pdf.
- Wolff, Edward N. 1996. "International Comparisons of Wealth Inequality," *Review of Income and Wealth* Vol. 42, No. 4, pp. 433-451. <http://roiw.org/1996/433.pdf>.
- Wolff, Edward N., Ajit Zacharias and Thomas Masterson 2009. "Long-Term Trends in the Levy Institute Measure of Economic Well-being (LIMEW), United States, 1959-2004." Working Paper 556. Annandale-on-Hudson, NY: The Levy Institute of Bard College. http://www.levyinstitute.org/pubs/wp_556.pdf.
- Zacharias, Ajit, Edward N. Wolff and Thomas Masterson 2009. "New Estimates of Economic Inequality in America, 1959-2004," Annandale-on-Hudson, NY: The Levy Economic Institute of Bard College. http://www.levyinstitute.org/pubs/lmw_apr_09.pdf.

Appendix 1: A Detailed Outline of the Estimation of Public Consumption

Household public consumption is estimated in three stages. First, aggregate public consumption is estimated with a detailed breakdown by the function of the spending. Second, expenditures within each functional category are attributed in whole or in part to the household sector. Expenditures attributed to the non-household sector (that is, the business sector or the foreign sector) are not included in the LIMEW. In the final stage, the household sector's shares of government expenditure in each functional category are distributed across households according to category-specific criteria. This appendix provides detail about how each of these stages was carried out.

A. Calculating Aggregate Government Expenditure by Function

As noted in the main text, our main source of data on aggregate public expenditure by function is the FMS, accessed in CANSIM Tables 385-0001 and 385-0002. The breakdown of public expenditure by category and subcategory is in several cases insufficiently detailed for our purposes. We require a highly detailed breakdown because, in order to maximize the comparability of our Canadian estimates with the US LIMEW estimates, the distribution of expenditures between the household and non-household sectors and across households within the household sector must in some cases differ by subcategory. In cases in which we require a more detailed breakdown than that which the FMS data provide, we augmented the FMS data with data from other sources.

i. Additional Data Sources

As subcategories of spending on protection of persons and property are to be allocated differently between the household sector and non-household sector, a breakdown into subcategories was required. Unfortunately, the consolidated figures do not contain a breakdown of protection of persons and property into its subcategories. In the US LIMEW half of the expenditure on policing and firefighting was allocated to the household sector. Only federal expenditure on policing was reported in 385-0002. We retrieved the series CANSIM Table 254-0002, "Trends in police expenditures for Canada." We used this to augment our data on expenditure on police. Expenditure for firefighting is only recorded for local government expenditure in 385-0002, so we assumed that firefighting is paid for at a local level.

Insufficient detail is available in the key CANSIM tables about the breakdown of government expenditure on transportation. Therefore, this was supplemented with a provincial breakdown of transportation expenditures from Table G7 of *Transportation in Canada 2007*, available at <http://www.tc.gc.ca/policy/anre/menu.htm>.

In order to keep the Canadian LIMEW estimates consistent with the American estimates, the allocation of government expenditure on conservation and industry should differ by subcategory. But, provincial and local spending in 385-0001 is not given by subcategory, so the distribution across subcategories was assumed to be the same as that for federal expenditure as found in 385-0002. Similarly, for the environment category the distribution between its subcategories was assumed to be the same as the federal government.

In cases in which alternative data sources could not be found, we generated estimates of expenditures by subcategory by distributing total category expenditures across the subcategories.

This was done in the calculation of expenditures net of intergovernmental transfers. The calculation of federal expenditure minus transfers to lower levels of government (as described in the main text) was insufficiently detailed for our purposes. There exists a more detailed federal expenditure function in CANSIM Table 385-0002. Using this table we assumed the distribution between subcategories of federal government spending minus transfers was same as the distribution between subcategories of federal government spending including transfers.

B. Allocating Government Expenditures to the Household Sector

As noted in the main text, the two largest expenditure categories—education and health—are allocated almost entirely to the household sector (and much of health expenditure is considered part of non-cash government transfers). This section addresses the allocation of the other spending categories between the household and non-household sectors.

When the data were available, provincial government expenditure was allocated separately by province. For example provincial government expenditure on agriculture was allocated by provinces by the share of net program benefits in that province which went to unincorporated farms. Federal government expenditure is allocated by the weighted average of allocation of provincial government expenditure (if it varies by province).

Consistent with the allocation of US government expenditure in Appendix Table 3, the government expenditure categories of general government, employment and immigration, and foreign affairs and international assistance were allocated to the non-household sector. The spending categories of labor and regional planning and development were allocated to the household sector, consistent with the allocation of general economic and labor affairs in the US LIMEW. Government expenditure on research is mostly transfers to institutions, so we allocated the spending category of research establishments to the non-household sector. Consistent with the US LIMEW, social services, recreation and culture, and housing are entirely allocated to the household sector. The undefined category of “other expenditures” (not a category in the NIPA tables) was allocated to the non-household sector.

We allocated public expenditure in the “protection of persons and property” category by subcategory. Consistent with LIMEW estimates in the United States, national defense, law courts, and corrections and rehabilitation were allocated to the non-household sector, but both policing and firefighting were allocated half to the household sector and half to the non-household sector. Although there were no equivalent categories in the United States LIMEW, regulatory measures and other protection of persons were also allocated 50:50 because of the allocation of other similar subcategories of protection of persons and property.

Transportation and communication were allocated by subcategory. We have yet to locate appropriate data on passenger versus cargo air travel use, so for preliminary purposes government expenditure on air is allocated a third to the household sector. This is consistent with the US LIMEW. Public expenditure on roads was allocated, by province, by the estimated share of cost of roads that were created by passenger vehicles. This is estimated in Transport Canada (2007b).

Government expenditure on rail was allocated according to the fraction of rail car-kilometers which were passenger car-kilometers using CANSIM Tables 404-0014 & 404-0015. This was to keep the allocation consistent with the LIMEW for the US, which allocated according to share of passenger-car miles in total car-miles.

Consistent with the American LIMEW, government funding of water transportation is entirely allocated to the non-household sector and spending on transit is entirely allocated to the household sector. There are no categories of government spending in the American LIMEW

equivalent to government expenditure on telecommunication and other transport communication, so we allocated both to the non-household sector.

Resource conservation and industrial development were allocated by subcategory. Trade and industry, tourism and promotion, other resource conservation and industrial development were allocated to the non-household sector. In the LIMEW of the United States, agriculture was allocated by share of family farms in total sales of farm product. However, because government funding may not be proportional to total sales, we allocated (by province) government expenditure on agriculture by the share of net program benefits which went to unincorporated farms (CANSIM Table 200-24 and 200-34). As in the United States, we allocated the categories of forestry and fish and game to the household sector. We allocated public expenditure on mining entirely to the non-household sector. In the US LIMEW, government expenditure on energy was allocated by share of household sector in total energy consumption (39 per cent in 1982). So, we allocated public expenditure on oil and gas and water power according to the share of household sector in energy consumption (22 per cent in Canada in 2005) (CANSIM Table 353-0032).

Public expenditure on the environment was allocated by subcategory. In the United States LIMEW, government funding of water supply facilities was allocated by domestic-use share of total deliveries from the public water supply. The spending category in Canada, water purification and supply, is allocated by household sector water usage.

In the US LIMEW, the government spending subcategory of pollution control and abatement was allocated by the average share of the household sector in the production of four categories of pollution: air pollution, CO₂ emissions, water pollution, and municipal solid wastes. Comparable figures do not exist in Canada for the household share of all those forms of pollution. So, we allocated government expenditure on pollution control by the household's sector's share of CO₂-equivalent emissions production (CANSIM Table 353-0034). The subcategory of other environmental services was allocated by residential share of waste disposal.

There are some categories of government expenditure which do not need to be allocated between sectors. Payments of debt consist of transfers to individuals, firms or governments and general transfer payments consist entirely of transfer payments to other levels of government. Thus these categories contain no government expenditure on goods and services.

C. Distributing Government Expenditures across Households

Policing, firefighting, regulatory measures, other government expenditure on protection of persons and property, labor, fish and game, forestry, mining, and recreation and culture were assumed to be distributed on a per capita basis.

Government expenditure on pollution control, and other environment was distributed by income. Specifically, it is allocated by ecological footprint by income decile. We used estimates from *Size Matters: Canada's Ecological Footprint by Income*, a 2008 Canadian Centre for Policy Alternatives study. It defines an ecological footprint as "... *the biologically productive space in per capita global hectares needed to provide the resources for a nation's total consumption and to absorb the waste that it generates.*" Government expenditure on the remaining sub-category of environmental spending, water was randomly distributed to those we are attributing municipal water supply usage according to percentage of households in the province who have a municipal water supply as their primary source, using 2007 data. (CANSIM Table 153-0062) Then the amount distributed to those we assume are using municipal water supply is proportional to the amount they spend on water and sewage (from the SHS).

Consumption microdata surveys, the 1999 and 2005 Surveys of Household Spending (SHS) were used to estimate the distribution of some categories of public spending. In energy, recreation and culture, government expenditure was assumed to be proportional to private expenditure by region and income quintile.

Canada does not have a personal transportation survey indicating the kilometers Canadians travel by method of transportation comparable to the National Household Travel Survey (NHTS) for the United States. The NHTS was used to distribute government expenditure on transportation in the United States.

For distributing government expenditure on roads, first we attributed car-ownership to families based on the probability of car-ownership by region and decile in the SHS. Then we distributed government expenditure on roads to those attributed car-ownership in proportion to the average amount spent on gasoline by car-owners in their respective region and income decile.

We distributed government spending on air and rail transportation in a similar manner, but because the public use micro-data for the SHS does not separately report expenditure on rail and air, we used the household expenditure on inter-city transportation for these two categories combined. First we attributed inter-city travel to families according to the proportion of households in the SHS by region and income decile that have positive expenditure on intercity-

travel. We then distributed government expenditure on rail and air to those families according to the average expenditure on inter-city travel by their respective regions and deciles.

Similarly for energy, the distribution of public expenditure was assumed to be proportional to private expenditure in that category.

Other government expenditures were distributed so that the organizational costs of transfer programs were distributed to those receiving the transfers. Thus the non-transfer expenditures of the CPP/QPP programs (1.6 per cent of the expenditures) were distributed to those receiving benefits. Likewise the organization costs of social services were distributed to those receiving social assistance. Government spending on agriculture was distributed such that it is proportional to household farm income.

Appendix 2: Tables and Appendix Tables

List of Tables

Table 1: Mean and Median Estimates of the LIMEW and Other Income Measures, Canada, 2000 US Dollars, 1999 and 2005

Table 2: Comparison of Canada and the United States by Median LIMEW and Other Income Measures, 2000 US Dollars, 1999/2000 and 2004/2005

Table 3: Composition of the LIMEW by LIMEW Quintile, Canada, Per cent, 1999 and 2005

Table 3a: Components of the LIMEW by LIMEW Quintile, Canada, 2000 US Dollars, 1999 and 2005

Table 4: Gini Coefficients for the LIMEW and Other Income Measures, Canada, 1999 and 2005

Table 5: 90/10 Ratios for the LIMEW, it's Components, and Other Income Measures, Canada, 1999 and 05

Table 6: Quintile Shares of Aggregate Income by Income Measure, Canada, Per cent, 1999 and 2005

Table 7a: Mean LIMEW and Other Income Measures by Age of Head of Household, Canada, 2000 US Dollars, 1999 and 2005

Table 7b: Median LIMEW and Other Income Measures by Age of Head of Household, Canada, 2000 US Dollars, 1999 and 2005

Table 8a: Mean LIMEW and Other Income Measures by Educational Attainment of Head of Household, Canada, 2000 US Dollars, 1999 and 2005

Table 8b: Median LIMEW and Other Income Measures by Educational Attainment of Head of Household, Canada, 2000 US Dollars, 1999 and 2005

Table 9a: Mean LIMEW and Other Income Measures by Region, Canada, 2000 US Dollars, 1999 and 2005

Table 9b: Median LIMEW and Other Income Measures by Region, Canada, 2000 US Dollars, 1999 and 2005

Table 10: Composition of Households, 1999 and 2005

Table 11: Remaining Life Expectancy by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

Table 12: Mean household Non-home Assets Holdings by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

Table 12a: Composition of Household Non-home Assets Holdings by LIMEW and Household Income Quintiles, Canada, Per cent, 1999 and 2005

Table 13: Mean Annual Hours of Household Production by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

Table 13a: Mean Annual Hours of Household Production Per Adult by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

Table 14: Mean Number of Adults per Household by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

Table 15: Mean Hourly Value of Household Production by LIMEW and Household Income Quintile, Canada, 1999 and 2005

Table 15a: Impact of the Performance Index on Hourly Imputed Wage, Canada, Per cent, 1999 and 2005

Table 16: Decomposition of the Change in Household Production over 1999-2005 Period, Canada

Table 17: Alternative Household Production Measures by LIMEW Quintiles, Canada, 1999 and 2005

Table 17a: Alternative Household Production Measures by Household Income Quintiles, Canada, 1999 and 2005

Table 17b: Alternative Household Production Measures by PFI Quintiles, Canada, 1999 and 2005

Table 17c: Alternative Household Production Measures by Household Production Quintiles and Gini Coefficient, Canada, 1999 and 2005

Table 18: Mean Equivalence Scale Value by LIMEW and Household Income Quintile, Canada, 1999 and 2005

Table 19: Gini Coefficients for the Alternate LIMEW Estimates, LIMEW and Other Income Measures, Canada, 1999 and 2005

List of Appendix Tables:

Appendix Table 1: Net Government Expenditure on Goods and Services, Canada, Millions of Current Dollars, 1999/2000

Appendix Table 2: Net Government Expenditure on Goods and Services, Canada, Millions of Current Dollars, 2005/2006

Appendix Table 3: Allocation and Distribution of Public Consumption, LIMEW for the United States

Appendix Table 4: Allocation and Distribution of Public Consumption, LIMEW for the Canada

Appendix Table 5: Allocation of Government Expenditure to Household and Non-Household Sectors, 1999

Appendix Table 6: Allocation of Government Expenditure to Household and Non-Household Sectors, 2005

Appendix Table 7: Rates of Return for Assets, Canada, Per Cent per Year, 1999 and 2005

Table 1: Mean and Median Estimates of the LIMEW and Other Income Measures, Canada, 2000 US Dollars, 1999 and 2005

Measure	1999		2005		Growth, 1999-2005 (Per cent per year)	
	Mean	Median	Mean	Median	Mean	Median
LIMEW	72,254	63,350	77,074	65,902	1.08	0.66
Base Income	36,264	27,556	39,984	29,707	1.64	1.26
Income from Wealth	11,261	5,264	13,136	4,563	2.60	-2.35
Net Government Expenditure	1,315	2,134	2,557	2,771	11.73	4.45
Household Production	23,415	18,031	21,397	15,578	-1.49	-2.41
After-tax Income	24,038	20,233	27,244	21,981	2.11	1.39
CDI	40,365	33,784	46,371	37,438	2.34	1.73
PFI	48,839	42,447	55,677	46,743	2.21	1.62

Equivalence Scale Adjusted:

LIMEW	90,796	81,916	98,291	87,362	1.33	1.08
Base Income	44,341	35,160	50,080	39,494	2.05	1.96
Income from Wealth	15,295	6,471	17,801	5,981	2.56	-1.30
Net Government Expenditure	2,681	2,836	4,100	3,851	7.34	5.23
Household Production	28,479	23,603	26,310	20,632	-1.31	-2.22
After-tax Income	29,498	25,989	34,323	29,232	2.56	1.98
CDI	51,957	44,985	60,560	50,431	2.59	1.92
PFI	62,317	55,737	71,981	62,496	2.43	1.93

Notes:

1. After-tax income is Base Income plus government cash transfers, less income taxes (federal and provincial), payroll taxes, property taxes, and consumption taxes paid by the household.
2. CDI is comprehensive disposable income. It equals after-tax income plus the value of home and nonhome wealth annuities.
3. PFI is post-fiscal income. It equals CDI plus household public consumption.
4. LIMEW is the complete Levy Institute Measure of Economic Well-being. It is the sum of base income, income from wealth, net government expenditure, and household production. Alternatively, it is equal to PFI plus household production.
5. Equivalent income measures are based on the household equivalence scale used in the U.S. Census Bureau's (2001) experimental poverty measures. The formula for the equivalence scale is as follows: A single adult is given the base value of 1.00, two adults is fixed at 1.41. For families with children the formula is $(A+0.5 \times C+0.3 \times S)^{0.7}$ Where A is the number of adults, C is the number of children and S is a dummy variable set to 1 if it is a lone parent household and 0 if it is a two-parent household.

Table 2: Comparison of Canada and the United States by Median LIMEW and Other Income Measures, 2000 US Dollars, 1999/2000 and 2004/2005

	1999/2000			2004/2005		
	Canada	United States	US-Canada Gap (Per Cent)	Canada	United States	US-Canada Gap (Per Cent)
LIMEW	63,350	69,514	9.7	65,902	71,599	8.6
PFI	42,447	52,597	23.9	46,743	53,332	14.1
CDI	33,784	43,754	29.5	37,438	43,971	17.5

Notes:

1. The US estimates are provided by the Levy Institute and were developed to be comparable with Canada.
2. Canadian estimates are for 1999 and 2005. US estimates are for 2000 and 2004.

Table 3: Composition of the LIMEW by LIMEW Quintile, Canada, Per cent, 1999 and 2005

Quintile	Mean LIMEW (2000 US Dollars)	Total	Base Income	Income from Wealth	Net Government Expenditure	Household Production
1999						
Lowest	22,564	100	46.2	11.3	18.3	24.2
Second	43,827	100	46.9	13.3	12.0	27.7
Third	63,401	100	46.5	13.2	8.8	31.5
Fourth	86,503	100	48.0	14.2	4.2	33.7
Highest	144,989	100	54.7	18.8	-8.3	34.7
All	72,254	100	50	16	2	32
2005						
Lowest	22,590	100	51.8	9.3	18.8	20.1
Second	44,753	100	50.7	11.8	13.6	24.0
Third	66,172	100	48.3	13.0	11.5	27.2
Fourth	92,222	100	50.4	14.8	5.1	29.7
Highest	159,635	100	54.5	22.6	-6.2	29.0
All	77,074	100	52	17	3	28
Equivalence Scale Adjusted:						
1999						
Lowest	45,090	100	46.3	11.5	18.8	23.5
Second	72,155	100	46.3	14.6	11.5	27.6
Third	85,425	100	45.5	14.9	8.2	31.4
Fourth	101,607	100	46.7	16.0	3.7	33.6
Highest	149,714	100	54.2	21.2	-9.4	34.0
All	90,796	100	49	17	3	31
2005						
Lowest	45,613	100	52.2	9.2	19.2	19.3
Second	75,160	100	50.3	12.8	13.2	23.7
Third	91,092	100	47.4	14.8	10.5	27.2
Fourth	110,863	100	49.6	16.7	4.1	29.6
Highest	168,731	100	53.7	25.6	-7.3	28.0
All	98,291	100	51	18	4	27

Notes:

1. Base income is the sum of earnings, benefits, interpersonal transfers and other income.
2. Income from wealth is the sum of the annuities from non-home wealth and the imputed yearly rent on owner-occupied housing (net of mortgage and non-home debt annuities).
3. Net government expenditure government transfers plus public consumption, minus all taxes (income, property, payroll and consumption taxes).
4. Household production is the imputed value of household production.

Table 3a: Components of the LIMEW by LIMEW Quintile, Canada, 2000 US Dollars, 1999 and 2005

Quintile	Mean LIMEW (2000 US Dollars)	Base Income	Income from Wealth	Net Government Expenditure	Household Production
	A=B+C+D+E	B	C	D	E
1999					
Lowest	22,564	10,426	2,559	4,119	5,460
Second	43,827	20,570	5,830	5,274	12,153
Third	63,401	29,477	8,357	5,590	19,977
Fourth	86,503	41,507	12,272	3,607	29,117
Highest	144,989	79,346	27,287	-12,019	50,375
All	72,254	36,264	11,261	1,315	23,415
2005					
Lowest	22,590	11,710	2,096	4,245	4,539
Second	44,753	22,694	5,265	6,065	10,729
Third	66,172	31,955	8,602	7,588	18,026
Fourth	92,222	46,486	13,654	4,707	27,375
Highest	159,635	87,076	36,062	-9,821	46,318
All	77,074	39,984	13,136	2,557	21,397

Equivalence Scale Adjusted:

1999					
Lowest	45,090	20,868	5,168	8,455	10,599
Second	72,155	33,393	10,537	8,288	19,937
Third	85,425	38,905	12,702	6,993	26,825
Fourth	101,607	47,411	16,273	3,787	34,136
Highest	149,714	81,135	31,796	-14,121	50,904
All	90,796	44,341	15,295	2,681	28,479
2005					
Lowest	45,613	23,829	4,204	8,770	8,810
Second	75,160	37,838	9,624	9,896	17,802
Third	91,092	43,219	13,520	9,540	24,813
Fourth	110,863	54,972	18,507	4,540	32,844
Highest	168,731	90,542	43,152	-12,245	47,282
All	98,291	50,080	17,801	4,100	26,310

Table 4: Gini Coefficients for the LIMEW and Other Income Measures, Canada, 1999 and 2005

	1999	2005	Per Cent Change
Base Income	0.546	0.550	0.82
After-tax Income	0.496	0.490	-1.19
CDI	0.382	0.399	4.48
PFI	0.345	0.365	5.80
LIMEW	0.340	0.357	5.04

Equivalence Scale Adjusted:

Base Income	0.531	0.535	0.77
After-tax Income	0.468	0.459	-2.05
CDI	0.345	0.360	4.45
PFI	0.288	0.307	6.30
LIMEW	0.266	0.285	7.01

Note: For each variable, there is a small proportion of households with negative values. The Gini coefficient may overstate the degree of inequality when negative income values are present in the data (indeed, negative values can lead to Gini coefficients greater than one). Although the number of households having negative values is relatively small, the Gini coefficients reported in this table should be interpreted with some caution.

Table 5: 90/10 Ratios for the LIMEW, its Components, and Other Income Measures, Canada, 1999 and 05

	1999			2005			Per Cent Change in 90/10 Ratio
	Bottom Decile (2000 US Dollars)	Top Decile (2000 US Dollars)	90/10 Ratio	Bottom Decile (2000 US Dollars)	Top Decile (2000 US Dollars)	90/10 Ratio	
LIMEW	16,014	175,829	5.43	15,978	196,307	5.89	8.47
Base Income	293	121,893	152.77	-243	136,771	n.a.	n.a.
Income from Wealth	-585	53,262	-334.95	-770	70,528	-380.09	13.5
Net Government Expenditure	-43,355	36,547	-1.242	-45,357	41,447	-1.3	6.0
Household Production	639	72,491	26.45	126	69,707	56.27	112.7
After-tax Income	-6,317	72,105	29.70	-5,601	82,967	16.55	-44.27
CDI	4,680	109,037	6.86	5,367	132,832	7.06	2.84
PFI	9,104	120,969	5.55	9,803	146,634	5.86	5.58
Equivalence Scale Adjusted:							
LIMEW	31,425	196,258	3.24	31,835	224,179	3.48	7.60
Base Income	739	146,733	83.92	-405	166,913	n.a.	n.a.
Income from Wealth	-929	76,432	-313.41	-1,213	98,353	-315.10	0.5
Net Government Expenditure	-57,826	52,088	-1.358	-61,755	59,048	-1.42	4.8
Household Production	1,202	80,798	16.49	226	79,051	38.31	132.4
After-tax Income	-10,379	84,218	19.51	-9,487	99,363	11.47	-41.19
CDI	8,565	133,003	4.75	9,811	164,695	4.91	3.33
PFI	17,235	143,066	3.48	18,727	175,897	3.65	4.74

Note: The 90/10 ratio is the ratio of the 90th percentile to the 10th percentile, where the 90th (10th) percentile is the LIMEW value above (below) which only 10 per cent of households' LIMEW values lie.

Table 6: Quintile Shares of Aggregate Income by Income Measure, Canada, Per cent, 1999 and 2005

	1999					2005				
	Quintiles					Quintiles				
	1	2	3	4	5	1	2	3	4	5
LIMEW	6.2	12.1	17.5	23.9	40.1	5.9	11.6	17.2	23.9	41.4
Base Income	0.3	4.4	15.3	26.8	53.1	-0.1	5.0	14.9	26.5	53.7
Income from Wealth	-0.5	1.9	9.5	21.8	67.2	-0.6	1.0	7.2	19.5	73.0
Household Production	1.9	8.1	15.4	25.2	49.4	1.1	6.9	14.6	25.4	51.9
After-tax Income	-0.8	9.1	16.9	26.3	48.5	0.1	9.0	16.2	25.9	48.8
CDI	4.8	11.5	16.8	23.6	43.3	4.7	11.0	16.2	23.2	44.9
PFI	6.0	12.3	17.4	23.7	40.6	5.7	11.7	16.9	23.5	42.3
Equivalence Scale Adjusted:										
LIMEW	9.1	14.4	18.1	22.7	35.8	8.5	13.9	17.8	22.6	37.2
Base Income	0.5	5.1	15.8	26.7	51.9	-0.1	5.6	15.8	26.5	52.1
Income from Wealth	-0.6	1.9	8.7	20.3	69.6	-0.7	1.0	6.9	18.5	74.3
Household Production	2.6	9.6	16.6	25.1	46.0	1.6	8.3	15.8	25.7	48.6
After-tax Income	-0.9	11.2	17.7	25.9	46.1	0.3	11.1	17.1	25.3	46.3
CDI	6.1	12.7	17.3	23.1	40.7	6.0	12.4	16.7	22.6	42.3
PFI	8.2	14.1	17.9	22.6	37.2	7.8	13.7	17.4	22.4	38.8

Note: Quintiles are defined with respect to each income measure. For example, the base income shares are based on household base income quintiles, while LIMEW shares are based on household LIMEW quintiles, and so on. We do not compute shares for net government expenditure because aggregate net government expenditure is approximately zero. Net government expenditure is large and positive at the top of the distribution and large and negative at the bottom. Expressing this in terms of shares of the aggregate amount is not particularly informative.

Table 7a: Mean LIMEW and Other Income Measures by Age of Head of Household, Canada, 2000 US Dollars, 1999 and 2005

	1999						2005					
	< 35	35-44	45-54	55-64	< 65	65+	< 35	35-44	45-54	55-64	< 65	65+
LIMEW	60,465	82,080	85,993	64,907	74,246	63,755	62,393	84,957	93,662	69,521	78,451	71,154
Base Income	35,051	50,332	53,304	31,695	43,830	3,987	39,067	51,994	60,139	38,160	48,208	4,628
Income from Wealth	5,604	9,488	12,487	11,552	9,459	18,944	5,893	10,583	14,684	13,100	10,918	22,670
Net Government Expenditure	-59	-3,707	-7,066	-2,461	-3,318	21,074	406	-498	-5,956	-4,281	-2,452	24,091
Household Production	19,868	25,966	27,267	24,122	24,275	19,751	17,027	22,878	24,797	22,542	21,777	19,765
After-tax Income	24,327	32,238	33,025	18,798	28,092	6,749	27,496	34,628	38,896	22,744	31,690	8,128
CDI	32,961	45,372	49,223	34,895	41,179	36,896	36,852	49,881	58,103	40,689	46,948	43,890
PFI	40,596	56,114	58,725	40,785	49,972	44,004	45,366	62,079	68,866	46,979	56,674	51,388

Equivalence Scale Adjusted:

LIMEW	76,922	91,023	95,725	87,242	87,610	104,386	81,643	95,656	106,127	93,082	94,301	115,446
Base Income	47,172	58,348	61,529	41,831	53,394	5,727	53,976	61,949	70,840	51,088	60,242	6,389
Income from Wealth	7,079	10,683	14,285	16,164	11,418	31,831	7,708	12,073	16,756	17,799	13,249	37,374
Net Government Expenditure	-1,593	-5,758	-9,411	-3,091	-5,073	35,757	-949	-3,068	-8,524	-5,557	-4,456	40,888
Household Production	24,264	27,749	29,322	32,339	27,871	31,071	20,908	24,702	27,055	29,752	25,267	30,795
After-tax Income	32,169	37,205	37,811	24,319	33,915	10,660	37,508	40,888	45,653	30,288	39,327	12,808
CDI	42,911	51,908	56,387	47,037	49,715	61,517	49,524	58,070	67,625	54,999	57,834	72,283
PFI	52,658	63,274	66,403	54,904	59,738	73,315	60,735	70,954	79,072	63,330	69,034	84,652

Table 7b: Median LIMEW and Other Income Measures by Age of Head of Household, Canada, 2000 US Dollars, 1999 and 2005

	1999						2005					
	< 35	35-44	45-54	55-64	< 65	65+	< 35	35-44	45-54	55-64	< 65	65+
LIMEW	53,658	74,194	76,175	53,642	65,333	56,070	54,564	78,278	79,730	54,926	67,002	62,283
Base Income	29,738	43,176	46,115	19,112	36,662	1,073	33,263	44,817	49,919	25,078	38,690	0
Income from Wealth	1,218	5,379	6,373	4,808	4,368	11,613	1,064	4,373	5,288	4,480	3,613	12,457
Net Government Expenditure	-374	-2,848	-5,307	-621	-2,331	21,630	-12	-857	-4,400	-1,528	-1,459	24,647
Household Production	14,785	20,337	21,070	18,548	18,691	15,344	11,120	17,427	18,197	16,123	15,643	15,295
After-tax Income	21,474	28,507	29,702	14,223	24,717	7,380	23,682	30,306	33,470	16,880	26,948	8,371
CDI	27,706	39,110	42,224	27,725	34,721	30,843	31,390	42,063	46,406	29,706	37,938	35,570
PFI	35,915	50,762	51,864	33,241	43,785	38,158	40,431	55,870	57,733	35,152	47,787	42,962

Equivalence Scale Adjusted:

LIMEW	70,602	82,273	87,088	77,524	79,208	93,900	74,235	87,256	92,733	79,865	83,818	102,997
Base Income	40,757	49,238	53,959	26,889	45,401	1,643	47,786	52,378	60,350	35,570	50,725	0
Income from Wealth	1,714	6,053	7,396	6,943	5,215	19,643	1,402	5,171	6,430	6,320	4,578	20,846
Net Government Expenditure	-516	-3,127	-6,235	-834	-2,957	39,048	-26	-1,140	-5,247	-2,401	-2,047	45,241
Household Production	19,970	23,377	24,808	26,904	23,184	26,023	15,580	20,136	21,671	23,232	19,714	25,479
After-tax Income	28,851	32,375	34,611	19,771	30,666	13,284	33,571	35,699	39,384	25,029	34,374	15,788
CDI	37,193	44,742	49,255	39,123	42,835	52,059	43,499	49,595	56,001	43,559	48,290	58,982
PFI	47,375	56,476	59,700	47,542	53,395	64,179	55,243	63,271	67,836	52,238	59,997	71,834

Table 8a: Mean LIMEW and Other Income Measures by Educational Attainment of Head of Household, Canada, 2000 US Dollars, 1999 and 2005

	1999					2005						
	Less than High School	High School Diploma	Non-university Post-Secondary Certificate	University Certificate or Degree	Less than High School	High School Diploma	Non-university Post-Secondary Certificate	University Certificate or Degree	Less than High School	High School Diploma	Non-university Post-Secondary Certificate	University Certificate or Degree
LIMEW	58,811	67,077	71,377	98,450	62,971	72,460	75,114	98,351	62,971	72,460	75,114	98,351
Base Income	16,304	33,708	38,805	61,306	17,983	34,204	40,327	64,773	17,983	34,204	40,327	64,773
Income from Wealth	10,071	9,365	9,104	19,046	12,512	13,755	12,487	14,706	12,512	13,755	12,487	14,706
Net Government Expenditure	14,007	2,493	-214	-14,072	16,621	4,660	1,985	-11,383	16,621	4,660	1,985	-11,383
Household Production	18,429	21,512	23,682	32,171	15,855	19,840	20,314	30,255	15,855	19,840	20,314	30,255
After-tax Income	14,927	23,122	25,467	34,666	17,181	23,779	27,439	39,089	17,181	23,779	27,439	39,089
CDI	32,543	37,166	38,854	57,477	38,435	43,781	45,206	58,473	38,435	43,781	45,206	58,473
PFI	40,382	45,566	47,695	66,279	47,116	52,619	54,800	68,096	47,116	52,619	54,800	68,096

Equivalence Scale Adjusted:

LIMEW	82,567	83,001	86,613	119,605	88,526	92,167	94,724	119,928	88,526	92,167	94,724	119,928
Base Income	19,755	41,181	47,085	75,819	22,055	42,084	51,117	80,804	22,055	42,084	51,117	80,804
Income from Wealth	15,445	12,483	11,882	24,763	18,791	19,018	16,560	18,664	18,791	19,018	16,560	18,664
Net Government Expenditure	22,484	3,482	-441	-18,589	26,324	6,573	2,362	-15,503	26,324	6,573	2,362	-15,503
Household Production	24,883	25,855	28,088	37,612	21,355	24,492	24,685	35,963	21,355	24,492	24,685	35,963
After-tax Income	19,509	28,159	30,696	42,240	22,879	29,340	34,744	48,108	22,879	29,340	34,744	48,108
CDI	46,858	47,022	48,213	71,789	55,352	57,126	58,422	72,731	55,352	57,126	58,422	72,731
PFI	57,684	57,146	58,526	81,993	67,171	67,675	70,039	83,965	67,171	67,675	70,039	83,965

Table 8b: Median LIMEW and Other Income Measures by Educational Attainment of Head of Household, Canada, 2000 US Dollars, 1999 and 2005

	1999				2005			
	Less than High School	High School Diploma	Non-university Post-Secondary Certificate	University Certificate or Degree	Less than High School	High School Diploma	Non-university Post-Secondary Certificate	University Certificate or Degree
LIMEW	52,828	60,290	66,057	86,898	54,102	63,322	65,999	84,859
Base Income	1,631	27,556	34,424	51,121	3,444	25,827	32,938	53,288
Income from Wealth	5,020	3,566	4,680	10,676	3,905	5,329	4,362	5,152
Net Government Expenditure	15,906	2,209	-895	-9,937	18,258	4,316	1,389	-8,392
Household Production	14,943	17,020	18,776	24,393	12,201	15,302	15,015	22,787
After-tax Income	11,193	20,506	23,402	31,304	12,725	20,153	23,625	34,270
CDI	28,082	31,892	34,473	47,648	31,115	35,549	37,401	47,513
PFI	36,042	40,474	43,418	56,792	39,601	44,818	46,840	56,726

Equivalence Scale Adjusted:

LIMEW	76,702	76,407	80,544	106,615	79,922	82,228	85,407	106,237
Base Income	2,454	34,897	43,025	65,275	5,503	33,954	44,539	70,386
Income from Wealth	7,072	4,451	5,443	12,251	5,644	6,695	5,585	6,619
Net Government Expenditure	25,922	3,024	-1,090	-13,051	29,380	5,679	1,892	-11,096
Household Production	21,936	22,012	23,603	30,544	18,121	19,631	19,362	29,114
After-tax Income	18,090	26,087	29,220	39,770	20,418	25,631	31,371	44,629
CDI	42,191	41,568	43,569	61,533	46,612	48,168	49,145	61,849
PFI	53,452	52,178	54,544	72,025	59,370	58,863	61,334	73,753

Table 9a: Mean LIMEW and Other Income Measures by Region, Canada, 2000 US Dollars, 1999 and 2005

	1999					2005				
	Atlantic	Quebec	Ontario	Prairies	British Columbia	Atlantic	Quebec	Ontario	Prairies	British Columbia
LIMEW	68,379	64,828	79,182	71,801	70,349	65,880	66,814	84,123	80,320	78,852
Base Income	28,372	30,895	41,743	37,518	34,615	31,620	32,720	43,772	46,480	39,599
Income from Wealth	11,299	9,554	12,685	10,716	11,283	8,254	9,410	15,732	11,930	17,088
Net Government Expenditure	6,429	3,056	-979	1,427	1,138	6,363	5,980	790	1,370	435
Household Production	22,279	21,322	25,733	22,140	23,313	19,643	18,704	23,829	20,540	21,730
After-tax Income	20,943	19,871	27,634	25,152	22,630	21,384	22,709	29,431	32,291	26,616
CDI	38,044	34,378	45,363	40,734	39,077	36,330	37,952	51,345	50,115	49,198
PFI	46,100	43,505	53,449	49,661	47,037	46,237	48,110	60,294	59,780	57,122
Equivalence Scale Adjusted:										
LIMEW	85,047	84,209	96,767	91,011	90,175	84,329	88,887	104,089	103,351	101,202
Base Income	33,784	39,325	49,614	46,102	43,516	39,241	42,902	52,891	59,437	50,039
Income from Wealth	15,046	13,006	16,933	14,731	16,044	11,454	13,112	20,914	16,155	23,475
Net Government Expenditure	9,231	4,959	-230	3,093	1,959	8,945	8,732	1,877	2,299	1,178
Household Production	26,986	26,919	30,450	27,084	28,656	24,689	24,140	28,407	25,459	26,510
After-tax Income	25,460	25,499	32,835	31,201	28,304	26,987	30,017	35,698	41,459	33,727
CDI	48,499	45,630	56,775	52,964	51,694	47,855	51,567	65,105	66,045	64,950
PFI	58,061	57,290	66,317	63,927	61,519	59,641	64,747	75,682	77,892	74,692

Table 9b: Median LIMEW and Other Income Measures by Region, Canada, 2000 US Dollars, 1999 and 2005

	1999					2005				
	Atlantic	Quebec	Ontario	Prairies	British Columbia	Atlantic	Quebec	Ontario	Prairies	British Columbia
LIMEW	61,712	57,091	68,639	63,525	62,491	57,175	57,562	72,644	69,846	66,311
Base Income	20,843	22,722	33,158	29,667	26,711	22,221	23,831	33,944	35,696	29,333
Income from Wealth	5,635	3,740	6,344	5,223	5,273	2,381	3,054	6,241	4,432	5,728
Net Government Expenditure	7,430	3,852	143	1,754	1,882	7,061	5,830	1,404	1,567	1,379
Household Production	17,919	16,632	19,649	16,815	17,585	14,947	13,666	17,647	14,934	15,077
After-tax Income	18,194	17,246	23,767	21,333	19,246	17,199	19,336	23,784	26,331	21,221
CDI	32,833	28,821	37,688	34,382	33,670	30,646	31,375	41,736	41,266	38,681
PFI	41,245	38,241	45,864	43,755	41,844	39,645	41,195	50,774	51,565	47,060
Equivalence Scale Adjusted:										
LIMEW	78,404	77,241	86,426	82,096	82,608	76,991	81,332	92,352	91,159	87,887
Base Income	25,218	30,761	40,434	38,273	33,530	29,633	33,954	42,609	47,950	38,279
Income from Wealth	7,057	4,782	7,704	6,467	6,321	3,248	4,181	7,636	6,061	7,205
Net Government Expenditure	9,708	5,599	194	2,405	2,642	9,392	8,341	1,797	2,081	1,859
Household Production	23,657	22,986	24,991	22,118	23,524	19,868	19,112	22,782	19,731	20,253
After-tax Income	22,879	23,466	29,443	27,023	24,762	23,282	26,684	30,484	34,579	28,532
CDI	42,855	39,733	49,342	46,265	45,465	42,111	45,312	54,042	55,337	51,735
PFI	53,135	51,908	58,983	57,359	55,729	54,367	59,369	64,753	67,729	61,689

Table 10: Composition of Households, 1999 and 2005

	1999				2005			
	Proportion of Households	Mean Equivalence Scale	Number of Adults	Number of Children	Proportion of Households	Mean Equivalence Scale	Number of Adults	Number of Children
1 Adult, 0 Children	25.5	0.46	1.00	0.00	27.1	0.46	1.00	0.00
>1 Adult, 0 Children	41.0	0.78	2.41	0.00	42.9	0.78	2.40	0.00
1 Adult, >0 Children	4.7	0.78	1.00	1.65	4.2	0.79	1.00	1.67
>1 Adult, >0 Children	28.8	1.04	2.29	1.81	25.7	1.04	2.32	1.78
0 Adults, >0 Children	0.1	0.74	0.00	1.29	0.1	0.72	0.00	1.17
All Households	100	0.77	1.95	0.60	100	0.76	1.94	0.53

Growth, 1999-2005 (Per cent per year)			
Proportion of Households	Mean Equivalence Scale	Number of Adults	Number of Children
1 Adult, 0 Children	0.00	0.00	0.00
>1 Adult, 0 Children	-0.08	-0.09	0.00
1 Adult, >0 Children	0.05	0.00	0.17
>1 Adult, >0 Children	0.04	0.22	-0.30
0 Adults, >0 Children	-0.34	0.00	-1.58
All Households	-0.30	-0.08	-2.09

Table 11: Remaining Life Expectancy by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

Quintile Basis	Quintile					Ratio of Top to Bottom Quintile	
	All	1	2	3	4		5
	1999						
LIMEW	35.7	34.2	34.4	36.3	36.9	37.0	1.1
Household Income	35.7	27.9	30.1	39.7	41.1	39.9	1.4
	2005						
LIMEW	34.8	34.1	33.6	35.2	35.9	35.4	1.0
Household Income	34.8	26.3	30.1	39.1	40.0	38.7	1.5

Notes:

- a. Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.
- b. Remaining life expectancy is the maximum of the expected remaining years of life of the household's major income earner and his or her spouse, given their current ages. It is an estimate of the number of years that the household is expected to remain in existence.

Table 12: Mean household Non-home Assets Holdings by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

		LIMEW Quintiles					
Asset Type	Real Interest Rate	All	1	2	3	4	5
1999							
Real Estate and Business	2.20	44,196	6,868	13,776	22,139	36,074	142,134
Liquid Assets	0.03	12,743	4,728	9,790	11,516	13,511	24,170
Financial Assets	2.68	19,881	3,470	7,583	9,402	14,134	64,823
Pension Assets	2.68	90,373	17,532	41,716	65,154	105,337	222,147
Non-mortgage Debt	-4.12	12,034	6,225	7,814	10,942	13,568	21,623
2005							
Real Estate and Business	2.20	81,152	9,234	16,241	26,989	44,456	308,842
Liquid Assets	0.03	17,050	5,068	11,122	13,652	18,570	36,839
Financial Assets	2.68	26,802	2,650	5,924	11,971	18,651	94,814
Pension Assets	2.68	118,796	18,241	48,654	80,268	142,273	304,547
Non-mortgage Debt	-4.12	19,884	9,347	12,082	16,655	21,560	39,779

		Household Income Quintiles					
Asset Type	Real Interest Rate	All	1	2	3	4	5
1999							
Real Estate and Business	2.20	44,196	18,902	26,947	34,293	53,546	87,357
Liquid Assets	0.03	12,743	13,053	14,970	9,207	9,849	16,646
Financial Assets	2.68	19,881	15,239	17,959	9,355	13,617	43,289
Pension Assets	2.68	90,373	45,427	71,958	57,360	92,936	184,354
Non-mortgage Debt	-4.12	12,034	5,104	6,357	11,083	15,780	21,858
2005							
Real Estate and Business	2.20	81,152	33,139	61,713	56,322	62,963	191,728
Liquid Assets	0.03	17,050	16,120	24,543	12,810	12,484	19,313
Financial Assets	2.68	26,802	12,704	21,182	18,344	18,944	62,866
Pension Assets	2.68	118,796	59,335	99,187	81,209	122,232	232,150
Non-mortgage Debt	-4.12	19,884	8,460	11,411	17,127	22,899	39,539

Notes:

a. Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.

Table 12a: Composition of Household Non-home Assets Holdings by LIMEW and Household Income Quintiles, Canada, Per cent, 1999 and 2005

Asset Type	Real Interest Rate	LIMEW Quintiles					
		All	1	2	3	4	5
1999							
Real Estate and Business	2.20	25	18	17	19	20	30
Liquid Assets	0.03	7	12	12	10	7	5
Financial Assets	2.68	11	9	9	8	8	14
Pension Assets	2.68	50	45	52	55	58	47
Non-mortgage Debt	-4.12	7	16	10	9	7	5
2005							
Real Estate and Business	2.20	31	21	17	18	18	39
Liquid Assets	0.03	6	11	12	9	8	5
Financial Assets	2.68	10	6	6	8	8	12
Pension Assets	2.68	45	41	52	54	58	39
Non-mortgage Debt	-4.12	8	21	13	11	9	5
Household Income Quintiles							
Asset Type	Real Interest Rate	All	1	2	3	4	5
1999							
Real Estate and Business	2.20	25	19	20	28	29	25
Liquid Assets	0.03	7	13	11	8	5	5
Financial Assets	2.68	11	16	13	8	7	12
Pension Assets	2.68	50	46	52	47	50	52
Non-mortgage Debt	-4.12	7	5	5	9	8	6
2005							
Real Estate and Business	2.20	31	26	28	30	26	35
Liquid Assets	0.03	6	12	11	7	5	4
Financial Assets	2.68	10	10	10	10	8	12
Pension Assets	2.68	45	46	45	44	51	43
Non-mortgage Debt	-4.12	8	7	5	9	10	7

Notes:

a. Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.

Table 13: Mean Annual Hours of Household Production by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

Quintile Basis	Quintile						Ratio of Top to Bottom Quintile
	All	1	2	3	4	5	
1999							
LIMEW	2,387	732	1,552	2,419	3,172	4,060	5.5
Household Income	2,387	1,452	2,319	2,472	2,668	3,026	2.1
2005							
LIMEW	2,251	601	1,398	2,226	3,044	3,986	6.6
Household Income	2,251	1,373	2,188	2,202	2,565	2,929	2.1

Note: Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.

Table 13a: Mean Annual Hours of Household Production Per Adult by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

Quintile Basis	Quintile						Ratio of Top to Bottom Quintile
	All	1	2	3	4	5	
1999							
LIMEW	1,226	630	981	1,216	1,391	1,492	2.4
Household Income	1,226	1,097	1,258	1,143	1,163	1,142	1.0
2005							
LIMEW	1,162	523	888	1,123	1,340	1,470	2.8
Household Income	1,162	1,097	1,258	1,143	1,163	1,142	1.0

Note: Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.

Table 14: Mean Number of Adults per Household by LIMEW and Household Income Quintiles, Canada, 1999 and 2005

Quintile Basis	Quintile						Ratio of Top to Bottom Quintile
	All	1	2	3	4	5	
1999							
LIMEW	1.9	1.2	1.6	2.0	2.3	2.7	2.3
Household Income	1.9	1.2	1.8	2.0	2.2	2.6	2.1
2005							
LIMEW	1.9	1.1	1.6	2.0	2.3	2.7	2.4
Household Income	1.9	1.3	1.7	1.9	2.2	2.6	2.0

Note: Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.

Table 15: Mean Hourly Value of Household Production by LIMEW and Household Income Quintile, Canada, 1999 and 2005

Quintile Basis	Quintile						Ratio of Top to Bottom Quintile
	All	1	2	3	4	5	
1999							
LIMEW	9.81	7.46	7.83	8.26	9.18	12.41	1.7
Household Income	9.81	8.89	8.87	8.46	9.26	12.56	1.4
2005							
LIMEW	9.51	7.56	7.67	8.10	8.99	11.62	1.5
Household Income	9.51	8.68	8.72	8.35	8.92	11.86	1.4

Note: Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.

Table 15a: Impact of the Performance Index on Hourly Imputed Wage, Canada, Per cent, 1999 and 2005

Quintile Basis	Quintile					
	All	1	2	3	4	5
1999						
LIMEW	6.8	-18.8	-14.8	-10.1	-0.1	35.1
Household Income	6.8	-3.2	-3.4	-7.9	0.8	36.7
2005						
LIMEW	8.3	-14.0	-12.6	-7.8	2.4	32.3
Household Income	8.3	-1.2	-0.7	-4.9	1.5	35.1

Note: Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.

Table 16: Decomposition of the Change in Household Production over 1999-2005 Period, Canada

	Levels		Growth Rates (per cent per year)	Growth Contribution (per cent of annual growth rate)
	1999	2005	1999-2005	1999-2005
Mean Value of Household Production	23,415	21,397	-1.49	
Hours	2,387	2,251	-0.97	65.30
Performance Index	1.07	1.08	0.23	-15.33
Base Wage	9.19	8.78	-0.75	50.26

Table 17: Alternative Household Production Measures by LIMEW Quintiles, Canada, 1999 and 2005

Household Production Measure	Performance Index	Equivalence Scale	LIMEW Quintile					Ratio of Top to Bottom Quintile	
			All	1	2	3	4		5
			1999						
Baseline	Yes	No	23,415	5,460	12,153	19,977	29,117	50,375	9.2
Alternative 1	Yes	Yes	28,479	10,289	18,410	25,313	34,773	53,612	5.2
Alternative 2	No	No	21,929	6,381	13,849	21,626	29,419	38,371	6.0
Alternative 3	No	Yes	27,267	11,834	20,716	27,678	34,903	41,207	3.5
			2005						
Baseline	Yes	No	21,397	4,539	10,729	18,026	27,375	46,318	10.2
Alternative 1	Yes	Yes	26,310	8,859	16,028	23,950	32,750	49,966	5.6
Alternative 2	No	No	19,766	5,048	12,045	19,260	27,166	35,314	7.0
Alternative 3	No	Yes	24,807	9,678	18,181	25,562	32,085	38,530	4.0

Note: For each row, quintiles are defined with respect to the LIMEW that is computed using the measure of household production corresponding to that row.

Table 17a: Alternative Household Production Measures by Household Income Quintiles, Canada, 1999 and 2005

Household Production Measure	Performance Index	Equivalence Scale	Household Income Quintile					Ratio of Top to Bottom Quintile	
			All	1	2	3	4		5
1999									
Baseline	Yes	No	23,415	12,912	20,567	20,911	24,703	38,009	2.9
Alternative 1	Yes	Yes	28,479	22,639	29,119	25,042	27,110	38,506	1.7
Alternative 2	No	No	21,929	13,338	21,299	22,711	24,506	27,797	2.1
Alternative 3	No	Yes	27,267	23,613	30,189	27,427	27,003	28,107	1.2
2005									
Baseline	Yes	No	21,397	11,914	19,080	18,391	22,870	34,753	2.9
Alternative 1	Yes	Yes	26,310	20,752	27,247	22,449	25,805	35,315	1.7
Alternative 2	No	No	19,766	12,057	19,209	19,339	22,521	25,723	2.1
Alternative 3	No	Yes	24,807	21,254	27,506	23,712	25,400	26,174	1.2

Note: Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.

Table 17b: Alternative Household Production Measures by PFI Quintiles, Canada, 1999 and 2005

Household Production Measure	Performance Index	Equivalence Scale	PFI Quintile					Ratio of Top to Bottom Quintile	
			All	1	2	3	4		5
1999									
Baseline	Yes	No	23,415	12,444	15,974	21,794	27,013	39,854	3.2
Alternative 1	Yes	Yes	28,479	21,554	23,370	27,324	30,369	39,779	1.8
Alternative 2	No	No	21,929	12,918	17,651	22,953	26,415	29,709	2.3
Alternative 3	No	Yes	27,267	22,886	25,860	28,662	29,521	29,409	1.3
2005									
Baseline	Yes	No	21,397	10,664	14,421	20,145	25,212	36,547	3.4
Alternative 1	Yes	Yes	26,310	18,617	21,434	25,852	28,807	36,842	2.0
Alternative 2	No	No	19,766	10,692	15,482	20,484	24,358	27,817	2.6
Alternative 3	No	Yes	24,807	19,049	23,096	26,207	27,676	28,006	1.5

Table 17c: Alternative Household Production Measures by Household Production Quintiles and Gini Coefficient, Canada, 1999 and 2005

Household Production Measure	Performance Index	Equivalence Scale	All	Respective Household Production Quintile					Ratio of Top to Bottom Quintile	Gini Index
				1	2	3	4	5		
1999										
Baseline	Yes	No	23,415	2,217	9,490	18,076	29,506	57,834	26.1	0.478
Alternative 1	Yes	Yes	28,479	3,715	13,716	23,657	35,771	65,541	17.6	0.436
Alternative 2	No	No	21,929	2,572	10,691	19,337	29,564	47,970	18.7	0.420
Alternative 3	No	Yes	27,267	4,264	15,141	25,172	36,004	55,832	13.1	0.383
2005										
Baseline	Yes	No	21,397	1,208	7,410	15,668	27,213	55,516	46.0	0.511
Alternative 1	Yes	Yes	26,310	2,060	10,928	20,818	33,829	63,941	31.0	0.474
Alternative 2	No	No	19,766	1,421	8,413	16,669	26,902	45,649	32.1	0.456
Alternative 3	No	Yes	24,807	2,386	12,199	21,894	33,459	54,243	22.7	0.424

Note: Household production quintiles are based on the distribution of each respective measure.

Table 18: Mean Equivalence Scale Value by LIMEW and Household Income Quintile, Canada, 1999 and 2005

Quintile Basis	Quintile						Ratio of Top to Bottom Quintile
	All	1	2	3	4	5	
1999							
LIMEW	0.77	0.51	0.64	0.79	0.90	1.03	2.0
Household Income	0.77	0.54	0.68	0.80	0.88	0.97	1.8
2005							
LIMEW	0.76	0.50	0.63	0.77	0.88	1.01	2.0
Household Income	0.76	0.54	0.67	0.77	0.86	0.96	1.8

Note: Household income quintiles are based on total pre-tax income—that is, base income plus cash transfers from the government.

Table 19: Gini Coefficients for the Alternate LIMEW Estimates, LIMEW and Other Income Measures, Canada, 1999 and 2005

	1999	2005	Per Cent Change
Base Income	0.546	0.550	0.82
After-tax Income	0.496	0.490	-1.19
CDI	0.382	0.399	4.48
PFI	0.345	0.365	5.80
LIMEW	0.340	0.357	5.04
Alternative LIMEW 2	0.314	0.338	7.67
Equivalence Scale Adjusted:			
Base Income	0.531	0.535	0.77
After-tax Income	0.468	0.459	-2.05
CDI	0.345	0.360	4.45
PFI	0.288	0.307	6.30
LIMEW (Alternative LIMEW 1)	0.266	0.285	7.01
Alternative LIMEW 3	0.241	0.266	10.67

Note: For each variable, there is a small proportion of households with negative values. The Gini coefficient may overstate the degree of inequality when negative income values are present in the data (indeed, negative values can lead to Gini coefficients greater than one). Although the number of households having negative values is relatively small, the Gini coefficients reported in this table should be interpreted with some caution.

Alternative LIMEW 1 employs Alternative 1 for Household Production Valuation from Table 17

Alternative LIMEW 2 employs Alternative 2 for Household Production Valuation from Table 17

Alternative LIMEW 3 employs Alternative 3 for Household Production Valuation from Table 17

Appendix Table 1: Net Government Expenditure on Goods and Services, Canada, Millions of Current Dollars, 1999/2000

Column	Baseline Spending		Less Intergov't Transfers		Less Transfers to Persons		Less Gov't Sales of Goods and Services	
	1 Federal	2 L & P/T	3 Federal	4 L & P/T	5 Federal	6 L & P/T	7 Federal	8 L & P/T
Total expenditures	173,337	257,078	144,442	257,078	92,867	226,918	89,820	197,748
General gov't services	5,858	8,122	5,630	8,122	5,630	8,122	5,445	7,078
Labor	2,447	862	2,089	862	2,089	862	2,020	751
Protection	18,448	14,178	17,571	14,178	17,571	14,178	16,994	12,355
National defence	11,869		11,305		11,305		10,934	
Courts of law	309		294		294		285	
Correction services	1,684		1,604		1,604		1,551	
Policing	2,362	6,395	2,250	6,395	2,250	6,395	2,176	5,573
Firefighting		2,133		2,133		2,133		1,859
Regulatory measures	766	306	730	306	730	306	706	267
Other	1,457	103	1,388	103	1,388	103	1,342	90
Transportation and comm.	1,720	16,658	1,459	16,658	1,459	16,658	1,411	14,517
Air transport	374	62	317	62	317	62	307	54
Road transport	260	11,988	221	11,988	221	11,988	213	10,447
Public transit		2,616		2,616		2,616		2,280
Rail transport	232	5	197	5	197	5	190	5
Water transport	441	2,370	374	2,370	374	2,370	362	2,065
Telecommunications	167	384	142	384	142	384	137	335
Other	246	344	209	344	209	344	202	300
Health	1,730	63,059	1,258	63,059	1,258	63,059	1,217	54,953
Hospital care	67	21,097	63	21,097	63	21,097	61	18,385
Medical care	333	27,441	277	27,441	277	27,441	268	23,913
Preventive care	439	2,246	377	2,246	377	2,246	365	1,957
Other health services	891	12,275	541	12,275	541	12,275	523	10,697
Social services	50,386	39,115	65,929	39,115	14,354	8,955	13,883	7,804
Education	4,917	57,268	3,189	57,268	3,189	57,268	3,189	57,268
Elementary and secondary education	941	33,700	613	33,700	613	33,700	613	33,700
Postsecondary education	1,584	20,631	1,271	20,631	1,271	20,631	1,271	20,631
Special retraining services	1,658	2,488	820	2,488	820	2,488	820	2,488
Other education	734	449	485	449	485	449	485	449
Conservation & Industry	5,779	9,564	4,790	9,564	4,790	9,564	4,633	8,335
Agriculture	2,199	3,639	1,823	3,639	1,823	3,639	1,763	3,171
Fish and game	413	683	342	683	342	683	331	596
Oil and gas	86	142	71	142	71	142	69	124
Forestry	131	217	109	217	109	217	105	189

Mining	149	247	124	247	124	247	119	215
Water power	0	0	0	0	0	0	0	0
Tourism promotion	63	104	52	104	52	104	51	91
Trade and industry	1,820	3,012	1,509	3,012	1,509	3,012	1,459	2,625
Other	918	1,519	761	1,519	761	1,519	736	1,324
Environment	1,362	7,386	1,286	7,386	1,286	7,386	1,244	6,437
Water	627	3,400	592	3,400	592	3,400	573	2,963
Pollution control	155	841	146	841	146	841	142	732
Other	580	3,145	548	3,145	548	3,145	530	2,741
Recreation and culture	3,159	6,792	3,117	6,792	3,117	6,792	3,015	5,919
Housing	1,928	2,807	712	2,807	712	2,807	689	2,446
Foreign affairs	4,309	0	4,291	0	4,291	0	4,150	0
Regional development	377	1,422	340	1,422	340	1,422	329	1,239
Research establishments	1,872	244	1,707	244	1,707	244	1,651	213
Transfers	24,797		0		0		0	
Debt charges	44,140	28,634	31,539	28,634	31,539	28,634	30,504	24,953
Other expenditures	34	393	108	393	108	393	104	342

Notes:

1. Data are for the fiscal year beginning in April 1999. Statistics Canada does not offer public expenditure data on a calendar year basis broken down by detailed expenditure category.
2. Baseline federal spending data are from CANSIM Table 385-0002. Baseline provincial and local data are from CANSIM Table 385-0001.
3. Federal expenditures net of intergovernmental transfers are calculated by subtracting provincial and local spending from consolidated federal/provincial/local government spending (CANSIM Table 385-0001). It is assumed that no intergovernmental transfers occur at the provincial/local levels.
4. Transfers to persons are from CANSIM Table 384-0009 and are attributed entirely to the Social Services category of spending.
5. Data on government sales of goods and services are from CANSIM Table 385-0001. Sales are allocated across spending categories according to categories' shares of total government expenditures net of intergovernmental and personal transfers.

Appendix Table 2: Net Government Expenditure on Goods and Services, Canada, Millions of Current Dollars, 2005/2006

Column	Government Expenditure		Less Intergov't Transfers		Less Transfers to Persons		Less Gov't Sales of Goods and Services	
	1 Federal	2 L & P/T	3 Federal	4 L & P/T	5 Federal	6 L & P/T	7 Federal	8 L & P/T
Total expenditures	215,205	351,068	165,601	351,068	97,778	315,015	93,883	275,534
General gov't services	8,891	11,458	8,616	11,458	8,616	11,458	8,273	10,022
Labor	1,976	904	1,576	904	1,576	904	1,513	791
Protection	25,485	19,149	24,150	19,149	24,150	19,149	23,188	16,749
National defense	15,075		14,285		14,285			
Courts of law	515		488		488			
Correction services	2,078		1,969		1,969			
Policing	3,512	9,282	3,328	9,282	3,328	9,282	3,195	8,119
Firefighting		3,094		3,094		3,094		2,706
Regulatory measures	1,296	435	1,228	435	1,228	435	1,179	380
Other	3,009	228	2,851	228	2,851	228	2,738	199
Transportation and comm.	3,096	22,662	2,176	22,662	2,176	22,662	2,089	19,822
Air transport	370	91	260	91	260	91	250	79
Road transport	434	15,782	305	15,782	305	15,782	293	13,804
Public transit	552	3,346	388	3,346	388	3,346	373	2,927
Rail transport	248	23	174	23	174	23	167	20
Water transport	607	291	427	291	427	291	410	254
Telecommunications	393	2,367	276	2,367	276	2,367	265	2,070
Other	492	649	346	649	346	649	332	568
Health	21,823	95,244	4,287	95,244	4,287	95,244	4,116	83,307
Hospital care	89	32,844	81	32,844	81	32,844	78	28,728
Medical care	699	41,647	642	41,647	642	41,647	616	36,427
Preventive care	1,071	2,990	1,054	2,990	1,054	2,990	1,012	2,615
Other health services	19,964	17,764	2,509	17,764	2,509	17,764	2,409	15,538
Social services	65,211	51,980	79,606	51,980	11,783	15,927	11,314	13,931
Education	5,385	81,362	3,398	81,362	3,398	81,362	3,263	71,165
Elementary and secondary education	1,110	46,421	713	46,421	713	46,421	685	40,603
Postsecondary education	1,634	31,647	1,240	31,647	1,240	31,647	1,191	27,681
Special retraining services	1,765	2,833	765	2,833	765	2,833	735	2,478
Other education	876	459	681	459	681	459	654	401
Conservation & Industry	9,815	11,931	7,829	11,931	7,829	11,931	7,517	10,436
Agriculture	3,744	4,594	2,986	4,594	2,986	4,594	2,867	4,018
Fish and game	471	578	376	578	376	578	361	505
Oil and gas	758	930	605	930	605	930	581	813
Forestry	271	333	216	333	216	333	208	291

Mining	70	86	56	86	56	86	54	75
Water power	1	1	1	1	1	1	1	1
Tourism promotion	100	123	80	123	80	123	77	107
Trade and industry	3,094	3,796	2,468	3,796	2,468	3,796	2,370	3,321
Other	1,306	1,602	1,042	1,602	1,042	1,602	1,000	1,402
Environment	1,738	11,687	1,471	11,687	1,471	11,687	1,412	10,222
Water	627	4,216	531	4,216	531	4,216	510	3,688
Pollution control	624	4,196	528	4,196	528	4,196	507	3,670
Other	487	3,275	412	3,275	412	3,275	396	2,864
Recreation and culture	4,169	10,288	3,980	10,288	3,980	10,288	3,821	8,999
Housing	2,119	3,847	680	3,847	680	3,847	653	3,365
Foreign affairs	5,586		5,585		5,585		5,363	
Regional development	256	2,025	210	2,025	210	2,025	202	1,771
Research	3,222	609	1,250	609	1,250	609	1,200	533
Transfers	24,328		0		0		0	
Debt charges	32,076	25,513	21,456	25,513	21,456	25,513	21,456	25,513
Other expenditures	101	1,713	25	1,713	25	1,713	25	1,713

Notes:

1. Data are for the fiscal year beginning in April 2005. Statistics Canada does not offer public expenditure data on a calendar year basis broken down by detailed expenditure category.
2. Baseline federal spending data are from CANSIM Table 385-0002. Baseline provincial and local data are from CANSIM Table 385-0001.
3. Federal expenditures net of intergovernmental transfers are calculated by subtracting provincial and local spending from consolidated federal/provincial/local government spending (CANSIM Table 385-0001). It is assumed that no intergovernmental transfers occur at the provincial/local levels.
4. Transfers to persons are from CANSIM Table 384-0009 and are attributed entirely to the Social Services category of spending.
5. Data on government sales of goods and services are from CANSIM Table 385-0001. Sales are allocated across spending categories according to categories' shares of total government expenditures net of intergovernmental and personal transfers.

Appendix Table 3: Allocation and Distribution of Public Consumption, LIMEW for the United States

No.	Function	Allocation	Distribution
General public service			
1	Executive and legislative	Non-household	
2	Tax collection and financial management	Non-household	
3	Other public service	Non-household	
4	National defense	Non-household	
5	Public order and safety		
		Household and non-household (50:50)	Population
6	Police	Household and non-household (50:50)	Population
7	Fire	Non-household	
8	Law courts	Non-household	
8	Prisons	Non-household	
Economic affairs			
9	General economic and labor affairs	Household	Population
10	Agriculture	Share of family farms in total sales of farm products	Farm income
11	Energy	Share of household sector in total energy consumption	Energy expenditures
12	Water resources (federal only)	Households	Population
13	Land conservation and management (federal only)	Households	Population
14	Forestry (State and local only)	Households	Population
15	Fish and game (State and local only)	Households	Population
16	Pollution control and abatement	Share of household sector in total pollution ¹	Polluting consumption expenditures ²
17	Highways	Share of passenger vehicles in total highway costs	Vehicle miles traveled
18	Air	Share of commercial air carrier miles in total air carrier miles	Person-miles traveled
19	Railroad	Share of passenger car-miles in total car-miles	Person-miles traveled
20	Public transit	Household	Person-miles traveled
21	Postal service (federal only)	Household	Expenditures on postage and stationery
22	Parking facilities (state and local only)	Household	Vehicle owning households
23	Liquor stores (state and local only)	Household	Expenditures on alcohol
24	Miscellaneous commerce (state and local only)	Household	Population
Housing and Community Services			
25	Water supply (state and local only)	Domestic-use share of total deliveries from the public water supply	Expenditures on water and other public services by households receiving public water supply
26	Sewerage (state and local only)	Domestic share of total water discharges from all sectors	Expenditures on water and other public services by households using public sewerage
27	Solid waste management (state and local only)	Residential share of total municipal solid waste	Expenditures on nondurables and entertainment (less fees and admissions)
28	Other housing and community development	Household	Recipients of government housing assistance
Health			
29	Public Health	Household	Population

30	Public hospitals	Household	Population
31	Occupational safety and health	Household	Employed
32	Administrative costs of Medicare	Household	Medicare recipients
33	Medical and related services for veterans	Household	Veterans
34	Recreation and culture	Household	Population
Education			
35	Elementary and secondary education	Household	Elementary and secondary public-school students
36	Higher education	Household and non-household	Higher education students residing in households
37	Other education	Household	Population
38	Libraries (State and local only)	Household	Population
Income Security			
39	Disability assistance	Household	Recipients of public disability assistance
40	Retirement	Household	Recipients of Social Security
41	Welfare and social services	Household	Recipients of means-tested public assistance
42	Unemployment	Household	Recipients of unemployment insurance
43	Other public welfare	Household	Recipients of means-tested public assistance
44	Welfare institutions (state and local only)	Household	Population

Appendix Table 4: Allocation and Distribution of Public Consumption, LIMEW for the Canada

Function	Allocation	Distribution
General gov't services	Non-household	
Labor	Household	Population
Protection		
National defense	Non-household	
Courts of law	Non-household	
Correction services	Non-household	
Policing	50:50	Population
Firefighting	50:50	Population
Regulatory measures	50:50	Population
Other	50:50	Population
Transportation and comm.		
Air transport	1/3	Personal expenditure on air, by decile and province
Road transport	Share of road costs	Personal expenditure on gasoline, by decile and province
Public transit	Household	Personal expenditure on transit, by decile and province
Rail transport	Passenger Car Share	Personal expenditure on rail, by decile and province
Water transport	Non-Household	
Telecommunications	Non-household	
Other	Non-household	
Health	Household	Health Costs by Age and Sex, Health Canada
Social services	Household	Household's share of aggregate government transfers to households
Education	Household	
Elementary and secondary education		School aged Child in HH, SLID
Postsecondary education		Member of HH enrolled in PS, SLID
Special retraining services		
Other education		
Conservation & Industry		
Agriculture	Share of agr. Programs	Proportional to farm income
Fish and game	Household	Population
Oil and gas	Share of energy consumption	Household energy Consumption, by income deciles by province
Forestry	Household	Population
Mining	Non-Household	

Water power	Share of energy consumption	Household energy consumption, by income deciles by province
Tourism promotion	Non-household	
Trade and industry	Non-household	
Other	Non-household	
Environment		Ecological footprint by decile, CCPA
Water	Water use	
Pollution control	Share of GHG emission	
Other	Share of Waste Disposal	
Recreation and culture	Household	By household personal expenditure on Recreation, SHS: RE module
Housing	Household	Receiving Gov't Reduced Rent
Foreign affairs	Non-household	
Regional development	Non-household	
Research establishments	Non-household	
Transfers		
Debt charges	n/a	
Other expenditures	Non-household	

Appendix Table 5: Allocation of Government Expenditure to Household and Non-Household Sectors, 1999

Geographical Region	Cnd.	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
General gov't services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Labor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Protection											
National defense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Courts of law	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Correction services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Policing	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Firefighting	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Regulatory measures	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Other	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Transportation and comm.											
Air transport	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Road transport	0.51	0.57	0.51	0.56	0.59	0.46	0.41	0.48	0.52	0.52	0.52
Public transit	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Rail transport	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Water transport	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Telecommunications	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Health	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Social services	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Education	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Conservation & Industry											
Agriculture	0.47	0.44	0.33	0.33	0.43	0.47	0.44	0.40	0.47	0.51	0.31
Fish and game	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Oil and gas	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Forestry	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Mining	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Water power	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Tourism promotion	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Trade and industry	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Environment																				
Water	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
Pollution control	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Other	0.38	0.60	0.52	0.44	0.52	0.37	0.38	0.38	0.51	0.37	0.38	0.51	0.37	0.38	0.51	0.37	0.38	0.51	0.37	0.36
Recreation and culture	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Housing	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Foreign affairs	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Regional development	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Research establishments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transfers																				
Debt charges	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other expenditures	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix Table 6: Allocation of Government Expenditure to Household and Non-Household Sectors, 2005

Geographical Region	Cnd.	Nfld.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.
General gov't services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Labor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Protection											
National defense	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Courts of law	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Correction services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Policing	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Firefighting	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Regulatory measures	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Other	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Transportation and comm.											
Air transport	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Road transport	0.51	0.57	0.51	0.56	0.59	0.46	0.41	0.48	0.52	0.52	0.52
Public transit	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Rail transport	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Water transport	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Telecommunications	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Health	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Social services	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Education	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Conservation & Industry											
Agriculture	0.48	0.25	0.48	0.51	0.24	0.48	0.46	0.47	0.49	0.51	0.30
Fish and game	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Oil and gas	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Forestry	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Mining	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Appendix Table 7: Rates of Return for Assets, Canada, Per Cent per Year, 1999 and 2005

	Nominal	Real
Real Estate and Business	6.59	2.20
Liquid Assets	4.32	0.03
Financial Assets	7.09	2.68
Pension Assets	7.09	2.68
Mortgage Debt	0.00	-4.12
Other Debt	0.00	-4.12

The rates of return are computed as follows:

Real Estate and Business: The method used in the US LIMEW could not be replicated in Canada due to the unavailability of data. We therefore estimate the rate of return by scaling the return on financial assets (see below) by 0.93, which is the ratio of the return on real estate and business assets to the return on financial assets in the US LIMEW.

Liquid Assets: Equal to the mean of monthly year-over-year interest rates on non-checkable savings deposits with chartered banks, 1960-2009 (CANSIM series v122493).

Financial Assets: A weighted sum of the following:

- Canada treasury bills (2 month), 1960-2009 (CANSIM series v122554)
- Prime corporate paper rate (1 month), Canada, 1960-2009 (CANSIM series v122509)
- Conventional mortgage (5 year) with a chartered bank, 1973-2009 (CANSIM series v122521)
- Unweighted average of returns on 1-3, 3-5, 5-10 and 10+ year Government of Canada marketable bonds, 1960-2009 (CANSIM series v122485, v122486, v122487 and v122558)
- Combined time series on provincial bond yields:
 - 1960-1979: McLeod, Young and Weir bond yield average (provincials) (CANSIM series v122488)
 - 1980-2007: Scotia Capital Inc. average weighted yield, provincials (long-term) (CANSIM series v122517)
- McLeod, Young and Weir bond yield average (municipals), 1960-1988 (CANSIM series v122489)
- Scotia Capital Ltd. Average weighted yield, all corporations (long-term) (CANSIM series v122518)
- Year-over-year growth in the Toronto Stock Exchange index (1960-2007) (CANSIM series v7668)
- Year-over-year growth in the S&P 500 index, 1960-2007 (<http://www.gpoaccess.gov/eop/tables09.html>)

The weights are based on the shares of each asset type in their combined total.

Pension Assets: Assumed equal to the return on financial assets (see above).