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A Social Accounting Matrix for Canada

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A Social Accounting Matrix for Canada

by
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Canadian System of National Accounts
Statistics Canada

Executive Summary

The paper presents the first Social Accounting Matrix (SAM) compiled for Canada. Using data for the year 2000, it demonstrates the feasibility of constructing a SAM for the national economy. Being an extension of the existing national economic accounts, a SAM is a consistent and complete representation of the socio-economic system that captures the interdependencies of institutional groups. It is both a conceptual framework and a data system that can support analyses of socio-economic policy issues, used to evaluate the socio-economic impact of exogenous changes, or serve as a database for general equilibrium modelling. This paper presents a macro SAM with three micro extensions. The first application expands the household sector through integration with household surveys, showing incomes, outlays, savings and fiscal transfers of the sector by income quintile and other household attributes. This expansion could be conducted within national accounting conventions reflected in the aggregate SAM. However, a market-transaction approach is used for this exercise that introduces a new perspective on household savings that diverge from the national accounting concepts and CSNA sub-control totals. The second application expands employment income by age, gender, educational attainment, and industry of employment. The third application shows product taxes by type of expenditure and type of tax.

Introduction

A SAM is a framework for analytical presentation of economic data jointly with other relevant data—such as data on social conditions or the environment—as an integrated whole. Such presentations go beyond what is available today from published national accounting statistics. Being an extension of existing national accounts, SAMs empower users of the accounts to more easily analyse socio-economic questions, to supply the information needed for policy development or to build general equilibrium models.

SNA 1993 describes SAM in its broadest form, namely as a "matrix presentation of national accounting data:

> "A SAM is defined here as the presentation of SNA accounts in a matrix which elaborates the linkages between a supply and use table and institutional sector accounts[1]. (SNA 1993, 20.4)

A SAM depicts the entire circular flow of income for an economy in a (square) matrix format. It shows production leading to the generation of incomes which, in turn, are allocated to institutional sectors[2]. In addition, it shows the redistribution of income leading to disposable income of institutional sectors. These incomes are either spent on products or saved. Expenditures by institutional sectors lead to production by domestic industries as well as supply from imports. This format, unlike a T-Account, identifies who pays, how much is paid, and to whom the payment is made.

One decisive advantage of SAM is its flexibility of classification of social and economic statistics at meso-level, designed expressly for given analytical objectives. For instance, the cells in Table 2, that show the compensation of employees (3a,2a/2c) in a macro SAM, can be expanded in an applied SAM to reveal the breakdown of this total by industry and by age group, thereby allowing an analysis of how different industries serve as income sources for different generations of workers. SNA 1993 describes such an applied SAM as follows:

> In many instances SAMs have been applied to an analysis of interrelationships between structural features of an economy and the distribution of income and expenditure among household groups. Evidently, SAMs are closely related to national accounts whereby their typical focus on the role of people in the economy may be reflected by, among other things, extra breakdowns of the household sector and a disaggregated representation of labour markets (i.e., distinguishing various categories of employed persons). " (SNA 1993, 20.4)

A key advantage of a SAM over the existing supply and use tables lies in the fact that it can use a disaggregated household sector when it is used for modelling the impact of exogenous changes on the system. Unlike a closed input-output model that uses a simple household sector, a SAM is capable of modelling inter-sectoral impacts that incorporates a complex household sector with different types of households (e.g., households with different income levels) displaying different induced expenditure patterns. Roland-Host (1990, p. 125) suggests that an inter-industry analysis which omits these considerations "can be seriously misleading".

This paper presents two versions of SAM for Canada as described in 1993 SNA: an aggregate SAM and a disaggregate SAM. The latter is a compact disaggregation of SAM designed to illustrate its potential to expand along any dimension. In addition, the paper presents three applications of SAM. The aggregate and disaggregate SAM mainly use data from the Canadian System of National Accounts' (CSNA) integrated economic accounts recently completed at Statistics Canada (See Siddiqi, 2004).

The first of the three applications presented here shows the income, expenditures and savings of the household sector by income quintile and other household attributes for the year 2000. This involves an integration of macro level national accounts data on this sector with Statistics Canada's Survey of Household Spending (SHS). The second application expands aggregate employment income into industries and attributes[3]such as gender, age, educational attainment and hours-worked. It permits a range of analyses, such as how average hourly earnings vary depending on age, gender and education. The third application is constructed around indirect taxes, showing the how the aggregate amount of commodity taxes varies by type of tax (or jurisdiction) and the tax base to which it is applied. These applications of SAM are built through integration of SNA data sources (e.g., as input-output tables) and other Statistics Canada sources such as the Survey of Household Spending, Survey of Employment, Payrolls and Hours, Labour Force Survey, and external data sources such as income tax data from Canada Revenue Agency.

Background

Historically, SAMs have been developed for and used by developing countries more than developed economies. Given the greater prevalence of activist and centrally driven economic development policies in these countries, it is not surprising to find that SAMs have been used for economic planning in many developing nations (see Pyatt and Round). Resosudarmo and Thorbecke (1996) discuss the analysis of the impact of environmental pollution abatement policies on household incomes for different socio-economic classes in Indonesia. More recent years have seen a resurgence of interest in applications of SAM for socioeconomic analysis[4]. In 1996, the UK Office of National Statistics developed a pilot SAM for the United Kingdom for the year 1993 (Stuttard and Frogner, 2003). A detailed SAM was built for trade policy analysis for the USA for reference year 1988 by Reinert and Roland-Holst (1992) who suggest that SAMs are rapidly becoming the standard data construct for general equilibrium models of trade policy. SAMs are now annually compiled by Statistics Netherlands for the domestic economy and Italian and British statistical offices are working on regular production of SAMs (Timmerman and Vande Ven).[5] In addition, regional SAMs have been built, in both developing and developed countries, for interregional and regional economic analysis (Thorbeck, p. 317).

The Aggregate SAM for Canada (Table 1)

In a SAM, rows record receipts (incomings) by origin, and columns record outlays (outgoings) by destination. Total receipts (row sums) equal total outlays (column sums). Accordingly, each account in SAM is represented by a row and column pair, identically numbered. The SAM framework of 1993 SNA distinguishes eleven accounts, enumerated in Tables 1 and 2 along both the rows and columns. Table 1A presents the same information as in Table 1 while separating the government tax account.

In this section of the paper we describe the aggregate SAM for Canada for reference year 2000. The aggregate SAM provides coherent economic aggregates without sector or institutional detail. Each entry is in fact the grand total of a sub-matrix. For example, the entry described as “output” in the second row, first column of Table 1, is the sum total of all goods and services domestically produced in Canada for reference year 2000 contained in the Make matrix of the Canadian input-output tables. In that matrix, domestic production is articulated for 727 goods and services produced by 300 industries.

The entry described as Intermediate Consumption (first row, second column) represents the sum total of the intermediate use matrix of the Canadian input-output tables. The entry denoted gross Value Added represents primary inputs cross-classified by industry.

Imports of goods and services are shown on the 10th row, 1st column. In the input-output tables imports are potentially classified by 727 commodities. The import duties included in the value of imports in the input-output tables are removed here and shown with commodity taxes at row 4 and column 1.

Row 1 of the table shows the use of goods and services at purchaser’s prices at $2,479 billion. The breakdown of this figure into intermediate consumption (1,2) final consumption,(1,6) change in inventories,(1,7) fixed capital formation,(1,8) and exports (1,10) is shown in the row. **Column 1** shows how the supply of these goods and services is made up of domestic production (2,1) imports(10,1) and taxes on products(4,1).

Row 2 presents total domestic production of goods and services at $1,965 billion (2,1) while **column 2** shows the breakdown of this figure into intermediate consumption (1,2) and gross value added (3,2). The accounts represented by the first two rows and columns are aggregate versions of the supply and use (input-output) tables of the Canadian system of National Accounts which are linked with the other accounts of the system.

Row 3 shows the categories of value added (3,2). The corresponding **column 3** shows the payment of these incomes to institutional sectors.

Row 4 records how primary incomes are allocated to institutional sectors: gross generated incomes (4,3), taxes on products (4,1), property income received from other sectors (4,4), and from the rest of the world (4,10). Note that inter-sectoral property income (4,4) simply changes the distribution of income and not the total national income. **Column 4** shows the property income paid to other sectors and to the rest of the world. The balancing item of this account (5,4) is national income.

The next account shows the relationship between the national income and disposable income. **Row 5** records the national income, inter-sectoral transfers including current transfers to and from the rest of the world. The balancing item (6,5) that equates the column and row totals is disposable income.

Row and column 6 describe the use of disposable income. **Column 6** shows the spending of disposable income on final consumption expenditures (1,6) and gross saving (7,6). This saving is carried forward into the capital account.

Row 7[6] shows the availability of funds coming from saving (7,6), borrowing (7,9), inter-sectoral capital transfers (7,7), and capital transfers from the rest of the world (7,11). **Column 7** records the allocation of these funds, namely, changes in inventories (1,7), fixed capital formation (8,7), lending (9,7), and inter-sectoral capital transfers including transfers payable to the rest of the world. The balancing item—the net lending of the nation–can also be derived from the difference between borrowing and lending.

Row and column 8 show gross capital formation of $207. This account can be expanded to show the composition of investment by sectors (household, business, and government) cross classified by industry and types of capital goods, etc.

Row and column 9 summarize the financial account, showing lending in the row and borrowing in the column. The balancing item is shown in row 9 because it equals net lending to the rest of the world.

The rest of the world transactions are shown in accounts 10 and 11. The current transactions and capital transactions are shown in **row-columns 10 and 11** respectively. The balancing item of the current account is viewed from the perspective of the rest of the world.

TABLE 1

Aggregate Social Accounting Matrix for Canada, Year 2000 ($ Billions)

Account (Classification)	Code	Goods and Services (Products)	I. Production (Industries)	II.1.1 Generation of Income (Value Added Categroies)	II.1.2 Allocation of Primary Income (Institutional Sectors)	II.2 Secondary Distribution of Income (Institutional Sectors)	II.4 Use of Income (Institutional Sectors)	III.1 Capital Households	Fixed Capital Formation (Industries)	III.2. Financial (Financial Assets)	V. Rest of the World		Statistical Adjustment	Total
											II.Current	III.1Capital		
		1	2	3	4	5	6	7	8	9	10	11		
Goods and Services (Products)	1		Intermediate Consumption				Final Consumpton Expenditure	Changes in Inventories	Gross Fixed Capital					
			976				794	12	207		490			2,479
Production (Industries)	2	Output												
		1,965												1,965
Generation of Income (Value Added Categroies)	3		Gross Value Added											
			990											990
Allocation of Primary Income (Institutional Sectors)	4	Taxes less Subsidies on Products		Gross Generated Income	Property Income						Property Income			
		86		990	295						29			1,400
Secondary Distribution of Income (Institutional Sectors)	5				Gross National Income	Current Taxes on Inc., Wealth, etc. and Curr. Transfers					Current Taxes on Income, etc. and Current Transfers From ROW			
					1,048	361					6			1,415
Use of Income (Institutional Sectors)	6					Gross Disposable Income	Adj. for Change in Net Equity Househ. On Pension Funds							
						1,049								1,049
Capital: Institutional	7						Gross Saving	Capital Transfer		Borrowing		Transfers from ROW		
							255	3		351		5	-6	608
Fixed Capital Formation (Industries)	8							Gross Fixed Capital Formation						
								207						207
Financial (Financial Assets)	9							* Lending				* Net Lending of ROW		
								386				-41	6	351
V. Rest of the World: current	10	Imports of Goods and Services			Prop. Income and Taxes less Subsid. On Prod. And Imp. To ROW	Current Taxes on Income, etc. and curr. Transf. to ROW								
		428			57	5								490
V. Rest of the World: capital	11							Capital Transfers to ROW			Current External Balance			
											-36			-36
Total		2,479	1,965	990	1,400	1,415	1,049	608	207	351	490	-36	0	

Table 1A

Aggregate Social Accounting Matrix for Canada, Year 2000 ($ Billions)

Account (Classification)	Codes	Goods and Services (Products)	I. Production (Industries)	II.1.1 Generation of Income (Value Added Categroies)	II.1.2 Allocation of Primary Income (Institutional Sectors)	II.2 Secondary Distribution of Income (Institutional Sectors)	II.4 Use of Income (Institutional Sectors)	III.1 Capital (Institutional Sectors)	Fixed Capital Formation (Industries)	III.2. Financial (Financial Assets)	Tax Account	V. Rest of the World		Statisical Adjustment	Total
												II.Current	III.1Capital		
		1	2	3	4	5	6	7	8	9	9a	10	11		
Goods and Services (Products)	1		Intermediate Consumption				Final Consumpton Expenditure	Changes in Inventories	Gross Fixed Capital						
			959				734	12	198			490			2,393
Production (Industries)	2	Output													
		1,965													1,965
Generation of Income (Value Added Categroies)	3		Gross Value Added												
			990												990
Allocation of Primary Income (Institutional Sectors)	4			Gross Generated Income	Property Income						Taxes on Production	Property from ROW			
				990	295						86	29			1,400
Secondary Distribution of Income (Institutional	5				Gross National Income	Current Taxes on Inc., Wealth, etc. and Curr. Transfers						Income Tax & Transfer From ROW			
					1,048	361						6			1,415
Use of Income (Institutional Sectors)	6					Gross Disposable Income									
						1,049									1,049
Capital (Institutional Sectors)	7						Gross Saving			Borrowing			Transfers from ROW		
							255			351			5	-6	605
Fixed Capital Formation (Industries)	8							Gross Fixed Capital Formation							
								207							207
Financial (Financial Assets)	9							* Lending					* Net Lending of ROW		
								386					-41	6	351
Tax on Products	9a														
			17				60		9						86
V. Rest of the World Current	10	Imports of Gods and Services			Prop. Income & Taxes less Subs. On Prod. & Imp. To ROW	Current Taxes on Income & curr. Transf. to ROW									
		428			57	5									490
V. Rest of the World Capital	11							Capital Transfers to ROW				Current External Balance			
								0				-36			-36
Total		2,393	1,966	990	1,400	1,415	1,049	605	207	351	86	490	-36		

A Disaggregate SAM

As mentioned earlier, a SAM can be estimated and presented for any level and type of aggregation which analysis demands, provided data sources permit. Following the example set by the SNA1993 presentation of SAM, a disaggregate version of the SAM is presented in Table 2. Since a fully disaggregate SAM would have unmanageable dimensions, a compact disaggregation consisting of three industry/commodity groups is presented here. This version of SAM articulates a sub-account for each account presented in Table 1. As with the 1993 SNA, the first number of each sub-account refers to the summary Table 1 while the second label refers to the details shown for that sub-account.

The domestic output shown at the intersection of (2, 1) in Table 1 is disaggregated in Table 2 by industry and commodity (2a-2c, 1a-1c). This block shows the commodities produced by each industry. At the limit, this account can be disaggregated to 300 industries and 727 goods and services using the most detailed Canadian Input-output tables. Columns 2a, 2b and 2c represent the industry use matrix. The block (1a, 1b, 1c and 2a, 2b, 2c) is an intermediate input commodity-by-industry matrix while the block (3a, 3b, 3c, 3d and 2a, 2b, 2c) shows primary inputs cross-classified by industry.

Taxes on products and services are shown in the 4th row of Table 2. Canadian accounts distinguish fourteen types of product taxes. These taxes are allocated to each purchaser of a commodity (depending on taxability) whether industries or final demand. The sub-matrix on commodity taxes is expanded later in the paper. In the Final Demand Table, there are 48 categories of personal expenditure, 39 industry group purchasing machinery and equipment, and 40 industry groups purchasing construction, six functional classes of government expenditure, two categories of inventories and two categories of exports. Each of these classes is cross classified by commodity. Thus, there are fourteen tax matrices (corresponding to types of taxes) relating to industries and final demand categories. This matrix corresponds to cell (4, 1) in the aggregate matrix.

The block (10, 1a, 1b and 1c) shows imports by commodities. From Canadian input-output tables, imports data can be obtained for potentially 727 goods and services. The import duties normally included in the value of imports are shown separately here with commodity taxes at row 4c .

The column totals (1a, 1b and 1c) represent the supply of each commodity. The supply of each commodity, say 2c, shown in the column total, is equal to domestic production plus taxes on products plus imports. The corresponding row total, say 1c, is equal to the sum of intermediate use, for example (1c, and 2a, 2b and 2c) and final use namely consumer expenditure (1c, 6a), government expenditure (1c, 6c) inventory (1b, 7b), fixed capital formation used by various industries (1c, and 8a, 8b, 8c) and exports which is at the intersection of (1c,10). The explanation for the rest of the accounts is the same as the aggregate SAM except for the sector or transaction details.

Table2

Expanded Aggregate SAM, Canada, 2000, $billions

Accounts (Classification)	codes	Goods and Services			Production			Generation of Income				Allocation of Primary Income			Secondary Distribution of Income		
		Agriculture, etc. ()	Manufacturing etc.	Services	Agriculture, etc.	Manufacturing etc.	Services	Compensation of Employees	Mixed Income, Gross	Operating Surplus	Other Taxes less Sub	Household Employees	Corporation and NPISHs	Government	Households, Employee	Corporations and NPISHs	Government
		1a	1b	1c	2a	2b	2c	3a	3b	3c	3d	4a	4b	4c	5a	5b	5c
Goods and Services																	
Agriculture, Forestery and Fishing ()	1a				17	78	4										
Mining, Manufact., electr. , constr.,(1-5)	1b				25	302	127										
Services (6-9)	1c				24	111	287										
Production																	
Agriculture, Forestery and Fishing (A+B)	2a	134	10	2													
Mining, Manufact., electr., constr.,	2b	3	729	24													
Services	2c	2	31	1,031													
Generation of Income																	
Compensation of Emplyees Domestic	3a				17	139	389										
Mixed Income, Gross	3b				3	6	58										
Operating surplus,gross	3c				60	112	164										
Other taxes less subsidies on Production	3d				-1	8	34										
Allocation of Primary Income																	
Households, Employee	4a							545	66	54			106	5			
Corporations and NPISHs	4b									262		38	48	52			
Government	4c	1	61	24						20	42		37	5			
Secondary Distribution of Income																	
Households, Employee	5a											742				4	110
Corporations and NPISHs	5b												192				
Government	5c													114	201		195
Use of Disposable Income																	
Households, Employee	6a														653		
Corporations and NPISHs	6b															142	
Government	6c																254
Capital																	
Households, Employee	7a																
Corporations and NPISHs	7b																
Government	7c																
Gross fixed capital Formation																	
Agriculture, Forestery and Fishing (A+B)	8a																
Mining, Manufact., electr., constr.,	8b																
Services	8c																
Financial																	
Currency and deposits	9a																
Loans	9b																
Other financial assets	9c																
Rest of the World																	
Current	10	26	348	54									45	15	2		
Capital	10																
Total		166	1178	1136	145	756	1063	545	66	336	42	780	429	191	856	192	367

Table2 ... cont.

Expanded Aggregate SAM, Canada, 2000, $billions

Accounts (Classification)	codes	Use of (Adjusted) Disposable Income			Capital			Gross Fixed Capital Formation			Financial			Rest of the World		
		Households, Employee	Corporations and NPISHs	Government	Households, Employee	Corporations and NPISHs	Government	Agriculture, etc.	Manufacturing etc.	Services	Currancy and Deposites	Loans	Other Financial Assets	Current	Capital	Total
		6a	6b	6c	7a	7b	7c	8a	8b	8c	9a	9b	9c	1	11	
Goods and Services																
Agriculture, Forestery and Fishing ()	1a	10				1								57		166
Mining, Manufact., electr. , constr.,(1-5)	1b	184				12		28	67	81				351		1,178
Services (6-9)	1c	402		198				2	14	15				82		1,136
Production																
Agriculture, Forestery and Fishing (A+B)	2a															145
Mining, Manufact., electr., constr.,	2b															756
Services	2c															1,063
Generation of Income																
Compensation of Emplyees Domestic	3a															545
Mixed Income, Gross	3b															66
Operating surplus,gross	3c															336
Other taxes less subsidies on Production	3d															42
Allocation of Primary Income																
Households, Employee	4a													3		780
Corporations and NPISHs	4b													29		429
Government	4c															191
Secondary Distribution of Income																
Households, Employee	5a															856
Corporations and NPISHs	5b															192
Government	5c															367
Use of Disposable Income																
Households, Employee	6a															653
Corporations and NPISHs	6b															142
Government	6c															254
Capital																
Households, Employee	7a	57													0	57
Corporations and NPISHs	7b		142												1	143
Government	7c			56											1	57
Gross fixed capital Formation																
Agriculture, Forestery and Fishing (A+B)	8a															
Mining, Manufact., electr., constr.,	8b				62	93	21									176
Services	8c					27	4									31
Financial																
Currency and deposits	9a				19	-3	-9								-8	0
Loans	9b				0	58	8								5	71
Other financial assets	9c				21	260	32									313
Rest of the World																
Current	10															
Capital	10															
Total		653	142	254	6	143	57									

Three SAM Applications

This paper presents three applications of SAM for the Canadian economy for reference year 2000. Each application entails expansion of the aggregate SAM along an economic or social dimension in a way that is both conceptually coherent and statistically integrated.

The first application presents incomes, outlays and savings of the household sector by income quintiles and other household attributes. This study would affect four accounts: (see Table 2) Allocation of primary income (4a), Secondary distribution of income (5a), Use of disposable income (6a) and the Capital account (7a). The household sector in each of these accounts will be disaggregated by income quintile using the Survey of Household Spending for reference year 2000. The allocation of income account would record primary income accruing to various income brackets (quintiles), the secondary distribution of income would include the transfers received and paid by each income quintile and the use of disposal income would record the expenditures and savings by each income group. Expanding along the income dimension requires that the macro household estimates are integrated with data from household expenditure surveys and other data sources on income and spending behaviour of households with different income profiles. The result is a fully integrated micro-macro framework that reveals not only how savings differ by income group, but also how different types of income (e.g., employment income versus social transfers) and different types of expenses (e.g., transfers to governments versus consumer expenditure) vary by income group.

The second application of SAM expands aggregate employment income (wages, salaries and supplementary labour income). This estimate is expanded along the industry dimension, showing the origin of labour income of households, and along four socio-economic dimensions, namely age, education, gender of the worker, and hours-worked. The first expansion merely presents a national accounts industry breakdown of employment income, whereas the second integrates these statistics with data on age, education, gender and hours-worked obtained from other surveys and administrative sources. Here the household sector in the generation of income account and industries in the production account will be expanded. The result is a SAM that permits analyses such as how average hourly earnings of workers vary depending on their age, years of schooling and gender in a statistically integrated framework.

In the third application of SAM, taxes on products are expanded to show their makeup in terms of tax bases (e.g., final consumption, fixed capital formation), in terms of the jurisdiction of the tax (federal, provincial) and the type of tax applied. This expansion of SAM permits an analysis of the origins of tax revenues and the relative contributions of tax jurisdictions. For this purpose, we have removed taxes on products from the allocation of primary income and created a product tax account (Table 1A, row and column 9a). The tax account row depicts taxes paid on intermediate consumption and final consumption, and the column shows the total tax on products at the intersection of the tax account column and allocation of primary income.

The principal contribution of these applications of SAM is in making available a coherent framework for analysis that integrates macro statistics from the national accounts with micro statistics on agents from social or economic surveys. In the first two applications presented here, the constructs involve an integration of two or more statistical sources, typically one at the macro level and one or more at the micro level. At the micro level, the focus is on the decision-making of individual units such as households or persons. Decisions made by these units are a function of certain observable attributes, such as the persons' age, number of children, source of employment,

level of income, single versus multi-parent family type, and so on. While statistics on these attributes are available from surveys (e.g., household surveys or labour force surveys), these bodies of information are usually separate from those that make up national accounts aggregates. National accounting data is generally concerned with aggregates that describe macroeconomic variables such as a sector's disposable income, its savings or expenditures. So long as these statistics in this domain remain separate from statistics on microeconomic agents, one cannot explain macroeconomic phenomena described in national accounts in terms of changes in behaviour that occur at the micro level, such as those of the household, the individual or the firm.

Using statistics at the micro level are often problematic because their concepts and definitions are heterogeneous, making linkages among them and their integration with macro statistics difficult. Over the last decade, Statistics Canada has streamlined its concepts and definitions used in its survey and administrative data collection vehicles in order to maximize the consistency of their statistical outputs. Nevertheless, significant consistency issues in both concepts and methods still remain because data collection vehicles serve fundamentally different needs. For instance, variables used in household spending surveys are defined for capturing attributes that relate to consumption habits and meet specific data collection objectives which may differ from those of a labour force survey intended to gather a coherent picture of labour market participation.

First Application: Expanding the Household Sector of SAM

This section expands the household sector of the disaggregate SAM presented in Table 2 so that incomes, outlays and savings can be shown by socio-economic attributes such as income bracket or household type. After removing non-profit institutions from the sector, the household sector account proper can be integrated with socio-economic data from the Survey of Household Spending (SHS) and personal income tax data from the CRA. The literature shows two clearly different approached to such integration. The first approach—used by de Bakker *et. al.* (1992) in building a historical SAM for the Netherlands—expands the household sector within the SNA framework. By adapting the (micro level) household statistics to the national accounting control totals, national accounting concepts and imputations are preserved while the data is disaggregated by household attributes.

The second approach, advocated by Ruggles and Ruggles (1986) and followed in this section, integrates national accounts aggregates with household level data using a market transaction view of household incomes and outlays. This involves recording transactions that constitute incomes and outlays of the households as they occur rather than following certain SNA conventions. While the SNA uses the transaction as the basis for measuring the flow of economic activity between institutional units, the system provides for three explicit exceptions where transactions are not recorded as observed (SNA 1993, 3.12-3.15). In each of these "rearrangements", transactions are rearranged so as to "bring out the underlying economic relationships more clearly" (SNA 1993, 3.23). In compiling the incomes and outlays of the household sector according to the 1993 SNA, some transactions are re-routed and others are partitioned in order to portray the economic significance of the activity between the parties. These rearrangements result in income, outlay and saving for the household sector that differ from what they actually experience. In the market-transaction approach followed in this paper, these rearrangements are reversed in order to conceptually integrate macro and micro statistics and to arrive at savings consistent with households' actual experience. The rearrangements treated in this paper relate to the treatment of owner-occupied dwellings, the treatment of investment incomes of insurance carriers and pension funds, the contribution of employers to pension and social security schemes, the treatment of non-

life insurance, and the treatment of imputed financial services. Although using the transaction basis alters national accounts aggregates such as household income, outlay and saving, it introduces a new perspective on the household sector by showing disaggregate socio-economic data that are especially suited for analysing present and future household behaviour in areas such as savings, investment and consumption. The integrated household account can also be used to address questions such as the adequacy of actual savings in providing households with income security, and the role of government transfers in fiscal redistribution among different income levels, family structures and employment profiles. SAMs that serve other analytical needs can be constructed from the methodology and the integrated database used in this section. The reader should note that changes to national accounts aggregates resulting from application of the transaction criterion are only confined to the household account shown in this section of the paper. Aggregates shown in Tables 1 and 2 and those shown in subsequent applications of SAM are not modified based on the work done in this section of the paper.

Table 3

Persons, Unincorporated Businesses & Non-Profit Institutions Serving Households, Canada 2000, $ billion

	Income	**840.4**
Incomes	**Wages, salaries and supplementary labour income**	**545.2**
	Wages and salaries	483.9
	Supplementary Labour Income	61.3
	Employers' contributions to employee benefits	56.6
	Retirement Allowances paid to employees	4.8
	Unincorporated business net income	**66.2**
	Imputed income, owner occupied dwellings	24.0
	Mixed income from all other industries	42.2
	Interest, dividends and misc. investment receipts	**114.7**
	Interest, dividend, royalties, and other income	62.9
	Income supplement of insurance & NPISH	16.8
	Investment income of pension funds	35.0
	Current transfers from government	**0.1**
	Employment insurance benefits	9.6
	Social security and other benefits to persons	92.9
	Grants to non-profit organizations	8.0
	Current transfers from corporations	**1.5**
	Current transfers from non-residents	**2.4**
	Outlay	**810.5**
Outlays	**Personal expenditure on goods and services**	**596.0**
	Imputed Rent, Owner Occupied Dwellings	82.6
	Imputation for financial services (FISIM)	14.2
	Operating Expenditures of Non-Profit Organizations	15.8
	Other Personal Expenditure	466.4
	Current transfers to government	**200.8**
	Income taxes	144.0
	Contributions to social insurance (EI, CPP, QPP, WCB)	49.8
	Other current transfers	7.1
	Current transfers to corporations (transfer portion)	**11.7**
	Current transfers to non-residents	**1.9**
	Saving	**29.9**
	Net Disposable income	639.6
	Capital consumption of Owner occupied Housing	12.9
	Disposable income	**652.4**

In addition, using the market transaction criterion entails including realized capital gains as household income. This is consistent with the disposable income recorded in the accounts that nets out income taxes on all forms of income including taxable capital gains.

Integration of the SHS and SNA household accounts

The data sources used for this study are the reference year 2000 Survey of Household Spending (SHS) and personal income tax data from the CRA. The survey collected data from a sample of about 21,000 households on their incomes, expenses, dwelling characteristics, household equipment, family structure or household type, household balance sheet, and number of other analytically useful characteristics. In order to construct a coherent SAM for the household sector, it is necessary to harmonize the concepts underlying the SNA household sector account with those of the SHS and to achieve an acceptable measure of statistical integration by making appropriate modifications to one or both sides. The problem of integration of the two sets of accounts arises out of the fact that national accounts data are compiled using definitions and standards designed to facilitate macroeconomic analysis, relying on concepts that underlie neoclassical theories of consumptions and production, among others, and international standards and conventions for compilation of national economic accounts. These concepts often differ from individuals' or households' perception of what they consume, what they earn, and what they save because they are concerned solely with the micro unit, namely, the household. For instance, a household would consider the funds it receives from a pension plan, from disability insurance, interest on bank deposits or gains from sales of its assets, to be its income for household management purposes. By contrast, none of the above are considered income for the household sector of the economy since they do not originate in current economic production. Similarly, households do not consider as income the contributions of an employer to their pension plan or disability insurance, since they cannot use these sums to defray household expenses (until they receive the associated benefits). However, all these items enter into income of the household sector for national accounts purposes. The approach adopted in this study for harmonizing the concepts of income and expenses between the micro units (household) and national accounts aggregates is to use a market-transaction view, as proposed by Ruggles and Ruggles (1992). As elaborated below, aggregates (such as income and savings) constructed with this approach differ substantially from those that follow SNA definitions. Table 3 shows the CSNA household income and outlay for the year 2000 as published by the CSNA. It shows savings of $29.9 billion as the balancing item of income ($840.4) over outlays ($810.5) of the sector.

Steps that are taken to harmonize and integrate the two sets of accounts are discussed below under separate headings.

1. Delineation of the household sector

The CSNA presently consolidates non-profit institutions serving households with the household sector in what is known as "Persons, Unincorporated Businesses and Non-Profit Institutions Serving Households. The operating expenses of non-profit institutions are financed by contributions from governments, businesses and households[7]. The presence of non-profit institutions in the sector makes it difficult to relate the aggregate sector with the behaviour of households that make up most of the sector since the economic behaviour of these organizations differs significantly from persons. An appropriate treatment that would improve macro household statistics would be to sector out these institutions as recommended by the 1993 SNA (1993 SNA, 4.10). This will have the impact of reducing household revenues and expenses by ($15.8 - $6.0= $9.2 billion). While this will have no effect on gross saving, it will reduce the *level* of income shown for the sector and harmonize income and expense aggregates with the SHS.

Treatment of Non-Profit Institutions Serving Households RY 2000 ($ billions)			
SNA income		Transaction income	
Income from contributions & membership fees, Households	6.0	Income from contributions & membership fees, Households	6.0
Income from contributions, businesses and government	8.4		
Investment Income	0.9		
Capital cost allowance	0.5		
Expenses of Persons, Unincorporated Businesses and Non-profit Institutions Serving Households Sector	**15.8**	**Expenses of Households and Unincorporated Businesses**	**6.0**

2. Employment benefits

Following SNA conventions (1993 SNA, 7.43-7.44), national accounts aggregates show all contributions made by employers toward social insurance, private insurance and pension plans of employees as labour compensation, even though they are paid directly into public or private plans[8]. The economic logic underlying this convention is that these expenditures benefit employees and represent a cost to the employer. The convention makes it easier to conduct macro economic analysis and to account for production and consumption as aggregate concepts. However, it is inherently problematic for microeconomic analysis of the household. While it is true that household decisions are made in full cognizance of the benefits receivable from these plans, they cannot be considered incomes of the household for microeconomic purposes. Employer contributions provide income in the future (in the case of pensions and life insurance) which will be accounted for in those periods. In the current period, households have no discretion in deciding whether to spend these sums on goods and services or save them. However, there are two classes of employment benefits that should be included as income for the current year: retirement allowances (4.8 billion) which are received in cash upon leaving jobs and employer contributions to employee welfare benefits (13.9 billion) that include dental insurance plans, drug plans, and disability insurance because these constitute the consumption of real services in the current period.

Treatment of employment benefits RY 2000 ($ billions)			
SNA income		Transaction income	
Employers' contributions to Employment Insurance	11.0		
Employers' contributions to CPP & QPP	12.0		
Employers' contributions to pensions	13.2		
Employers' contributions to Workers' Compensation	6.5		
Employers' contributions to welfare benefits	13.9	Employers' contributions to welfare benefits	13.9
Retirement allowances	4.8	Retirement allowances	4.8
Total income	**61.4**	**Total income**	**18.7**

In the CSNA, contributions to social insurance such as CPP and QPP (12.0 billion), Employment Insurance (11.0 billions) and Worker's compensation (6.5 billion) are shown as transfers back to government. In order to reconcile the macro concept of household income with the household budget, these contributions are removed both from the income and outlay sides of the account.

This would affect only net saving. For the same reasons, employers' contributions to pensions are also removed from incomes (this is discussed in the section on pension and insurance below). Benefits received under these programs constitute current income and are included in the income and outlay account of households.

3. Owner-occupied dwellings

One of the national accounting conventions that clearly impede micro-macro integration relates to the treatment of owner occupied dwellings (Ruggles and Ruggles, 1985, pp. 251-2). The System of National Accounts shows the ownership of owner-occupied homes as an industry. According to this convention, owner-occupied homes are treated as if they were rented to their owners at a competitive rental rate by this fictive industry which receives the rental incomes, pays mortgage interest, operation and maintenance expenses and taxes, sets aside funds for depreciation and pays the rest to households as net rental income. While this treatment may be expedient for many purposes, it has significant drawbacks when national accounts data is used to analyse household behaviour and household savings (see Ruggles and Ruggles, 1992, and Webb, 1980). Essentially, this is a consequence of removing housing from the domain of the household and classifying it as a business industry. Unless a number of complex adjustments are made, this distorts the analysis of homeowner decisions with respect to borrowing, investment and saving when aggregative household account data is used. In addition, the existing treatment includes the depreciation of homeowners' property in the imputed rent of owner occupied dwellings that is considered consumption expenditure for the current period. Families typically pay for repair and maintenance of their dwellings as they arise. The treatment understates the amount households actually put aside for future consumption by classifying it as an amount consumed in the current period. Gross savings shown in the SNA sector accounts (which include capital cost allowance) show the appropriate amount of savings available to households.

An appropriate reconciliation between the macro and micro sides is to dissolve the housing industry and allocate the current costs of home ownership (excluding depreciation) to households as suggested by Ruggles and Ruggles (1985). This consists of moving the expenses of the housing industry such as repair, mortgage interest, insurance, maintenance, and property taxes to the household sector where they are shown as household expenses. Capital consumption allowance of housing, a major expense at $14 billion in 2000, is no longer charged as a current household expense. As the text-table shows, household incomes will be reduced by the amount

Treatment of cost of housing
RY 2000 ($ billions)

SNA expense		Transaction expense	
Repair and maintenance	6.1	Repair and maintenance	6.1
Property Taxes (less subsidies)	14.0	Property Taxes (less subsidies)	14.0
Mortgage interest paid	24.1	Mortgage interest paid	24.1
Capital cost allowance	14.4		
Imputed mixed income, OOD	24.0		
Total Imputed Rent	**82.6**	**Total cost to Households**	**44.2**

of the imputed rental income of owner-occupied dwellings (net rental income of unincorporated business) by about $24 billion in 2000. Household outlays will be reduced by ($14.4+$24.0= $38.4) billion as depreciation and mixed income are no longer considered costs. This treatment will have no impact on gross saving but net saving will be affected.

4. Insurance income and pension income

Another national accounting treatment that differentiates micro and macro concepts relates to life insurance and pensions. National accounting conventions have always treated the reserves of these institutions as if they are assets of persons who ultimately receive benefit payments. It follows from this principle that any returns earned on invested assets of these funds[9] are recorded in the national accounts as incomes of households in the current period. It also follows that benefits (e.g. annuity payments, policy dividends) paid to households are not recorded as their income, but only appear as expenses of life insurers and pension funds. In addition, lump-sum life insurance settlements paid to households do not explicitly appear in the accounts because they are treated as intra-sectoral transfers where insurance assets are consolidated with all other assets within the household sector.

By contrast, data compilation at the micro level follows business accounting conventions. Households, who are unaware of investment incomes of insurance and pension funds, simply report their receipts from pension plans, annuities, life insurance claims and dividends as their current income. They similarly consider gross premium payments as the cost of acquiring the security of insurance and report these payments as their outlays. Households plan their spending, investment and saving decisions in light of these incomes and outlays.

In order to make the macro accounts consistent with the household budget reflected in the micro data, investment returns originating from insurance reserves and pension assets are removed from the income side of the household sector. They are replaced by dividend income, annuity receipts, pension benefits and life insurance claims received.

Treatment of pension incomes
RY 2000 ($ billions)

SNA income		Transaction income	
Investment income of life insurance and fraternal	10.9	Benefit paid to individuals under life insurance and annuities	18.5
Investment income of pension fund	35.0	Benefit paid by private and public pension funds and other pension income	39.0
Premium supplement, Non-life insurance	5.0		
Investment income, non-profit institutions	0.9		
Total pension income	**51.8**	**Total benefits received**	**57.5**

In order to account for household expenditure on insurance, payments of life insurance premiums should be shown as an outlay. However, this should include only premium payments for life insurance products such as term life insurance actually consumed by the household, excluding premiums for insurance plans with a saving feature such as endowment insurance[10]. While premiums paid for term life insurance are unambiguously household expenses at par with premiums for fire and casualty insurance that simply purchase risk coverage, certain other kinds of life insurance (endowment insurance and some forms of universal insurance) contain an investment component that is managed as an investment portfolio by insurance companies. These investment components have attributes that make them close substitutes of tax sheltered savings plans or savings accounts. Consequently, it is necessary to separate the data on life insurance premiums into pure premiums and investment contributions and treat them accordingly. This

separate treatment has not been implemented in this paper, leading to a slight understatement in household savings.

Following the same rationale, household contributions toward pensions (going to pension managers, life insurers, etc.) are not shown as an outlay of the household because they are forms of saving that increase household assets.

5. Non-life insurance

The treatment of non-life (property and casualty) insurance in the accounts is another area where existing conventions necessitate an adjustment. Following conventions recommended in 1993 SNA, households' expenditure on non-life insurance (e.g., automobile, property, accident and sickness) is measured by a cost-of-service concept. Premiums and claims do not appear on the income or expense side of the accounts. Instead, a cost-of-service appears as the outlay of consumers of insurance. It includes premiums paid less adjustment expenses less claims received by households plus the investment income (premium supplement) of policy reserves. Consequently, household expenses shown in the SNA sector accounts are net amounts that are smaller than the actual (gross) outlays on premiums. The investment income associated with this cost-of-service is also entered on the income side of the SNA sector accounts. Although insurance settlements (claims) received by households finance their expenses on goods and services, they are only added to income, but are shown as part of depreciation in the sector accounts.

At the micro level, data from the Survey of Household Spending household expenses excludes both income from settlement of insurance claims and the expenses of goods and services financed by them. The survey only records the deductible portion of expenditures that are covered or financed by insurance as a household expense. To reconcile the household accounts with the actual budget of the household, the imputation for cost-of-service is removed from personal expenditure and the full amount of premiums paid by the sector is shown as an outlay. On the income side, insurance settlements received by households are added to income while the same amount is removed from the sector's capital cost allowance[11].

6. The treatment of interest

The treatment of interest income and interest expense in the national accounts differs significantly from how households perceive and report on these items. The CSNA income and outlay account of the households sector shows total interest and other property incomes of households. In addition to total interest received, the CSNA includes an imputation for FISIM (Financial Intermediation Services Indirectly Measured) on deposits of households held by financial institutions, as recommended by 1993 SNA. This imputation, $6.7 billion in 2000, is the difference between what the household sector actually received and the opportunity cost of those funds to deposit-taking institutions. An identical amount is shown as personal expenditure of households on financial services. On the borrowing side of financial transactions, the interest paid by households is divided into two parts: imputed loan interest and pure interest. The imputed loan interest is shown as expenditure of households ($7.5 billion in 2000) and as pure interest ($11.7 billion in 2000), a transfer to the financial sector.

In contrast to transfers and imputations used in the SNA, the micro data on household spending show gross interest (and dividends) income from domestic and foreign sources and gross principal-and-interest payments on consumer loans and mortgages (including principal residence

mortgages). Interest income is also available from income tax data. In making the SNA and the micro data sources consistent, our objective is not only to accurately reflect the household budget by showing the actual net interest income (expense), but to show gross interest (and dividend) income on the income side and gross interest expenses on the cost side so that each side can be matched with the desired data on social attributes of the households. To make these modifications in the household accounts data, the imputation for financial services (FISIM) on deposits previously shown as part of income is removed. As well, all FISIM imputations are removed from the expenditure side of the account and replaced with gross payments of interest on consumer credit (i.e., all interest payments of the sector except those for mortgage on owner-occupied housing). Earlier, it was mentioned that homeowners' mortgage interest is added to the expenses side of the households once the Owner-Occupied Dwelling industry is dissolved. These adjustments reconcile both the concepts and the values in the household sector accounts with those of micro data from the expenditure survey.

7. The treatment of employees' contributions to pensions

Households' contributions to pensions sponsored by employers or managed by insurance companies are (implicitly) included in savings in this study, rather than being treated as an outlay of households. The reason for this treatment is that pension assets belong to households, that they are generally portable as employees change jobs, support households' borrowing power, and relieve them of the necessity of voluntarily saving for retirement through other vehicles such as tax shelters or other forms of retirement savings plans. However, depending on the objectives of the analysis this may not be the most appropriate treatment. In such cases, one would simply adjust the expense and the saving figures accordingly.

The case of contributions to social insurance schemes such as the Canada Pension Plan and the Quebec Pension Plan is more straightforward. Household contributions to these schemes are included as outlays (as is current practice in the CSNA) rather than as savings under present regimes. Contributions to these social insurance schemes have many of the attributes of taxes that support social safety nets, namely, they are (mostly) un-funded, offer terms and conditions that can be changed unilaterally by governments as policies change, and involve no legal, contractual obligations. As some of these conditions change, it may be more appropriate to include these payments in household savings. For instance, an increasing proportion of Canada Pension Plan assets are funded and invested in marketable securities. As Canadians begin to view these investments as their retirement savings, household contributions shown as outlays should be reduced to allow an increase in corresponding savings.

8. The treatment of holding gains

The 1993 SNA defines income as "…the maximum amount that a household or other unit can afford to spend on consumption goods or services during the accounting period without having to finance its expenditure by reducing its cash, by disposing of other financial or non-financial assets or by increasing its liabilities (1993 SNA, 8.15). Holding gains that result from changes in the prices of assets (fixed and financial) are excluded from income in the SNA, because income is measured on the same basis as production. Following this definition, household receipts that originate from capital gains when they dispose of financial or non-financial assets are not reflected on the income side of the SNA sector account, even though the income tax paid on these gains are shown as an expense in calculating disposable income. In addition, goods and services purchased by households with capital gains proceeds appear on the expense as personal expenditure. The

actual saving of the sector, which is a residual of income over outlay, is thus understated by the amount by which consumption is financed through this source[12]. The Canberra International Expert Group on Household Income Statistics (the Canberra Group) that deliberated revisions to the 1993 SNA acknowledged in its 2001 report that households' use of these proceeds to finance consumption argues for their inclusion in income (Canberra Group 2001, p. 15). It recognized also that "there are good reasons in some areas for departing from the recommendations embodied in SNA93, reflecting the different purposes of the statistics to be compiled" (Canberra Group, 2001, p. 16) and recommended that capital gains and losses should be treated as a memorandum item which may be added to income for certain analyses (Canberra Group, p. 17). The report of the Group also recognized that certain features of macro statistics are not suitable for microeconomic purposes, such as for analysis of income distribution, because households with higher income levels receive a disproportional share of capital gains income13.

The household account presented in this paper uses the transaction as the basis for recognition of incomes and outlays of the household sector. As such, it includes proceeds from all sources, including realized capital gains. The 1993 SNA recognizes that the use of SAM for general equilibrium modelling and policy analysis requires that it adapts to the specific needs of these applications. It affirms that "if one thinks that … capital gains, are directly and to a large extent reflected in final consumption expenditure, these values could be booked as an incoming on the (secondary) distribution of income account" (SNA 1993, 20.130). This is the approach that is taken in this paper. Unfortunately data is only available on *taxable* capital gains at the present time. Proceeds from other realized capital gains such as the sale of principal residences (a non-taxable income in Canada) should also be included here.

Table 4

Transforming the SNA Sector Account into a SAM Household Account

SNA Sector account		Household accounts for SAM	
Persons, Unincorporated Businesses & Non-Profit Institutions Serving Households	**2000**	**Persons & Unincorporated Businesses**	**2000**
Income	**840.4**	**Income**	**814.2**
Wages, salaries and supplementary labour income	**545.2**	**Wages, salaries and supplementary labour income**	**502.5**
Wages and salaries	483.9	Wages and salaries	483.9
Supplementary Labour Income	61.3	Supplementary Labour Income	18.6
Employers' contributions, CPP, QPP, EI, WCB, pension	42.7		
Employers' contributions, welfare benefits	13.9	Employers' contributions, welfare benefits	13.9
Retirement Allowances paid to employees	4.8	Retirement Allowances paid to employees	4.8
Unincorporated business net income	**66.2**	**Unincorporated business net income**	**42.2**
Imputed income, owner occupied dwellings	24.0		
Mixed income from all other industries	42.2	Mixed income from all other industries	42.2
Interest, dividends and misc. investment receipts	**114.7**	**Interest, dividends and misc. investment receipts**	**146.5**
Gross interest income	35.9	Gross interest income	35.9
Distributed dividends of corporatios	18.9	Distributed dividends of corporatios	18.9
		Life insurance policyholder dividends	1.7
FISIM on deposits	6.7		
Income supplement, non-life insurance	5.0		
Investment income, non-profit institutions	0.9		
Investment income, life insurance	10.9	Life Insurance & annuity benefits received	18.5
Royalties	1.5	Royalties	1.5
Investment income of pension funds	35.0	Benefits from registered pension plans	39.0
		Taxable capital gains	**31.0**
Current transfers from government	**110.5**	**Current transfers from government**	**102.5**
Employment insurance benefits	9.6	Employment insurance benefits	9.6
Social security and other benefits to persons	92.9	Social security and other benefits to persons	92.9
Grants to non-profit organizations	8.0		
Current transfers from corporations	**1.5**	**Current transfers from corporations**	**1.5**
Current transfers from non-residents	**2.4**	**Current transfers from non-residents**	**2.4**
		Non-life insurance settlements	**16.7**
Outlay	**810.5**	**Outlay**	**740.8**
Personal expenditure on goods and services	**596.0**	**Personal expenditure on goods and services**	**547.9**
Imputed Rent, Owner Occupied Dwellings	82.6	Mortgage interest: Owner-Occupied Dwellings	24.1
		Shelter Expenses (maintenance & property taxes, O.O.D.)	18.8
Imputation for financial services (FISIM)	14.2		
Insurance cost-of-service (inc. housing)	17.0	Insurance gross premiums (inc. housing)	32.5
Operating Expenditures of Non-Profit Organizations	15.8	Contributions & fees, Non-Profit Organizations	6.0
Other Personal Expenditure	466.4	Other Personal Expenditure	466.4
Current transfers to government	**200.8**	**Current transfers to government**	**171.8**
Income taxes	144.0	Income taxes	144.0
Contributions to social insurance (EI, CPP, QPP, WCB)	49.8	Employees' only contributions to social insurance (....)	20.7
Other current transfers	7.1	Other current transfers	7.1
Current transfers to corporations (transfer portion)	**11.7**	**Gross interest on consumer credit--Transfer portion**	**11.7**
		Gross interest on consumer credit--Administrative portion	**7.5**
Current transfers to non-residents	**1.9**	**Current transfers to non-residents**	**1.9**
Saving	**29.9**	**Saving ***	**73.4**
Net Disposable income	639.6	Disposable income	642.5
Saving rate (Percent)	**4.7%**	**Saving rate (Percent)**	**11.4%**
* Includes taxable capital gains income for the reference year			
Gross saving and capital transfers	60.3	Gross saving and capital transfers	90.4
Saving, Net	29.9	Saving, Net	73.4
Capital consumption allowances	30.2	Capital consumption allowances, exc. Housing	16.8
Net capital transfers	0.2	Net capital transfers	0.2
Government	-5.3	Government	-5.3
Non-residents	5.5	Non-residents	5.5
Details may not add up due to rounding.			

A Transaction–based Integrated Household Account

Table 4 shows at an aggregative level how the existing CSNA account for the household sector is modified in order to be integrated with the survey data on household spending. The household account shows $814.2 billion in income in 2000, rather than $840.4 billion as shown in the National Economic Accounts. The household income now excludes $56.6 billion in employers' contributions to employee benefits (see text table) and excludes $24.0 billion in a national accounting imputation of net income for owner-occupied dwellings (see text table). Removing the incomes of non-profit organizations (contributions of government and business) provides an additional reduction of $8.0 billion. However, the new estimate of income includes $1.7 billion in life insurance dividends, $31.0 in capital gains income (as reported by the CRA), $16.7 billion in insurance claim settlements and larger estimates for life insurance and annuity benefits ($18.5 billion) and pension benefits ($39.0 billion).

On the expense side the sector's outlays are only $740.8 billion, rather than $810.5 billion as shown in CSNA accounts. A key difference with the CSNA sector account is that outlays on housing are limited to actual expenses of maintaining owner-occupied dwellings, including taxes and mortgage interest, which add up to $42.9 billion, compared to imputed rent at $82.6 billion. Secondly, the imputation for financial services (FISIM) is removed, but outlays now include gross interest payment, compared with the existing sector accounts which include only the transfer portion of interest. Third, outlays that represent contributions to social insurance are significantly smaller at $20.7 billion because only the portion contributed by employees is shown as an expense of the household sector, leaving out the portion paid out by employers ($29.0 billion). Finally, outlays on life and non-life insurance are larger ($32.5 billion vs. $17.0 billion) under the transaction approach which accounts for the full value of policy premiums (excluding annuities).

The amount of savings generated by the sector is redefined in that it includes capital gains reported to the Canada Revenue Agency as taxable income. Following this approach, income should also include non-taxable capital gains such as gains in tax sheltered assets (e.g., RRSP). The present project overlooks these considerations as no consistent estimates are available. Nonetheless, net savings (excluding depreciation) is $73.4 billion, compared to $29.9 billion that is consistent with national accounting conventions.

Disposable income, the residual of incomes over transfers to governments, is $642.5 billion, yielding a savings rate of 11.4% compared to 4.7% consistent with SNA conventions.

Table 5 presents a summary of incomes and expenses by income quintiles and social statistics relevant to each quintile. Shaded cells contain data that are based on the Survey of Household Spending, whereas the non-shaded cells are based on national accounts data modified according to concepts and procedures proposed in this paper to ensure their integration with micro data on households[14].

To better facilitate the analysis of transfers by income level, transfers to governments and transfers from governments are shown by level of government for each quintile. The net amounts of these transfers are also shown in a subsequent line of the table. While the three levels of government received transfers of $171.8 billion from households, they transferred $102.5 billion to households, leading to a net transfer to governments of $69.2 billion. The table also shows net savings of $73.4 billion, or 11.4 % of households' disposable income.

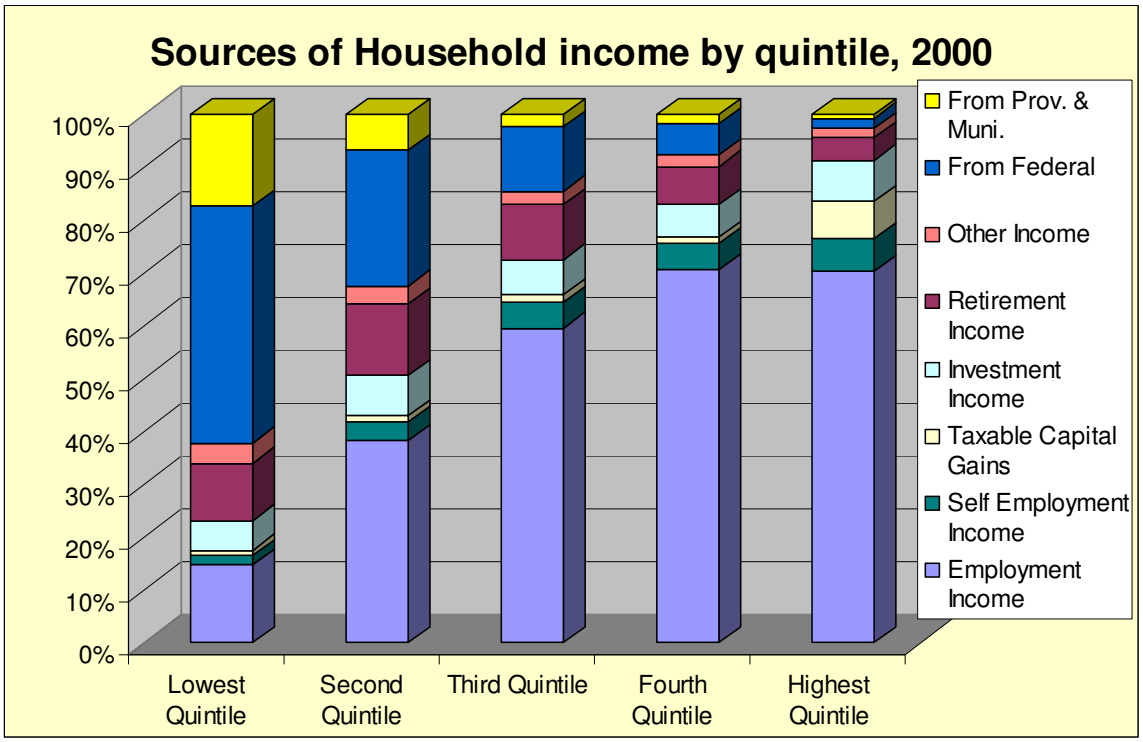
Table 5

Household Sector Account by income quintile

Reference Year 2000	Total, all Quintiles	Lowest Quintile	Second Quintile	Third Quintile	Fourth Quintile	Highest Quintile
		$0 - $21,216	$21,216 - $37,000	$37,000 - $55,760	$55,760 - $82,402	$82,402 and above
Average household size	2.57	1.53	2.19	2.62	3.05	3.47
Percent of household with no full-time earners	41.0	91.3	59.9	31.2	14.7	7.8
Percent of household with one full-time earners	37.9	8.2	36.6	53.9	53.8	37.2
Percent of household with two or more full-time earners	21.1	...	3.5	14.9	31.5	55.0
Percentage of one person household	24.7	62.3	29.3	19.0	9.1	3.6
Percentage of lone-parent household	9.3	12.8	13.1	10.1	7.2	3.1
Percentage of husband-wife household	60.0	20.2	50.3	64.0	78.2	87.4
Estimated number of households ('000)	11,362	2,272	2,272	2,272	2,272	2,272
Average household income from SAM ($ '000)	**71.7**	22.0	39.0	56.5	80.9	159.9
Figures in $billions						
Income	**814.2**	**50.0**	**88.7**	**128.5**	**183.7**	**363.3**
Income excluding government transrers	711.7	18.9	59.8	109.8	169.8	353.4
Employment Income	502.5	7.4	33.9	76.4	129.8	255.1
Self Employment Income	42.2	0.9	3.2	6.2	9.2	22.7
Taxable Capital Gains	31.0	0.5	0.9	1.9	2.1	25.6
Investment Income	58.0	2.8	6.8	8.6	11.4	28.4
Retirement Income	59.9	5.5	12.0	13.4	13.3	15.6
Other Income	18.2	1.9	3.0	3.2	4.1	6.0
Gross Transfers from Governments	102.5	31.1	28.8	18.7	13.9	10.0
Transfers from Federal Government	78.7	22.4	22.9	15.7	10.6	7.1
Transfers from Provincial Government	20.6	7.5	5.2	2.6	2.9	2.5
Transfers from Municipal Government	3.2	1.2	0.8	0.4	0.5	0.4
Outlay	**740.8**	**50.4**	**86.7**	**130.7**	**178.9**	**294.1**
Personal Expenditure	547.9	47.1	73.5	102.4	131.3	193.6
Gross interest payments, transfers out of Canada	21.1	0.8	2.1	4.0	5.8	8.4
Gross Transfers to governments	171.8	2.5	11.1	24.3	41.8	92.1
Transfers to Federal Government	110.9	1.2	6.9	15.8	27.4	59.6
Transfers to Provincial Government	60.1	1.2	4.1	8.4	14.3	32.2
Transfers to Municipal Government	0.7	0.1	0.1	0.1	0.2	0.2
Net government transfers	-69.2	28.6	17.8	-5.6	-27.9	-82.1
Personal Disposable Income*	642.5	47.6	77.6	104.1	141.9	271.3
Net Saving ($ billion)	**73.4**	**-0.4**	**2.0**	**-2.3**	**4.8**	**69.3**
Saving as % of Disposible Income	11.4	-0.8	2.6	-2.2	3.4	25.5
Saving per household ($)	6,463	-172	881	-995	2,121	30,481

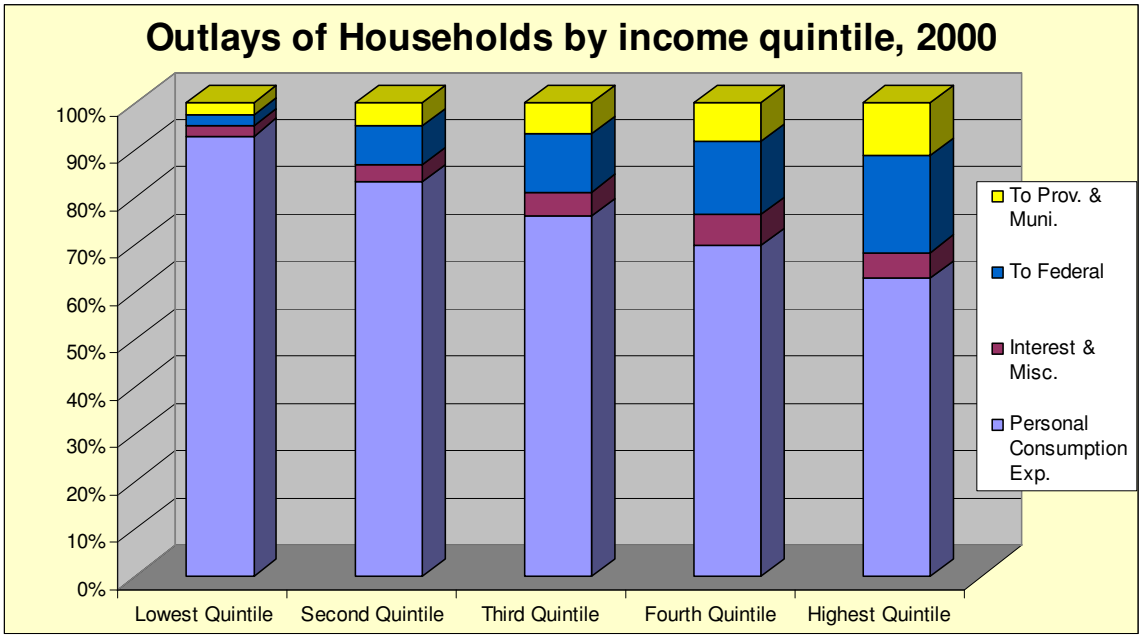
* Definition of income and outlay has been slightly modified because transfers to non-residents are netted out of income

Table 6 analyzes the results of Table 5, focussing particularly on the relationship between the income quintiles, transfers, and savings. SHS data for the first quintile shows that about 91% of these households have no full-time wage earner and mostly (62.3%) consist of single individuals with about 1.5 children on average (2.5 for all households). While these households make up 20% of Canadian households, they only earn 2.7% of non-transfer or earned income. After receiving more than 30% of all government transfers (from all sources and levels of government), the combined incomes of these households rise to only 6.1% of the household sector. Since their outlays account for 6.8% of those of the sector, their saving is negative at -$0.4 billion. This is not surprising given that they account for 20% of the number of households but receive only 7.4% of the sector's disposable income.



The second quintile has a slightly larger household size, more full-time earners, and is half made-up of husband-wife family units. Their non-transfer income is somewhat larger at 8.4% of that of the sector, but they require more than 28% of all government transfers in order to raise their incomes to 10.9% of that of all households. Personal disposable income for this quintile was 12.1% of all households', leaving them with 2.0 billion in savings in 2000 (Table 5).

The third quintile has very different attributes from the first two. Their family size is slightly larger than the average, they have more full-time earners than the average household, are mostly (64%) husband-wife family units, and they paid $5.5 more in government transfers than they received in 2000 (see Table 5). However, this made them net borrowers of $2.3 billion or about $1,000 per household in 2000. This finding is discussed in greater detail Appendix 1.



In the fourth quintile, families are larger (3.05 persons) and about 1/3 have two or more full-time wage earners and predominantly (78.2%) husband-wife families with average incomes of $80,900, or 14% higher than the national average. These households have a larger share of non-transfer income (23.9%) than their sheer number accounts for (20%). While they are recipients of 13.6% of government transfers, they pay 24.4% of all transfers to governments. They earned about 22% of all personal disposable income in 2000. Nevertheless, they only accounted for 4.1% of all household savings. On average, these households saved $2,121 during 2000, or 3.4% of their disposable income.

Finally, the fifth quintile, with an average income of $159,900 (123% higher than the average) has more units with 2 or more full-time earners (55.0%) than single full-time earner (37.2%), and a family size much larger than the average (3.47 compared to 2.57). These households accounted for almost half of all non-transfer income. This group pays more than half of all government transfers (53.6%), and receives only 9.7% of transfers paid to the sector. In 2000, their net transfer to governments was $92.1 billion, larger than the net transfer from all other households combined. They saved more than 25% of their disposable income, or $30,481 per household in 2000. In fact, households in this income bracket saved more in 2000 than the rest of households in Canada.

The household income includes declared capital gains incomes of approximately $31 billion for the year 2000, a year when households' gains from investments in equities was probably at its peak. It is important to know to what extent these incomes affect the savings picture described above because extraordinary gains in that year were much larger than years before and since reference year 2000. A comparison of savings with and without declared realized capital gains is shown at the bottom of Table 6. Excluding declared taxable income from capital gains (and gains within tax shelters, plus unrealized gains), total savings of about $42 billion out of (a smaller) disposable income indicate an average saving rate of 6.9%. Compared to the case with capital gains income, saving rates for all quintiles are lower, with the first and the third quintile showing larger rates of dis-saving. For the highest income quintile, the saving rate out of disposable income would be 17.8% versus 25.5% with capital gains. The finding that savings are predominantly made by the 2.3 million households in the highest income quintile remains unchanged.

Table 6

Analysis of Household Sector Account by income quintile

Shares of income quintiles in total	Total, all Quintiles	Lowest Quintile $0 - $21,216	Second Quintile $21,216 - $37,000	Third Quintile $37,000 - $55,760	Fourth Quintile $55,760 - $82,402	Highest Quintile $82,402 and above
Average household size	2.57	1.53	2.19	2.62	3.05	3.47
Percent of household with no full-time earners	41	91.3	59.9	31.2	14.7	7.8
Percent of household with one full-time earners	37.9	8.2	36.6	53.9	53.8	37.2
Percent of household with two or more full-time earners	21.1	...	3.5	14.9	31.5	55
Percentage of one person household	24.7	62.3	29.3	19	9.1	3.6
Percentage of lone-parent household	9.3	12.8	13.1	10.1	7.2	3.1
Percentage of husband-wife household	60	20.2	50.3	64	78.2	87.4
Estimated number of households ('000)	11,362	2,272	2,272	2,272	2,272	2,272
Average household income from SAM ($ '000)	100%	30.7%	54.5%	78.9%	112.8%	223.1%
Income	**100%**	**6.1%**	**10.9%**	**15.8%**	**22.6%**	**44.6%**
Income excluding government transrers	100%	2.7%	8.4%	15.4%	23.9%	49.6%
Gross Transfers from Governments	100%	30.3%	28.1%	18.2%	13.6%	9.7%
Outlay	100%	6.8%	11.7%	17.6%	24.2%	39.7%
Outlays excluding transfers to governments	100%	8.4%	13.3%	18.7%	24.1%	35.5%
Gross Transfers to governments	100%	1.4%	6.4%	14.2%	24.4%	53.6%
Net government transfers	100%	-41.4%	-25.7%	8.1%	40.3%	118.6%
Personal Disposable Income*	100%	7.4%	12.1%	16.2%	22.1%	42.2%
Net Saving	**100%**	**-0.5%**	**2.7%**	**-3.1%**	**6.6%**	**94.3%**

Impact of Capital Gains on Household Sector Savings

	Reference Year 2000	Total, all Quintiles	Lowest Quintile $0 - $21,216	Second Quintile $21,216 - $37,000	Third Quintile $37,000 - $55,760	Fourth Quintile $55,760 - $82,402	Highest Quintile $82,402 and above
Including Capital Gains	**Net Saving ($ billion)**	73.4	-0.4	2.0	-2.3	4.8	69.3
	Share of quintiles	100.0%	-0.5%	2.7%	-3.1%	6.6%	94.3%
	Saving as % of Disposible Income	11.4	-0.8	2.6	-2.2	3.4	25.5
	Saving per household ($)	6,463	-172	881	-995	2,121	30,481
Excluding Capital Gains	**Net Saving ($ billion)**	42.5	-0.9	1.1	-4.2	2.8	43.7
	Share of quintiles	100.0%	-2.1%	2.5%	-9.8%	6.5%	102.9%
	Saving as % of Disposible Income	6.9	-1.9	1.4	-4.1	2.0	17.8
	Saving per household ($)	3,738	- 388	466	- 1,834	1,217	19,230

Second Application: Breakdown of Employee Compensation by Social Attributes

This part of the paper expands the labour compensation of employees in the generation of income account (row 3a in Table 2) The labour compensation data is shown by industry cross classified by social characteristics–age, gender, and educational attainment—in order to explain differences in employee compensation. Employee compensation in the national accounts consists of wages and salaries of employed persons plus supplementary income which includes employment benefits paid by the employer.

The table in Appendix 2 presents labour compensation for 20 broad industry groups in the business sector of the Canadian economy. The business sector excludes general government and NPISH[15]. Using data on hours-worked corresponding to the employment income, Appendix 3 presents the hourly compensation of employees in each of these industries for reference year 2000. The labour compensation data represents the reconciliation of data collected from payroll surveys, labour force surveys and administrative data. These sources are integrated at Statistics Canada[16]with data on employee attributes collected primarily from the survey of employees, payrolls and hours by establishment.

Labour force attributes for which labour compensation is shown are gender, seven worker age brackets, and six successive levels of education. Combining the three groups of attributes, labour compensation is shown for 84 gender/age/education combinations that permit the analysis of how it varies among attributes and among industries.

Table 7 below is an excerpt of the complete results presented in Appendix 2. It reveals that about ¼ of paid labour compensation in Canadian industries (excluding government and NPISH) is received by women. It shows, however, that this varies from as little as 7% in Forestry and Logging to about 50% in the Finance, Insurance and Real Estate group, and to as high as about 80% in Health Care and Social Assistance. It is easily evident from the table that most of the compensation received by women in Canada goes to the 35-44 year old age bracket, with almost 60% going to the 25 to 44 year old paid workers. It also shows that a similar pattern prevails among men, although the age brackets that account for 60% of labour compensation are 35 to 54 years of age, somewhat older than that among women.

While these results answer a wide range of queries dealing with wages and salaries and benefits, a more powerful and revealing picture of earnings differentials emerges from analysis of average labour compensation per hour, obtained by dividing annual compensation (Appendix 2) by a similar table of data on hours-worked by the same employees. Complete results on average labour compensation per hour are presented in Appendix 3. Table 8 below is an excerpt of Appendix 3 showing that, in 2000, employees received an average of $21.50 per hour for work outside the general government and non-profit sector of the Canadian economy. Workers in the Utilities industries, owing to their higher technical qualifications, received more than $35 an hour, a 65% advantage and in Finance, more than $32 an hour, a 51% advantage.

Table 8 shows that while women's average hourly compensation is about 82% of that of men in Canadian industries, this varies from lows of about 78% in Construction and Manufacturing industries to highs of 96% in Education and 98% in Healthcare and Social Assistance. Importantly, the latter two industries employ a very high proportion of women.

Analysis of Appendix 3 also reveals that women's highest earning years are in the 35-44 year age bracket, where their earnings per hour are 12% higher than their life-time average (see Table 8). For men, this occurs in the 45-54 year range, where they earn about 18% more than the life-time average for their gender. Women who are over 65 years of age earn about 68% of their life-time average hourly compensation. Men in this age bracket earn about 59% of the life-time average for their gender. In addition, while men in the 55-64 brackets still earn 4% higher than their life-time average hourly compensation, women's compensation is actually below their life-time average by 4%.

Table 8 also sheds light on how educational attainments may affect employees' hourly compensation. For instance, the first column of the Table can be used to see the advantage that a post-graduate degree offers an employee in terms of earning compared to the average of their age group. Comparing the hourly rate for the post-graduate with the average for the age bracket in the same column for the total of all industries show that, for women the premium associated with such educational attainment varies from 8% for the over 65 group to 49% for the 18-24 group, meaning that those with a post-graduate degree earn up to 49% more than their peer group in hourly compensation. For the highest earning bracket, those aged 35 to 44, a post-graduate degree confers a 45% earning advantage whereas a bachelor's degree offers a 37% premium over the average. For men, a post-graduate degree boosts hourly earnings by only 31% over the average during their highest income earning years of 45 to 54 years of age, whereas the advantage is as high as 36% for younger groups of 25 to 34 and 35 to 44 years of age who have slightly lower earnings, showing the diminishing returns to education in higher income brackets. The advantage conferred by a bachelor degree is highest for the 18 to 24 year group and tends to decline with the worker's age. Comparing men and women of same age groups, a bachelor and a post graduate degree tend to raise one's earning above the average wage more for women than for men.

Table 7

Labour Compensation in 2000 $million	All Industries	Crop & Animal Prod.	Forestry & Logging	Fishing, Hunting &Trapping	Support Activities, Ag. & Forestry	Mining & Oil and Gas Extraction	Utilities	Construction	Manufacturing	Wholesale Trade	Retail Trade	Transportation & Warehousing	Information and Cultural Industries	Prof., Sci. & Tech. Services	Admin. & Support, etc.	Finance, Ins., R.E. Etc	Educational Services	Health Care & Social Assist.	Arts, Entertainment & Rec.	Accommodation and Food Services	Other Services (Ex. Pub. Admin.)	Government Sector & NPISH
Total	545,204	3,305	2,934	263	705	10,111	6,162	36,120	96,082	34,783	37,238	27,691	16,831	31,208	15,145	48,596	1,221	10,778	4,767	17,677	11,863	131,725
Female	126,172	822	196	31	118	1,180	1,091	2,714	18,983	8,113	15,812	4,870	6,728	10,083	5,991	24,166	749	8,549	2,031	9,031	4,914	NA
Age 25-34	33,356	143	44	8	22	294	227	571	5,183	2,231	3,873	1,245	1,971	3,398	1,820	5,977	150	2,182	572	2,168	1,274	NA
0-8 school years	275	8	1	1	0	1	0	3	125	7	29	6	2	1	17	10	0	11	1	35	16	NA
Some highschool	1,422	17	2	1	1	11	2	31	406	78	240	54	25	23	80	83	1	47	24	228	69	NA
Highschool graduate	5,996	35	10	2	3	38	22	124	1,181	404	1,078	266	238	210	300	964	4	170	102	610	236	NA
Post-secondary grad.	14,757	69	21	4	9	146	107	323	1,934	1,085	1,726	572	770	1,277	948	2,602	21	1,202	242	953	748	NA
Bachelor degree	8,374	12	9	0	6	75	77	72	1,229	549	688	278	689	1,191	368	1,896	90	545	152	296	151	NA
More than Bachelor	2,531	2	0	0	3	23	19	18	309	109	112	69	247	696	108	423	36	207	51	47	53	NA
Age 35-44	41,129	261	70	7	44	465	482	921	6,524	2,908	4,454	1,728	2,330	3,533	1,584	8,882	208	2,611	549	2,205	1,363	NA
0-8 school years	636	20	1	1	0	1	0	8	279	17	62	15	7	1	46	19	0	24	7	97	31	NA
Some highschool	3,052	41	9	1	4	29	14	78	862	199	480	152	69	58	150	217	3	113	44	409	119	NA
Highschool graduate	10,624	72	17	2	12	95	101	276	1,826	773	1,519	517	567	498	358	2,515	14	316	134	688	324	NA
Post-secondary grad.	18,490	109	35	3	21	226	233	470	2,502	1,422	1,846	786	1,010	1,641	769	4,131	43	1,507	235	815	686	NA
Bachelor degree	6,148	17	7	0	4	74	101	67	806	422	461	203	467	848	196	1,522	100	461	90	168	134	NA
More than Bachelor	2,178	3	1	0	3	40	32	22	249	76	87	54	210	487	65	478	48	189	38	27	70	NA
Male	287,307	2,483	2,739	232	587	8,931	5,071	33,406	77,099	26,670	21,426	22,821	10,103	21,125	9,154	24,429	472	2,228	2,735	8,646	6,949	NA
Age 35-44	94,599	726	926	51	218	3,124	1,956	10,888	26,215	9,342	6,423	7,842	3,392	7,079	2,410	8,072	127	719	690	2,225	2,175	NA
0-8 school years	1,915	66	75	9	7	86	8	398	618	83	88	197	8	4	86	24	0	13	11	76	56	NA
Some highschool	9,823	165	253	15	25	442	61	1,633	3,220	882	655	1,185	82	57	345	210	3	25	57	285	222	NA
Highschool graduate	19,210	193	213	9	35	628	278	2,332	6,017	2,139	1,782	2,241	513	346	544	803	7	62	140	558	371	NA
Post-secondary grad.	43,107	265	336	19	108	1,411	1,190	5,946	11,671	4,637	2,991	3,401	1,672	2,366	1,082	3,043	29	296	338	980	1,327	NA
Bachelor degree	13,532	29	47	0	25	370	302	426	3,222	1,234	700	594	695	2,394	224	2,567	49	175	100	252	125	NA
More than Bachelor	7,012	6	2	0	19	187	118	154	1,467	367	206	224	421	1,912	129	1,424	38	147	44	73	75	NA
Age 45-54	72,253	488	708	61	152	2,632	1,956	8,430	19,134	7,146	4,416	6,929	2,620	4,900	1,769	6,739	197	645	529	1,229	1,575	NA
0-8 school years	3,041	78	106	17	9	150	22	697	957	139	146	340	10	6	107	44	1	10	22	93	88	NA
Some highschool	7,828	111	174	16	15	372	83	1,236	2,573	666	546	1,062	88	56	237	182	3	21	43	178	166	NA
Highschool graduate	14,111	98	132	5	17	364	256	1,492	3,988	1,714	1,237	1,929	457	312	372	1,050	7	48	97	296	239	NA
Post-secondary grad.	31,732	169	249	21	68	1,221	1,042	4,470	8,592	3,402	1,843	2,789	1,267	1,445	725	2,668	32	214	209	455	849	NA
Bachelor degree	9,633	27	44	1	22	350	357	374	2,063	892	466	549	466	1,496	199	1,702	75	171	103	159	116	NA
More than Bachelor	5,909	6	2	0	22	175	196	161	961	332	177	260	331	1,586	129	1,093	78	181	54	48	116	NA
Total--Paid employees	413,479	3,305	2,934	263	705	10,111	6,162	36,120	96,082	34,783	37,238	27,691	16,831	31,208	15,145	48,596	1,221	10,778	4,767	17,677	11,863	131,725

Table 8

Compensation Per Hour in 2000	All Industries*	Crop & Animal Prod.	Forestry & Logging	Fishing, Hunting &Trapping	Support Activities, Ag. & Forestry	Mining & Oil and Gas Extraction	Utilities	Construction	Manufacturing	Wholesale Trade	Retail Trade	Transportation & Warehousing	Information and Cultural Industries	Prof., Sci. & Tech. Services	Admin. & Support, etc.	Finance, Ins., R.E. Etc	Educational Services	Health Care & Social Assist	Arts, Entertainment & Rec.	Accommodation and Food Services	Other Services (Ex. Pub. Admin.)
Total	21.5	12.5	24.1	15.4	17.0	28.3	35.3	24.5	24.4	22.4	15.1	22.4	27.2	26.0	17.1	32.4	18.9	16.2	16.7	11.1	14.4
Female	17.6	11.7	19.9	12.5	13.7	24.4	30.5	19.1	18.9	19.0	13.1	20.3	23.8	21.5	16.1	28.3	18.1	15.9	15.5	10.3	12.7
Age 25-34	18.5	13.0	19.9	14.0	13.4	23.7	28.9	18.5	19.4	19.9	14.5	20.1	23.7	21.8	17.7	27.7	16.3	16.1	16.7	11.5	12.8
0-8 school years	13.0	7.5	25.3	16.3	5.9	21.5	16.2	11.7	14.7	11.3	11.7	14.3	19.3	12.1	11.8	24.6	6.9	13.8	13.3	10.4	12.6
Some highschool	12.7	11.4	17.1	12.0	9.3	15.7	20.3	17.1	14.7	14.2	11.5	14.8	15.6	13.8	13.5	18.1	8.7	11.1	12.2	9.7	10.8
Highschool graduate	16.1	13.2	18.0	13.9	10.9	22.1	22.3	18.4	17.4	18.7	13.7	18.4	22.3	17.7	15.9	25.5	11.1	13.3	15.3	10.7	11.2
Post-secondary grad.	17.7	15.0	18.4	14.0	13.1	21.6	26.3	18.4	18.6	19.8	14.2	19.0	22.2	19.7	17.6	25.7	12.4	15.4	16.1	11.9	12.7
Bachelor degree	23.2	12.9	29.6	23.4	16.3	30.6	35.6	19.5	25.5	22.3	18.2	25.6	24.9	22.9	20.1	32.6	17.0	18.8	18.8	13.7	16.3
More than Bachelor	25.5	7.9	14.6	11.3	16.1	30.8	35.7	22.1	29.0	21.3	18.0	29.3	30.2	27.6	23.8	31.3	18.7	18.9	20.7	14.9	21.3
Age 35-44	19.8	13.1	21.6	12.4	16.3	26.7	32.4	20.4	19.7	20.6	14.7	21.3	25.9	23.6	16.4	30.6	17.9	16.7	18.5	11.3	13.8
0-8 school years	12.4	10.1	20.1	11.3	7.0	14.5	10.9	14.1	14.1	12.6	11.5	13.7	24.2	10.1	12.4	21.4	8.9	11.3	14.9	9.9	9.5
Some highschool	13.9	13.0	17.2	9.8	14.4	21.8	28.7	17.0	15.9	15.1	12.2	17.2	18.4	15.0	14.0	20.6	9.8	12.2	14.3	9.9	10.9
Highschool graduate	18.1	12.3	20.0	13.6	13.9	22.9	28.0	20.3	18.6	19.0	14.0	19.8	24.0	19.3	15.3	27.9	12.2	13.9	17.3	10.9	12.2
Post-secondary grad.	20.1	14.2	22.3	13.6	17.5	24.8	30.2	20.5	20.6	21.2	15.1	21.6	25.3	22.4	16.5	29.9	13.8	16.6	18.8	12.1	14.1
Bachelor degree	27.2	14.3	37.3	13.7	20.9	38.8	45.0	25.3	27.7	27.2	20.3	28.7	29.3	28.0	20.1	39.6	20.7	21.2	20.6	14.6	19.7
More than Bachelor	28.7	13.3	11.9	6.9	20.6	48.0	40.5	24.3	30.1	19.8	18.4	30.3	33.1	30.0	25.1	42.0	21.7	19.8	26.2	14.5	25.0
Male	23.7	12.8	24.5	15.9	17.9	28.9	36.5	25.1	26.2	23.7	17.1	22.9	30.0	28.9	17.9	37.8	20.3	17.4	17.7	12.1	15.9
Age 35-44	26.3	14.2	25.7	17.0	20.4	30.1	37.1	27.0	28.0	25.9	20.3	23.7	32.8	31.4	19.8	43.1	20.2	19.0	21.0	14.6	17.5
0-8 school years	18.8	14.9	21.5	15.8	16.4	24.4	20.8	23.7	19.6	17.5	15.0	18.6	37.1	15.6	16.0	19.0	10.9	13.6	15.1	11.6	14.0
Some highschool	20.6	14.6	24.0	15.4	18.7	24.5	30.0	24.0	23.1	20.0	16.8	19.2	24.7	17.2	17.4	25.7	12.4	13.9	17.2	11.9	14.4
Highschool graduate	23.8	13.3	27.9	16.7	18.9	27.3	32.5	25.7	26.6	24.3	19.9	22.8	29.7	24.5	19.6	33.4	14.2	16.2	19.3	14.0	16.4
Post-secondary grad.	26.8	14.9	26.3	19.4	20.9	30.2	36.8	28.7	28.4	27.6	20.9	25.4	32.1	29.1	20.3	40.3	17.8	18.4	22.3	15.6	17.9
Bachelor degree	33.3	12.1	35.1	17.6	23.0	43.9	45.6	27.7	35.6	30.6	22.6	31.1	34.9	33.1	21.4	49.5	22.2	21.9	21.0	16.3	21.7
More than Bachelor	35.8	8.9	10.0	13.9	22.8	47.1	42.5	30.5	37.0	24.4	23.5	34.5	39.6	35.4	26.0	54.3	23.5	20.5	26.9	19.2	30.4
Age 45-54	28.1	12.7	26.3	18.0	19.5	34.6	39.3	28.7	30.2	27.7	20.6	25.8	35.3	33.3	19.8	44.4	23.0	19.8	22.1	13.7	18.2
0-8 school years	20.4	15.8	21.2	16.6	16.2	27.9	29.0	25.1	22.3	19.1	15.8	19.2	33.1	18.8	17.0	20.5	12.9	10.1	17.7	10.3	14.9
Some highschool	22.3	13.8	24.9	15.5	16.3	28.1	31.5	25.7	25.9	20.8	18.1	21.0	26.5	20.8	17.7	23.1	13.2	13.9	16.3	11.4	15.7
Highschool graduate	26.2	11.1	26.9	18.3	16.8	30.5	35.1	27.8	28.9	27.4	20.8	25.6	33.5	27.2	19.1	40.3	15.9	16.2	18.6	13.6	16.9
Post-secondary grad.	29.1	13.0	27.8	22.3	19.4	34.8	37.7	30.6	31.5	29.8	21.3	27.6	35.2	30.8	20.2	42.8	20.0	20.0	22.8	14.7	17.8
Bachelor degree	33.8	10.2	44.8	17.1	24.1	51.1	48.4	29.7	36.8	30.0	22.0	31.3	37.3	33.4	22.0	50.8	24.3	23.3	27.2	16.7	23.1
More than Bachelor	36.9	6.6	17.1	8.1	23.4	49.1	48.2	31.8	38.3	28.7	22.8	41.4	39.2	38.5	24.6	55.3	25.3	19.8	28.8	15.7	37.6

* Excludes Government Sector and NPISH

Third Application: Expanding the Government Account (Taxes on products by type and by origin)

This section focuses on a breakdown of taxes on products. The goal of this study is to present an appropriate breakdown of tax types linked with the tax bases (types of products) that can be used to show the origin of government revenues from indirect taxes. These taxes do not include those levied on incomes of persons, incorporated and unincorporated enterprises, nor taxes on production such as property taxes, school taxes and capital taxes. These taxes could also be expanded through a similar study.

At the most disaggregate level, the Canadian System of National Accounts compiles 14 types of product taxes in its national and provincial input-output tables[17]. For this exercise, they have been grouped into 6 broad tax groups.

1. Federal taxes: These consist of federal trading profits, the federal gasoline sales tax, the federal air (transportation) tax, the excise tax and the excise duty.

2. Provincial taxes: These are taxes imposed by various provincial governments in Canada. They consist of the provincial gallon tax (on alcoholic beverages), a tax on trading profits, and the provincial gasoline sales tax.

3. Municipal sales taxes: these consist only of amusement taxes levied by certain municipalities.

4. GST: This is the goods and services tax (GST), imposed nation-wide by the federal government, that accounts for the largest proportion of indirect tax revenue. With relatively few exceptions, such as spending on certain types of food purchased from store and financial services, all goods and services transacted in Canada are subject to the GST. Businesses receive refunds for GST paid on intermediate inputs. The harmonized Sales Tax has recently replaced the GST in a few provinces where, subject to a federal-provincial tax accord on sales tax harmonization, the federal government collects the provincial sales tax and the GST in a single collection at the point of sale.

5. The Provincial Sales Tax (PST): This is the provincial counterpart of the GST discussed above. It is imposed by most provinces on most types of transactions on goods.

6. Custom Duties: These taxes are imposed by the federal government on imports of goods. Data on import duties were estimated from the input-output tables using the import-share assumption conventionally used for these calculations.

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Table 9

Taxes on Products by type of tax and type of purchaser, Canada, 2000, ($ billion)

	Total, All Taxes	Sales Taxes		Federal Taxes	Provincial Taxes	Municipal Taxes	Custom Import Duties
		Federal GST	Provincial (PST)				
Total, All Payers	**86.2**	**26.6**	**30.6**	**8.4**	**17.9**	**0.3**	**2.4**
Intermediate Consumption	17.3	2.5	7.4	2.1	4.5	0.0	0.7
Construction Industry	2.1	0.0	1.7	0.1	0.2	0.0	0.1
Industries Exc. Construction	15.2	2.5	5.7	2.0	4.3	0.0	0.7
Final Consumption	68.9	24.2	23.2	6.2	13.4	0.2	1.7
Personal Sector Expenditure	58.3	19.7	18.8	5.9	12.3	0.0	1.6
NPISH Expenditure	0.3	0.2	0.1	0.0	0.0	0.0	0.0
Capital Formation	8.5	3.8	3.5	0.1	0.9	0.2	0.1
Machinery & Equipment	3.7	0.8	2.7	0.1	0.0	0.0	0.1
Construction	4.9	3.0	0.8	0.0	0.9	0.2	0.0
Government Expenditure	1.7	0.5	0.8	0.2	0.2	0.0	0.0
Exports	0.1			0.1			

The disaggregate SAM presented in Table 9 shows the values of taxes collected for each of the above 6 types and for types of products affected. This is a disaggregation of the "taxes less subsidies on products" with a value of $86.2 billion shown in cell (4, 1) of Table 1 or, alternatively, on Table 2 as the sum of (4c, 1a), (4c, 1b) and (4c, 1c). Table 10 expresses the effective tax rates that underlie Table 9, showing those taxes as a percentage of the value of goods and services associated with them

Table 9 reveals that the preponderance of product tax revenue originated in final expenditure, accounting for about 80% of the total: furthermore, about 85% of this total came from personal consumption expenditure. Little more than 12% of taxes on final expenditure were collected through levies on capital formation such as construction and machinery and equipment. Exports accounted for a negligible share of taxes. Taxes on intermediate consumption of goods and services by domestic industry accounted for the remaining 20% of taxes collected, with some 87% of those coming from industries other than construction. The table also shows that provincial sales taxes account for more than 80% of the taxes imposed on the construction industry's intermediate expenses, with another 10% coming through other provincial taxes. Less than 10% of the construction industry's taxes go to the federal government through import duties and other federal taxes.

Table 10 contains effective tax rates that illustrate the relative incidence of taxes on products shown in Table 7[18]. By far the highest incidence occurs on personal consumption expenditure, where consumers pay about 11%. While the federal goods and services tax applies at the rate of 7% currently, tax exemptions for consumer expenditure such as food and rent and the exemption of financial services such as banking reduce the effective rate to 3.7%. The effective tax rate on capital formation was 4.3% in 2000, mostly coming through federal and provincial sales taxes paid on investment goods and services that are capitalized. Canadian industry paid about 2.0% on its intermediate expenses, about the same as governments paid on their expenditures (1.9%).

However, the construction industry paid a substantially higher 3.4% tax rate on the goods and services it bought to produce its output. This industry is defined in the national accounts to include not only the builders of residential and non-residential structures, but all other construction activities that are conducted on own-account elsewhere in the economy. The tax on exports was less than a tenth of a percent, whereas imports were subject to an effective rate of 0.6% in custom duties. The highest rate of import duties is found in goods that enter into personal consumption expenditure.

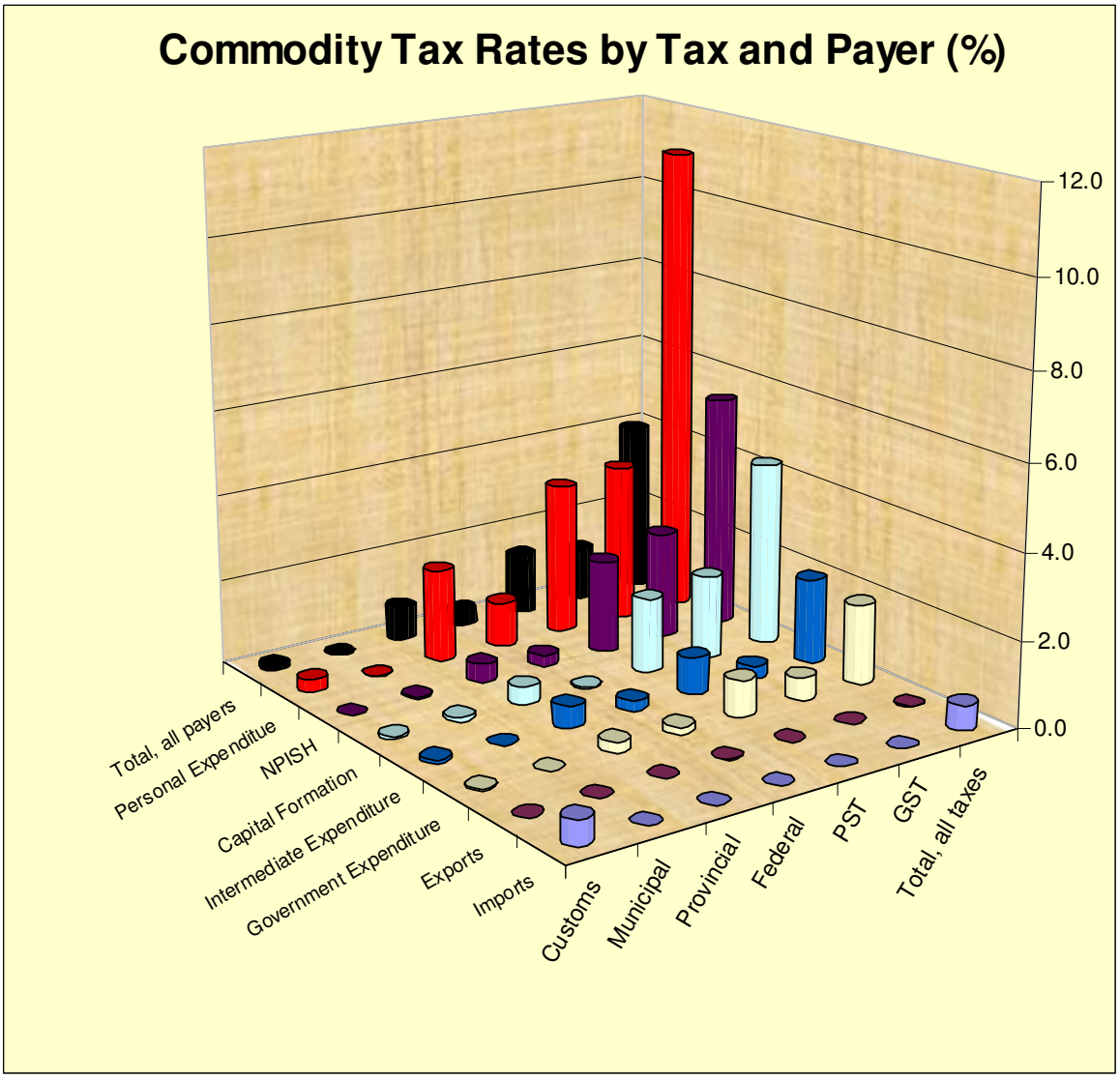

Table 10

EffctiveTax rates for Taxes on Products by type of tax and type of payer
Canada, 2000, (%)

	Total, All Taxes	Sales Taxes		Federal Taxes	Provincial Taxes	Municipal Taxes	Custom Import Duties
		Federal GST	Provincial (PST)				
Total, All Payers	**4.0**	**1.2**	**1.4**	**0.4**	**0.8**	**0.0**	**0.1**
Intermediate Consumption	2.0	0.3	0.9	0.2	0.5	0.0	0.1
Construction Industry	3.4	0.0	2.8	0.2	0.3	0.0	0.1
Industries Exc. Construction	1.9	0.3	0.7	0.2	0.5	0.0	0.1
Final Consumption	5.4	1.9	1.8	0.5	1.0	0.0	0.1
Personal Sector Expenditure	11.1	3.7	3.6	1.0	2.2	0.0	0.3
NPISH Expenditure	5.5	2.5	2.2	0.3	0.4	0.0	0.0
Capital Formation	4.3	1.9	1.8	0.0	0.4	0.1	0.1
Machinery & Equipment	4.2	1.0	3.0	0.1	0.0	0.0	0.1
Construction	4.4	2.7	0.7	0.0	0.8	0.2	0.0
Government Expenditure	1.9	0.5	0.9	0.2	0.2	0.0	0.0
Exports	0.0			0.0			
Imports	0.6						0.6

Concluding Remarks

This study has demonstrated the feasibility of constructing a Social Accounting Matrix for the Canadian economy with existing Statistics Canada economic and social statistics. At the macro level, the data sources are the income and outlay accounts and national input-output tables. Micro variables are obtained from a household spending survey, payroll and labour force surveys and income tax files. The study has shown that SAM is a useful construct in its own right as an integrated system of socio-economic statistics.

The paper shows three applications of SAM where macro and micro concepts and data sources are integrated. The most interesting case is the socio-economic disaggregation of the household sector (the first application) which is only possible in a SAM framework. The paper shows that a market transaction approach to measuring the household sector works well for integrating incomes, outlays and savings of the sector with socio-economic data on household attributes. We suggest that a supplementary income and outlay account for the household sector based on the transaction approach would be a useful addition to existing statistical measures. While the paper presents a complete integration of macro and micro concepts using the market transaction approach, statistical integration of household spending data, tax data, and national accounts aggregates is a broader project than the objective of this paper. Work is underway by the authors and others at Statistics Canada to enhance the statistical reconciliation of household income data though the integration of household surveys with income tax data and other sources.

Appendix 1

The third income quintile shows a net borrowing of $2.3 billion or $995 per household in 2000 (Table 5, p. 21). By contrast, the second quintile has a positive saving of $881 per household and higher quintiles also show positive savings that rise with their average income levels. This finding challenges the expectation that saving levels would monotonically rise with income levels for each quintile. The purpose of this appendix is to explore possible explanations for the observed saving pattern across quintiles with the limited data available at the present time. A definitive explanation would require data on all elements of income and outlays for several years. However, some tentative explanations can be gleaned from available data on household attributes.

Comparing the households in this quintile with others in the SHS suggests explanations in terms of the average age of household members and in terms of their employment status. Households in the 3rd quintile have an average income of $56,500, about 44% higher than the $39,000 earned by those in the 2nd quintile. However, it could be argued that these households expect a still higher long term income because 69% of these households have full-time job holders whereas the rate is only 40% for the 2nd quintile (and 85% for the 4th quintile). Full-time employment brings with it not only a higher expected life-time income to support consumption, but also the ability to finance consumptions in excess of current income on a temporary basis. This explanation is consistent with predictions of the permanent income hypothesis of consumption.

A second and complementary explanation relates to the average age of wage-earners who head the household. A proxy for this available from the SHS is the average age of the reference person—the individual who is normally responsible for financial maintenance of the household such as paying bills. The 3rd quintile's reference person is on average 47 years old, with nearly a half (46%) of all reference persons between 25 and 44 years of age. The reference person in the second quintile is considerably older at 53 years of age. Furthermore, those in the 2nd quintile are fairly evenly spread with about 1/3 in the 25-44 bracket, 1/3 in the 45-64 bracket, and about 31% over 65 years of age. In the 4th and 5th quintiles the average age declines only slightly to 45 years and 46 years respectively. However, these households have substantially higher levels of income on both per-adult basis and per-person basis compared to those in the 3rd quintile. This explanation is consistent with the life-cycle theory of consumption.

In sum, the likely explanation of the observed saving pattern is that household in the third income quintile have a disproportionate number of people who are economically secure with their full-time jobs yet within an age bracket when major expenditures are undertaken that are associated with early stages of life in anticipation of higher incomes in the future.

Appendix 2

Labour Compensation in 2000 $million	All Industries	Crop & Animal Prod.	Forestry & Logging	Fishing, Hunting & Trapping	Support Activities, Ag. & Forestry	Mining & Oil and Gas Extraction	Utilities	Construction	Manufacturing	Wholesale Trade	Retail Trade	Transportation & Warehousing	Information and Cultural Industries	Prof., Sci. & Tech. Services	Admin. & Support, etc.	Finance, Ins., R.E. Etc	Educational Services	Health Care & Social Assist.	Arts, Entertainment & Rec.	Accommodation and Food Services	Other Services (Ex. Pub. Admin.)	Government Sector & NPISH
Total	545,204	3,305	2,934	263	705	10,111	6,162	36,120	96,082	34,783	37,238	27,691	16,831	31,208	15,145	48,596	1,221	10,778	4,767	17,677	11,863	131,725
Female	126,172	822	196	31	118	1,180	1,091	2,714	18,983	8,113	15,812	4,870	6,728	10,083	5,991	24,166	749	8,549	2,031	9,031	4,914	NA
Female — Age 16-17	1,192	32	0	0	1	0	0	8	49	18	384	6	27	9	40	44	0	15	66	454	37	NA
0-8 school years	41	6	0	0	0	0		0	6	0	7	0	0	0	1	1	0	1	1	15	2	NA
Some highschool	988	24	0	0	1	0	0	7	35	15	315	4	22	8	34	30	0	12	55	394	31	NA
Highschool graduate	96	1	0	0	0	0	0	1	4	2	36	1	3	1	3	8	0	1	6	29	2	NA
Post-secondary grad.	66	1	0	0	0	0	0	1	3	1	25	0	2	1	2	6	0	1	4	17	2	NA
Bachelor degree																						NA
More than Bachelor																						NA
Age 18-24	13,024	109	18	2	16	75	28	180	1,568	537	2,709	334	534	706	863	1,482	22	580	390	2,314	559	NA
0-8 school years	56	4	0	0	0	0	0	1	19	1	9	1	0	0	2	1	0	2	1	11	3	NA
Some highschool	1,216	20	1	0	1	5	1	20	199	41	260	28	18	15	88	58	0	30	28	354	49	NA
Highschool graduate	3,440	25	5	0	3	13	4	44	446	141	857	87	99	80	227	354	1	70	95	750	139	NA
Post-secondary grad.	6,981	56	10	1	10	47	17	105	730	295	1,423	184	317	425	465	834	8	405	215	1,088	345	NA
Bachelor degree	1,190	3	2	0	2	10	5	9	158	54	147	31	86	153	73	212	10	67	45	102	21	NA
More than Bachelor	142	0	0		0	0	1	1	16	4	13	3	14	33	8	23	2	7	6	9	2	NA
Age 25-34	33,356	143	44	8	22	294	227	571	5,183	2,231	3,873	1,245	1,971	3,398	1,820	5,977	150	2,182	572	2,168	1,274	NA
0-8 school years	275	8	1	1	0	1	0	3	125	7	29	6	2	1	17	10	0	11	1	35	16	NA
Some highschool	1,422	17	2	1	1	11	2	31	406	78	240	54	25	23	80	83	1	47	24	228	69	NA
Highschool graduate	5,996	35	10	2	3	38	22	124	1,181	404	1,078	266	238	210	300	964	4	170	102	610	236	NA
Post-secondary grad.	14,757	69	21	4	9	146	107	323	1,934	1,085	1,726	572	770	1,277	948	2,602	21	1,202	242	953	748	NA
Bachelor degree	8,374	12	9	0	6	75	77	72	1,229	549	688	278	689	1,191	368	1,896	90	545	152	296	151	NA
More than Bachelor	2,531	2	0	0	3	23	19	18	309	109	112	69	247	696	108	423	36	207	51	47	53	NA
Age 35-44	41,129	261	70	7	44	465	482	921	6,524	2,908	4,454	1,728	2,330	3,533	1,584	8,882	208	2,611	549	2,205	1,363	NA
0-8 school years	636	20	1	1	0	1	0	8	279	17	62	15	7	1	46	19	0	24	7	97	31	NA
Some highschool	3,052	41	9	1	4	29	14	78	862	199	480	152	69	58	150	217	3	113	44	409	119	NA
Highschool graduate	10,624	72	17	2	12	95	101	276	1,826	773	1,519	517	567	498	358	2,515	14	316	134	688	324	NA
Post-secondary grad.	18,490	109	35	3	21	226	233	470	2,502	1,422	1,846	786	1,010	1,641	769	4,131	43	1,507	235	815	686	NA
Bachelor degree	6,148	17	7	0	4	74	101	67	806	422	461	203	467	848	196	1,522	100	461	90	168	134	NA
More than Bachelor	2,178	3	1	0	3	40	32	22	249	76	87	54	210	487	65	478	48	189	38	27	70	NA
Age 45-54	28,511	186	48	11	26	290	304	740	4,285	1,866	3,232	1,175	1,541	1,930	1,262	6,168	296	2,270	338	1,319	1,225	NA
0-8 school years	1,009	23	1	1	1	1	1	23	420	22	114	24	5	5	63	32	1	51	8	143	69	NA
Some highschool	2,836	36	9	4	3	26	14	90	751	176	478	141	61	54	129	236	4	142	31	309	143	NA
Highschool graduate	8,546	48	14	2	7	79	89	241	1,304	609	1,189	390	468	422	323	2,257	20	306	92	385	300	NA
Post-secondary grad.	11,294	68	21	3	11	133	136	322	1,361	841	1,121	463	582	794	553	2,612	57	1,194	118	386	519	NA
Bachelor degree	3,303	9	3	0	1	38	37	52	343	175	268	111	262	359	145	730	137	384	52	79	118	NA
More than Bachelor	1,524	2	0	0	3	13	26	12	105	43	61	47	164	296	50	303	76	194	36	17	76	NA
Age 55-64	8,452	80	14	3	8	56	49	277	1,335	530	1,086	369	311	473	398	1,498	71	841	105	549	397	NA
0-8 school years	689	20	2	0	1	3	0	21	249	15	77	20	6	4	42	29	1	43	9	108	41	NA
Some highschool	1,262	17	4	2	2	7	3	54	268	82	214	72	23	26	54	119	3	87	17	142	66	NA
Highschool graduate	2,337	13	2	1	2	19	18	82	342	165	355	119	84	128	105	538	6	109	29	128	93	NA
Post-secondary grad.	3,243	27	4	1	2	23	24	108	400	235	371	130	107	224	153	636	19	445	36	143	153	NA
Bachelor degree	629	3	1	0	0	2	3	10	57	22	55	23	55	51	32	135	26	98	8	23	24	NA
More than Bachelor	293	0	0		0	1	1	2	19	11	14	5	36	41	12	41	17	60	6	5	20	NA
Age 65 +	508	10	1	0	0	0	0	18	39	22	73	14	14	34	23	115	2	51	11	22	59	NA
0-8 school years	55	3	0	0	0	0	0	2	7	1	7	2	1	0	2	7	0	4	1	5	13	NA
Some highschool	88	2	0	0	0	0	0	5	10	4	14	3	2	3	6	17	0	5	3	5	9	NA
Highschool graduate	156	2	1	0		0		6	9	9	27	5	4	10	7	43	0	11	2	7	16	NA
Post-secondary grad.	157	3	0	0	0	0		4	11	7	19	2	3	14	6	40	1	23	5	4	17	NA
Bachelor degree	31	0			0			1	0	1	5	1	3	4	2	6	0	4	1	1	2	NA
More than Bachelor	20	0						0	2	0	2	0	2	3	0	2	0	5	0	0	3	NA

Appendix 2 cont.

Labour Compensation in 2000 $million	All Industries	Crop & Animal Prod.	Forestry & Logging	Fishing, Hunting &Trapping	Support Activities, Ag. & Forestry	Mining & Oil and Gas Extraction	Utilities	Construction	Manufacturing	Wholesale Trade	Retail Trade	Transportation & Warehousing	Information and Cultural Industries	Prof., Sci. & Tech. Services	Admin. & Support, etc.	Finance, Ins., R.E. Etc	Educational Services	Health Care & Social Assist.	Arts, Entertainment & Rec.	Accommodation and Food Services	Other Services (Ex. Pub. Admin.)	Government Sector & NPISH
Male	287,307	2,483	2,739	232	587	8,931	5,071	33,406	77,099	26,670	21,426	22,821	10,103	21,125	9,154	24,429	472	2,228	2,735	8,646	6,949	NA
Male — Age 16-17	1,587	93	5	2	4	5	0	118	180	68	387	25	35	9	86	46	0	6	84	397	36	NA
Male — Age 16-17 — 0-8 school years	116	16	1	0	1	0	0	13	35	5	13	2	2	0	5	2	0	0	3	12	6	NA
Male — Age 16-17 — Some highschool	1,233	72	3	1	3	5	0	86	118	51	307	19	26	6	70	27	0	5	68	341	25	NA
Male — Age 16-17 — Highschool graduate	104	3	0	0	0	0	0	9	13	5	30	2	3	1	4	5	0	0	5	20	2	NA
Male — Age 16-17 — Post-secondary grad.	134	3	0	0	1	0	0	10	14	7	37	3	5	2	6	11	0	1	9	23	2	NA
Male — Age 16-17 — Bachelor degree																						NA
Male — Age 16-17 — More than Bachelor																						NA
Male — Age 18-24	22,027	392	229	21	56	611	57	2,783	5,505	1,508	2,702	1,086	675	1,002	1,368	1,019	9	98	411	1,821	675	NA
Male — Age 18-24 — 0-8 school years	304	23	10	1	1	8	0	41	99	15	25	18	1	2	20	4	0	2	3	20	12	NA
Male — Age 18-24 — Some highschool	3,390	102	60	7	9	139	3	576	923	237	348	186	23	26	245	60	0	8	39	298	101	NA
Male — Age 18-24 — Highschool graduate	7,074	120	69	6	13	234	10	929	1,908	496	974	409	131	117	472	229	1	15	130	627	181	NA
Male — Age 18-24 — Post-secondary grad.	9,891	140	83	7	29	215	35	1,196	2,273	687	1,256	441	415	566	582	518	5	61	207	805	371	NA
Male — Age 18-24 — Bachelor degree	1,215	7	6	0	4	14	8	37	273	65	90	28	88	246	44	189	3	12	27	65	9	NA
Male — Age 18-24 — More than Bachelor	152	0	0	0	0	1	0	3	29	7	9	3	16	46	5	19	1	1	4	6	1	NA
Male — Age 25-34	69,497	520	579	76	113	1,968	652	7,800	18,531	5,962	5,600	4,597	2,822	6,380	2,503	5,887	77	529	784	2,344	1,772	NA
Male — Age 25-34 — 0-8 school years	942	45	27	9	3	36	2	182	309	39	65	80	2	4	47	7	0	8	6	35	35	NA
Male — Age 25-34 — Some highschool	5,417	88	113	21	10	258	14	993	1,706	415	418	522	41	34	258	102	1	14	36	224	149	NA
Male — Age 25-34 — Highschool graduate	13,675	131	157	12	18	500	57	1,768	4,214	1,340	1,493	1,195	292	235	591	569	3	37	167	583	313	NA
Male — Age 25-34 — Post-secondary grad.	31,892	225	232	33	59	904	391	4,397	8,429	2,913	2,752	2,166	1,244	2,076	1,168	1,989	14	241	385	1,162	1,115	NA
Male — Age 25-34 — Bachelor degree	13,167	28	50	1	15	217	150	377	3,020	1,051	727	527	870	2,664	331	2,376	41	158	150	290	121	NA
Male — Age 25-34 — More than Bachelor	4,405	3	1	0	8	54	38	83	852	204	146	107	373	1,368	106	844	18	70	41	51	39	NA
Male — Age 35-44	94,599	726	926	51	218	3,124	1,956	10,888	26,215	9,342	6,423	7,842	3,392	7,079	2,410	8,072	127	719	690	2,225	2,175	NA
Male — Age 35-44 — 0-8 school years	1,915	66	75	9	7	86	8	398	618	83	88	197	8	4	86	24	0	13	11	76	56	NA
Male — Age 35-44 — Some highschool	9,823	165	253	15	25	442	61	1,633	3,220	882	655	1,185	82	57	345	210	3	25	57	285	222	NA
Male — Age 35-44 — Highschool graduate	19,210	193	213	9	35	628	278	2,332	6,017	2,139	1,782	2,241	513	346	544	803	7	62	140	558	371	NA
Male — Age 35-44 — Post-secondary grad.	43,107	265	336	19	108	1,411	1,190	5,946	11,671	4,637	2,991	3,401	1,672	2,366	1,082	3,043	29	296	338	980	1,327	NA
Male — Age 35-44 — Bachelor degree	13,532	29	47	0	25	370	302	426	3,222	1,234	700	594	695	2,394	224	2,567	49	175	100	252	125	NA
Male — Age 35-44 — More than Bachelor	7,012	6	2	0	19	187	118	154	1,467	367	206	224	421	1,912	129	1,424	38	147	44	73	75	NA
Male — Age 45-54	72,253	488	708	61	152	2,632	1,956	8,430	19,134	7,146	4,416	6,929	2,620	4,900	1,769	6,739	197	645	529	1,229	1,575	NA
Male — Age 45-54 — 0-8 school years	3,041	78	106	17	9	150	22	697	957	139	146	340	10	6	107	44	1	10	22	93	88	NA
Male — Age 45-54 — Some highschool	7,828	111	174	16	15	372	83	1,236	2,573	666	546	1,062	88	56	237	182	3	21	43	178	166	NA
Male — Age 45-54 — Highschool graduate	14,111	98	132	5	17	364	256	1,492	3,988	1,714	1,237	1,929	457	312	372	1,050	7	48	97	296	239	NA
Male — Age 45-54 — Post-secondary grad.	31,732	169	249	21	68	1,221	1,042	4,470	8,592	3,402	1,843	2,789	1,267	1,445	725	2,668	32	214	209	455	849	NA
Male — Age 45-54 — Bachelor degree	9,633	27	44	1	22	350	357	374	2,063	892	466	549	466	1,496	199	1,702	75	171	103	159	116	NA
Male — Age 45-54 — More than Bachelor	5,909	6	2	0	22	175	196	161	961	332	177	260	331	1,586	129	1,093	78	181	54	48	116	NA
Male — Age 55-64	25,843	230	282	21	43	589	450	3,213	7,303	2,520	1,768	2,265	518	1,628	876	2,394	60	212	210	595	665	NA
Male — Age 55-64 — 0-8 school years	2,901	85	102	8	7	88	20	659	895	138	157	325	12	10	116	67	2	12	25	95	77	NA
Male — Age 55-64 — Some highschool	3,685	53	70	5	7	99	24	496	1,158	383	289	436	42	27	160	185	2	13	33	117	84	NA
Male — Age 55-64 — Highschool graduate	4,977	30	26	2	4	93	48	463	1,340	608	483	551	94	128	210	579	3	21	44	142	108	NA
Male — Age 55-64 — Post-secondary grad.	9,991	54	73	6	13	213	215	1,429	2,959	1,048	617	780	183	515	293	954	11	67	75	169	318	NA
Male — Age 55-64 — Bachelor degree	2,407	5	10	0	5	57	76	101	619	214	151	106	113	385	48	358	16	42	18	46	37	NA
Male — Age 55-64 — More than Bachelor	1,883	2	0	0	7	39	67	65	331	129	72	68	75	564	49	252	25	57	15	25	42	NA
Male — Age 65 +	1,501	34	9	0	1	2	0	175	232	125	130	77	42	126	142	273	2	19	27	35	51	NA
Male — Age 65 + — 0-8 school years	181	12	4	0	0	0	0	35	30	7	13	18	1	1	21	18	0	2	4	6	9	NA
Male — Age 65 + — Some highschool	271	11	2	0	0	0	0	36	39	19	31	23	2	4	37	36	0	3	6	11	11	NA
Male — Age 65 + — Highschool graduate	277	5	1	0	0	0	0	19	27	53	34	10	2	6	30	67	0	2	7	7	8	NA
Male — Age 65 + — Post-secondary grad.	517	5	2	0	0	1	0	77	111	34	40	22	8	32	48	95	0	5	8	9	19	NA
Male — Age 65 + — Bachelor degree	135	0	0	0	0	0		6	18	9	8	3	15	27	4	36	0	4	1	2	1	NA
Male — Age 65 + — More than Bachelor	121	0	0		0	0		2	7	4	4	1	14	55	4	22	1	4	1	0	3	NA

Appendix 3

Compensation Per Hour in 2000	All Industries*	Crop & Animal Prod.	Forestry & Logging	Fishing, Hunting & Trapping	Support Activities, Ag. & Forestry	Mining & Oil and Gas Extraction	Utilities	Construction	Manufacturing	Wholesale Trade	Retail Trade	Transportation & Warehousing	Information and Cultural Industries	Prof., Sci. & Tech. Services	Admin. & Support, etc.	Finance, Ins., R.E. Etc	Educational Services	Health Care & Social Assist.	Arts, Entertainment & Rec.	Accommodation and Food Services	Other Services (Ex. Pub. Admin.)
Total	21.5	12.5	24.1	15.4	17.0	28.3	35.3	24.5	24.4	22.4	15.1	22.4	27.2	26.0	17.1	32.4	18.9	16.2	16.7	11.1	14.4
Female	17.6	11.7	19.9	12.5	13.7	24.4	30.5	19.1	18.9	19.0	13.1	20.3	23.8	21.5	16.1	28.3	18.1	15.9	15.5	10.3	12.7
Female — Age 16-17	8.3	8.9	6.7	8.9	6.9	8.9	7.0	9.5	10.9	11.1	8.4	9.7	8.4	9.5	9.4	12.8	6.4	7.8	9.3	7.6	7.4
0-8 school years	8.8	5.4		1.4	5.2	7.3		5.9	10.6	2.9	10.1	9.1	12.0	6.2	10.2	14.3	2.7	9.7	9.7	9.7	8.7
Some highschool	8.3	10.8	6.2	8.7	7.1	9.5	5.7	9.6	11.0	11.6	8.4	9.8	8.1	9.5	9.4	12.2	6.5	7.8	9.2	7.5	7.3
Highschool graduate	8.7	7.1	9.4	14.3	5.7	7.1	9.4	9.4	10.5	9.8	8.6	7.9	10.6	9.5	8.9	14.3	7.2	6.7	10.2	7.5	7.6
Post-secondary grad.	8.7	10.1	12.1	6.6	6.4	9.5	7.3	11.1	10.5	8.0	8.6	12.0	10.0	10.1	9.9	14.1	8.0	7.9	10.0	7.2	7.5
Bachelor degree																					
More than Bachelor																					
Female — Age 18-24	11.8	11.3	16.0	9.4	10.4	16.8	17.3	13.4	15.1	13.3	9.8	15.1	16.4	14.1	13.3	19.2	11.0	11.3	11.8	9.1	9.3
0-8 school years	11.0	5.6	20.4	14.1	8.3	9.5	11.4	26.4	14.5	10.6	11.3	10.9	12.7	12.9	10.0	13.3	3.3	10.8	12.4	9.2	10.8
Some highschool	9.6	10.2	14.1	7.3	11.0	11.8	14.1	11.9	12.3	10.7	8.5	13.7	11.9	9.5	11.3	13.8	7.1	8.7	9.6	8.4	7.8
Highschool graduate	11.2	11.3	14.6	7.6	10.0	15.7	16.0	13.2	14.6	13.0	9.8	14.6	15.4	11.7	13.2	18.6	8.0	9.9	11.6	8.8	8.6
Post-secondary grad.	12.1	12.7	15.4	12.2	10.3	17.0	16.6	13.7	15.3	13.4	10.0	14.9	16.4	13.6	13.5	19.0	9.2	11.5	11.9	9.4	9.7
Bachelor degree	15.9	11.0	26.3	7.4	12.1	22.4	22.9	13.7	21.2	16.2	11.6	19.9	18.7	17.1	15.9	23.7	13.5	13.4	13.6	10.0	12.0
More than Bachelor	17.6	6.8	7.2		6.4	17.5	21.0	20.5	23.4	15.7	10.6	18.4	22.3	20.7	19.7	24.0	14.7	12.0	16.2	11.4	16.7
Female — Age 25-34	18.5	13.0	19.9	14.0	13.4	23.7	28.9	18.5	19.4	19.9	14.5	20.1	23.7	21.8	17.7	27.7	16.3	16.1	16.7	11.5	12.8
0-8 school years	13.0	7.5	25.3	16.3	5.9	21.5	16.2	11.7	14.7	11.3	11.7	14.3	19.3	12.1	11.8	24.6	6.9	13.8	13.3	10.4	12.6
Some highschool	12.7	11.4	17.1	12.0	9.3	15.7	20.3	17.1	14.7	14.2	11.5	14.8	15.6	13.8	13.5	18.1	8.7	11.1	12.2	9.7	10.8
Highschool graduate	16.1	13.2	18.0	13.9	10.9	22.1	22.3	18.4	17.4	18.7	13.7	18.4	22.3	17.7	15.9	25.5	11.1	13.3	15.3	10.7	11.2
Post-secondary grad.	17.7	15.0	18.4	14.0	13.1	21.6	26.3	18.4	18.6	19.8	14.2	19.0	22.2	19.7	17.6	25.7	12.4	15.4	16.1	11.9	12.7
Bachelor degree	23.2	12.9	29.6	23.4	16.3	30.6	35.6	19.5	25.5	22.3	18.2	25.6	24.9	22.9	20.1	32.6	17.0	18.8	18.8	13.7	16.3
More than Bachelor	25.5	7.9	14.6	11.3	16.1	30.8	35.7	22.1	29.0	21.3	18.0	29.3	30.2	27.6	23.8	31.3	18.7	18.9	20.7	14.9	21.3
Female — Age 35-44	19.8	13.1	21.6	12.4	16.3	26.7	32.4	20.4	19.7	20.6	14.7	21.3	25.9	23.6	16.4	30.6	17.9	16.7	18.5	11.3	13.8
0-8 school years	12.4	10.1	20.1	11.3	7.0	14.5	10.9	14.1	14.1	12.6	11.5	13.7	24.2	10.1	12.4	21.4	8.9	11.3	14.9	9.9	9.5
Some highschool	13.9	13.0	17.2	9.8	14.4	21.8	28.7	17.0	15.9	15.1	12.2	17.2	18.4	15.0	14.0	20.6	9.8	12.2	14.3	9.9	10.9
Highschool graduate	18.1	12.3	20.0	13.6	13.9	22.9	28.0	20.3	18.6	19.0	14.0	19.8	24.0	19.3	15.3	27.9	12.2	13.9	17.3	10.9	12.2
Post-secondary grad.	20.1	14.2	22.3	13.6	17.5	24.8	30.2	20.5	20.6	21.2	15.1	21.6	25.3	22.4	16.5	29.9	13.8	16.6	18.8	12.1	14.1
Bachelor degree	27.2	14.3	37.3	13.7	20.9	38.8	45.0	25.3	27.7	27.2	20.3	28.7	29.3	28.0	20.1	39.6	20.7	21.2	20.6	14.6	19.7
More than Bachelor	28.7	13.3	11.9	6.9	20.6	48.0	40.5	24.3	30.1	19.8	18.4	30.3	33.1	30.0	25.1	42.0	21.7	19.8	26.2	14.5	25.0
Female — Age 45-54	19.2	11.6	20.0	12.5	13.6	25.5	32.0	20.5	19.3	19.7	14.3	21.1	25.5	22.1	16.6	30.3	20.0	16.5	17.9	10.8	13.7
0-8 school years	12.9	12.5	14.0	10.6	10.8	10.5	24.5	16.6	14.7	13.0	11.8	16.2	19.8	16.4	12.5	20.0	10.8	12.1	13.4	10.3	9.9
Some highschool	14.5	11.7	18.8	11.0	13.0	20.0	30.4	19.5	16.8	16.3	12.7	18.4	18.2	15.1	14.2	21.3	11.4	12.9	13.3	10.1	10.5
Highschool graduate	19.2	10.8	21.8	13.4	14.2	25.0	29.0	20.1	19.8	19.4	14.3	21.1	25.2	20.1	15.9	29.8	13.8	14.5	16.0	10.6	13.0
Post-secondary grad.	19.7	12.5	20.1	17.2	12.1	25.2	29.8	20.7	20.7	20.4	14.7	20.5	24.9	21.0	17.4	29.6	16.3	16.3	18.5	11.5	14.0
Bachelor degree	23.7	9.2	21.3	9.3	18.1	33.5	43.6	24.2	25.2	22.9	16.5	26.1	25.8	24.1	19.4	35.5	22.1	21.1	20.3	12.0	20.3
More than Bachelor	28.3	6.0	11.1	4.1	26.4	33.4	52.1	23.3	28.8	20.0	17.1	38.7	33.9	30.9	21.3	44.5	24.2	20.2	28.8	14.6	29.1
Female — Age 55-64	16.9	9.9	20.7	12.1	14.6	22.1	27.2	19.5	19.0	16.0	12.9	20.5	25.2	20.3	15.6	26.4	19.4	16.1	14.3	10.3	12.7
0-8 school years	12.2	11.3	14.0	5.6	14.4	26.4	14.5	16.0	15.1	10.8	10.2	15.8	22.1	14.1	12.2	16.1	10.4	11.7	11.5	9.3	9.5
Some highschool	14.2	9.4	25.9	18.4	12.8	19.7	26.0	19.3	18.2	13.8	12.1	19.6	17.9	15.9	13.0	20.2	11.4	13.5	12.6	9.8	11.0
Highschool graduate	17.5	8.6	16.5	12.6	16.5	20.9	26.7	19.4	19.7	16.7	13.0	21.2	25.1	19.3	16.7	27.1	14.1	14.5	15.1	10.2	12.6
Post-secondary grad.	18.2	10.4	23.2	8.7	15.5	22.4	26.8	20.5	21.7	17.0	14.0	20.5	24.4	21.0	16.4	27.2	17.0	16.5	14.8	11.4	13.3
Bachelor degree	20.8	7.7	24.4	15.9	4.4	40.3	45.7	18.4	21.2	14.6	13.3	24.6	29.8	20.4	19.5	30.7	22.7	20.9	13.8	13.6	18.5
More than Bachelor	22.5	4.5	13.8		11.9	20.5	32.3	22.4	26.0	18.0	15.9	21.9	29.7	25.3	18.5	27.9	25.3	19.5	19.2	11.0	25.8
Female — Age 65 +	12.0	5.8	9.4	17.8	5.6	3.6		10.6	10.8	6.9	9.4	16.0	17.3	14.4	10.5	18.5	19.1	14.5	13.1	7.4	14.0
0-8 school years	10.5	6.6	12.5	31.5	11.7	1.4		14.7	9.0	8.0	7.9	17.0	38.8	12.0	9.4	15.3	19.9	13.8	12.7	8.0	12.8
Some highschool	10.9	5.0	8.2	13.5	2.4	4.7		11.0	12.5	7.4	9.0	15.4	22.4	12.5	10.9	17.0	9.5	12.8	11.8	7.4	10.9
Highschool graduate	14.7	7.7	10.5	32.9		1.9		11.4	11.5	7.7	11.5	16.0	27.5	16.4	17.0	23.9	19.2	18.4	13.4	9.7	17.9
Post-secondary grad.	11.4	5.6	6.5	7.7	1.5	5.7		7.5	11.3	6.6	8.0	13.9	8.5	15.0	8.6	16.5	21.2	14.4	16.9	5.6	13.4
Bachelor degree	10.4	2.2			5.6			15.9	2.1	4.7	9.8	22.2	21.1	13.1	5.5	16.0	17.1	12.2	7.0	5.3	11.5
More than Bachelor	13.0	0.2						8.6	12.9	1.5	12.3	80.4	20.0	11.3	8.7	12.9	22.9	13.4	12.7	2.5	26.1

Appendix 3 cont.

Compensation Per Hour in 2000	All Industries*	Crop & Animal Prod.	Forestry & Logging	Fishing, Hunting &Trapping	Support Activities, Ag. & Forestry	Mining & Oil and Gas Extraction	Utilities	Construction	Manufacturing	Wholesale Trade	Retail Trade	Transportation & Warehousing	Information and Cultural Industries	Prof., Sci. & Tech. Services	Admin. & Support, etc.	Finance, Ins., R.E. Etc	Educational Services	Health Care & Social Assist.	Arts, Entertainment & Rec.	Accommodation and Food Services	Other Services (Ex. Pub. Admin.)
Male	23.7	12.8	24.5	15.9	17.9	28.9	36.5	25.1	26.2	23.7	17.1	22.9	30.0	28.9	17.9	37.8	20.3	17.4	17.7	12.1	15.9
Age 16-17	9.2	9.8	11.1	7.9	7.5	9.9	9.3	12.0	11.1	9.9	8.5	11.0	9.3	9.6	10.7	14.9	6.4	7.1	10.0	7.8	7.4
0-8 school years	9.6	6.8	11.2	11.1	14.8	11.2	11.1	9.3	11.5	9.2	9.3	9.9	25.7	10.8	10.3	15.1	16.3	2.3	11.1	8.8	9.0
Some highschool	9.0	11.0	11.2	7.6	7.0	10.0	7.2	12.1	11.0	9.9	8.4	10.9	8.4	8.2	10.7	13.1	5.9	7.2	9.8	7.7	7.0
Highschool graduate	10.1	9.5	10.8	9.6	7.4	9.4	7.1	14.2	11.7	10.4	9.4	13.4	11.2	11.2	11.1	17.9	8.7	6.2	10.7	8.1	8.6
Post-secondary grad.	10.2	8.2	10.2	7.3	5.8	7.3	13.5	14.4	10.8	10.6	9.0	11.3	13.7	14.5	10.6	19.8	7.9	8.9	11.3	8.2	7.9
Bachelor degree																					
More than Bachelor																					
Age 18-24	14.3	12.3	17.6	11.0	12.0	18.6	18.1	16.9	17.2	14.0	10.9	15.0	18.3	17.1	13.6	19.6	10.8	10.4	12.6	9.7	10.7
0-8 school years	13.2	12.2	15.7	9.2	13.8	18.6	11.8	16.8	14.1	12.6	9.6	12.9	17.0	18.3	14.3	16.8	6.3	9.4	10.5	10.2	10.7
Some highschool	12.6	13.0	15.6	9.1	11.7	16.6	16.9	15.5	14.9	12.0	9.6	12.5	12.3	11.2	12.5	13.3	8.2	9.2	10.2	8.6	9.4
Highschool graduate	13.9	11.6	18.8	11.4	11.0	18.5	16.1	16.3	17.1	13.5	10.7	15.2	16.7	14.0	13.5	19.0	8.9	8.5	12.5	9.6	10.0
Post-secondary grad.	14.8	12.5	18.1	13.8	12.2	19.9	17.9	18.1	17.8	15.1	11.2	15.9	18.5	16.6	14.0	19.4	9.8	10.9	13.1	10.1	11.4
Bachelor degree	19.5	12.5	24.7	19.2	14.0	24.3	24.1	18.9	24.4	17.8	13.2	19.9	22.4	21.2	15.7	24.6	13.3	12.3	14.5	11.6	12.4
More than Bachelor	18.2	11.1	5.9	8.0	16.0	13.8	20.6	23.7	22.3	10.4	11.1	22.5	24.0	20.8	13.1	22.2	14.6	12.3	17.9	10.4	14.1
Age 25-34	22.6	14.3	24.0	17.1	16.6	26.0	31.3	24.0	24.2	22.3	17.5	21.0	27.4	26.7	19.0	34.2	17.5	15.9	18.9	13.1	15.6
0-8 school years	17.4	14.5	20.0	16.7	14.5	23.7	13.5	21.5	18.0	16.3	15.0	16.8	20.6	14.8	17.0	18.0	9.8	13.2	14.1	11.0	14.0
Some highschool	18.0	14.6	22.3	14.2	14.4	21.8	25.7	21.5	20.0	17.3	14.8	16.9	18.8	14.8	16.9	20.5	10.5	11.1	13.8	11.1	13.4
Highschool graduate	20.3	13.3	24.9	17.0	16.6	24.9	25.5	22.9	22.5	20.6	17.0	19.5	23.3	20.8	18.3	29.6	12.2	13.3	20.6	12.5	14.3
Post-secondary grad.	22.1	15.2	23.3	20.0	16.3	26.0	30.4	25.1	23.9	22.8	17.7	21.9	25.5	23.9	18.8	30.7	14.6	15.5	18.5	13.6	15.9
Bachelor degree	28.2	12.2	35.1	19.6	18.5	35.5	38.3	24.8	31.0	26.8	19.5	28.4	30.3	28.3	21.7	38.7	18.8	18.3	19.6	14.3	18.6
More than Bachelor	30.7	8.6	10.3	7.2	20.1	34.6	34.9	26.4	33.8	23.0	20.8	28.1	34.8	31.1	27.3	39.6	19.7	16.1	20.8	15.7	25.4
Age 35-44	26.3	14.2	25.7	17.0	20.4	30.1	37.1	27.0	28.0	25.9	20.3	23.7	32.8	31.4	19.8	43.1	20.2	19.0	21.0	14.6	17.5
0-8 school years	18.8	14.9	21.5	15.8	16.4	24.4	20.8	23.7	19.6	17.5	15.0	18.6	37.1	15.6	16.0	19.0	10.9	13.6	15.1	11.6	14.0
Some highschool	20.6	14.6	24.0	15.4	18.7	24.5	30.0	24.0	23.1	20.0	16.8	19.2	24.7	17.2	17.4	25.7	12.4	13.9	17.2	11.9	14.4
Highschool graduate	23.8	13.3	27.9	16.7	18.9	27.3	32.5	25.7	26.6	24.3	19.9	22.8	29.7	24.5	19.6	33.4	14.2	16.2	19.3	14.0	16.4
Post-secondary grad.	26.8	14.9	26.3	19.4	20.9	30.2	36.8	28.7	28.4	27.6	20.9	25.4	32.1	29.1	20.3	40.3	17.8	18.4	22.3	15.6	17.9
Bachelor degree	33.3	12.1	35.1	17.6	23.0	43.9	45.6	27.7	35.6	30.6	22.6	31.1	34.9	33.1	21.4	49.5	22.2	21.9	21.0	16.3	21.7
More than Bachelor	35.8	8.9	10.0	13.9	22.8	47.1	42.5	30.5	37.0	24.4	23.5	34.5	39.6	35.4	26.0	54.3	23.5	20.5	26.9	19.2	30.4
Age 45-54	28.1	12.7	26.3	18.0	19.5	34.6	39.3	28.7	30.2	27.7	20.6	25.8	35.3	33.3	19.8	44.4	23.0	19.8	22.1	13.7	18.2
0-8 school years	20.4	15.8	21.2	16.6	16.2	27.9	29.0	25.1	22.3	19.1	15.8	19.2	33.1	18.8	17.0	20.5	12.9	10.1	17.7	10.3	14.9
Some highschool	22.3	13.8	24.9	15.5	16.3	28.1	31.5	25.7	25.9	20.8	18.1	21.0	26.5	20.8	17.7	23.1	13.2	13.9	16.3	11.4	15.7
Highschool graduate	26.2	11.1	26.9	18.3	16.8	30.5	35.1	27.8	28.9	27.4	20.8	25.6	33.5	27.2	19.1	40.3	15.9	16.2	18.6	13.6	16.9
Post-secondary grad.	29.1	13.0	27.8	22.3	19.4	34.8	37.7	30.6	31.5	29.8	21.3	27.6	35.2	30.8	20.2	42.8	20.0	20.0	22.8	14.7	17.8
Bachelor degree	33.8	10.2	44.8	17.1	24.1	51.1	48.4	29.7	36.8	30.0	22.0	31.3	37.3	33.4	22.0	50.8	24.3	23.3	27.2	16.7	23.1
More than Bachelor	36.9	6.6	17.1	8.1	23.4	49.1	48.2	31.8	38.3	28.7	22.8	41.4	39.2	38.5	24.6	55.3	25.3	19.8	28.8	15.7	37.6
Age 55-64	24.7	10.8	26.9	13.3	19.1	30.2	36.4	26.6	28.8	22.0	18.4	23.5	35.4	31.4	17.8	36.2	20.1	17.1	16.7	11.9	17.1
0-8 school years	19.1	13.9	23.8	12.2	15.5	22.7	24.3	23.5	21.4	16.5	15.0	18.1	39.2	21.0	16.4	20.3	12.8	12.8	15.8	10.2	13.9
Some highschool	21.6	10.2	26.8	12.7	18.8	26.7	31.6	25.0	26.6	19.4	17.3	20.8	28.0	19.7	18.1	27.1	12.8	15.3	16.3	11.9	15.7
Highschool graduate	24.8	9.4	28.6	12.1	16.7	30.3	32.6	27.9	29.2	22.2	19.3	25.8	33.1	26.8	19.6	38.9	16.5	17.8	15.8	11.9	17.0
Post-secondary grad.	26.7	10.2	30.2	18.1	18.8	31.0	37.6	28.5	31.3	23.4	19.0	26.2	34.0	32.2	17.6	38.6	20.1	18.1	19.3	12.9	17.8
Bachelor degree	26.8	5.0	46.4	13.8	19.5	47.2	38.1	25.6	33.9	21.5	19.0	23.3	42.3	27.8	15.1	36.0	19.9	18.5	12.7	10.9	16.2
More than Bachelor	31.8	4.8	9.3	2.0	29.0	48.3	42.3	27.7	36.3	29.9	20.5	36.6	38.3	36.4	18.2	39.5	23.4	16.5	17.7	16.0	27.3
Age 65 +	13.9	5.9	12.7	11.9	7.8	6.1	12.3	14.8	19.1	10.7	10.1	12.9	33.7	18.3	14.1	19.4	18.7	11.0	11.8	7.4	9.6
0-8 school years	10.5	6.1	14.5	14.2	7.6	8.8	12.1	12.0	15.3	5.8	7.3	10.4	34.2	25.1	13.8	15.2	14.6	16.8	9.2	5.7	8.5
Some highschool	13.5	7.3	14.0	10.5	11.5	4.2	18.6	16.8	16.6	8.4	13.0	13.8	15.6	14.8	16.2	17.2	14.1	22.1	13.6	8.6	12.1
Highschool graduate	16.1	7.3	15.3	7.7	6.1	8.0	12.3	13.4	15.0	18.8	12.6	14.9	13.4	21.8	17.5	23.4	33.4	15.7	16.5	8.7	10.4
Post-secondary grad.	15.5	4.2	8.7	13.4	7.8	8.4	8.6	17.5	25.2	9.2	10.1	16.1	21.2	20.5	14.5	21.0	20.6	15.3	12.7	8.5	8.9
Bachelor degree	12.2	2.4	14.8	14.0	1.9	1.9		11.2	17.7	6.9	6.1	8.9	73.8	13.8	4.4	17.9	12.1	8.2	5.2	4.6	5.7
More than Bachelor	13.4	1.2	3.0		31.7	4.1		4.6	11.3	6.4	5.1	2.9	39.0	20.2	7.1	14.9	22.3	6.7	3.6	2.0	12.5

* Excludes Government Sector and NPISH

References

Alarcon, Jorge, van Heemst, J. and de Jong, N. "Extending the SAM with Social and Environmental Indicators: An Application to Bolivia" *Economic Systems Research* December 2000

Avery, Robert B. and Kennickell, A. B. "Household Saving in the U.S." *Review of Income and Wealth* December 1991

Bhatia, Kul B. "Accrued Capital Gains, Personal Income and Savings in the United States, 1948-1964" *Review of Income and Wealth* March 1970

den Bakker, Gert P., de Gijt, J. and Keuning, S. "A Historical Social Accounting Matrix for the Netherlands (1938)" Paper presented at the 22nd General Conference of the International Association for Research in Income and Wealth, Flims, Switzerland, August 30-September 5, 1992

De Santis, Roberto and Ozhan, H. G., "A Detailed Social Accounting Matrix for Turkey, 1990" *Economic Systems Research,* 1997, Vol. 9, Issue 3, pp. 281-85

Eisner, Robert "The Real Rate of U.S. National Saving" *Review of Income and Wealth* March 1991

Jackson, Chris and O'Hagan, P. "Compilation of 'Personal Sector' Accounts in the Canadian System of National Accounts" in *Handbook of National Accounting* Studies in Methods, Series F. No. 75/ Volume 1, United Nations, New York, 2000

Lee, Chulhee "Life-Cycle Saving in the United States, 1900-90" *Review of Income and Wealth* June 2001

Madsen, Bjarne and Jensen-Butler, C. "Interregional Social Accounting for Denmark" Paper presented at the 14th Annual Conference on Input-Output Techniques, Montreal, 2002

Pence, Karen "Household Saving in the '90s: Evidence From Cross-Section Wealth Surveys" *Review of Income and Wealth* December 1999

Reinert, Kenneth A. and Roland-Holst, D. W. "A Detailed Social Accounting Matrix for the USA, 1988" *Economic Systems Research* 1992, Vol. 4, Issue 2

Robinson, Sherman, Cattaneo, A. and El-Said, M. "Updating and Estimating a Social Accounting Matrix Using Cross Entropy Methods" *Economic Systems Research* March 2001

Roland-Holst, David "Interindustry Analysis with Social Accounting Methods" *Economic Systems Research* 1990, Vol. 2, Issue 2

Ruggles, Nancy and Ruggles, R. "Household and Enterprise Saving and Capital Formation in the United States: A Market Transaction View" *Review of Income and Wealth* June 1992

Ruggles, Nancy and Ruggles, R. "The Integration of Macro and Micro Data for the Household Sector" *Review of Income and Wealth* September 1986

Siddiqi, Yusuf "Integrated Economic Accounts for Canada, 2000" System of National Accounts Analytical Paper, Statistics Canada 2004

Statistics Canada "2001 Census: Analysis series: Income of Families", Catalogue No. 96F0030XIE2001014, May 2003

Stone, Richard "The Disaggregation of the Household Sector in the National Accounts" *Social Accounting Matrices A Basis of Planning* by Pyatt, G. and Round, J. I. (eds.) The World Bank, Washington, D.C. 1985

Stuttard, Nigel and Frogner, M. "Developing a Pilot Social Accounting Matrix for the United Kingdom" *Economic Trends* May 2003

Stuttard, Nigel and Frogner, M. "Linking Together Economic and Social Data: Using Social Accounting Matrices to Look at the Distribution of Earnings" *Labour Market Trends* May 2003

Thorbecke, Erik Social Accounting Matrices and Social Accounting Analysis" in *Methods of Interregional and Regional Analysis* by Walter Isard (ed.), 1998, Aldershot: Ashgate

Webb, Roy H. "A Difficulty in Interpreting the Persona Saving Rate" *Review of Income and Wealth* December 1980

Yan, Xiaoyi "Understanding Saving and Wealth Accumulation" Income and Expenditure Accounts Working Paper, Statistics Canada, 2000

NOTES

[1] SNA sector accounts are presented in T-format while the supply and use tables (Input-output tables) are presented in matrix format.

[2] The 1993 SNA defines an institutional unit as "An economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities" (SNA 1993, Para. 4.2). Persons and groups of persons in the form of households are institutional units. Other examples of institutional units include corporations, non-profit institutions and certain government units. Groups of institutional then make up the sectors and sub-sectors of the System.

[3] Data on characteristics of employment are taken from Micro Economic Studies and Analysis Division of Statistics Canada.

[4] In fact Richard Stone, the noble laureate, produced first SAM for U.K. in early the 60's, "*Social Accounting Matrix for Development Planning"* by *Graham Pyatt and Jeffery I. Round*. Similarly, the Netherlands produced the first SAM for 1938 (see den Bakker et. el.)

[5] *Accounting for welfare with SESAME* by Steven J. Keuning

[6] The 1993 SNA's design of this SAM has interlaced the capital and finance accounts. The capital account is classified by institutional sector while the financial account is classified by assets. In a disaggregated SAM both assets and liabilities are shown by institutional sector.

[7] The contributions of households to non-profit institutions are treated as an intra-sectoral transfer. In the household sector presented here, these are made explicit once the institutions are removed from the sector.

[8] "An amount equal to the value of the social contributions incurred by employers in order to obtain social benefits for their employees needs to be recorded as compensation of employees. Employers' social contributions may be either actual or imputed. They are intended to secure for their employees the entitlement to social benefits should certain events occur, or certain circumstances exist, that may adversely affect their employees' income or welfare -- sickness, accidents, redundancy, retirement, etc. Social benefits are described in chapter VIII, and also in annex IV at the end of this manual." (1993 SNA, 7.43)

"These consist of social contributions payable by employers for the benefit of their employees to social security funds, insurance enterprises or other institutional units responsible for the administration and management of social insurance schemes. Although they are paid by the employer directly to the social security fund or other scheme, the payments are made for the benefit of the employees. Accordingly, employees should be treated as being remunerated by an amount equal to the value of the social contributions payable. This imputed remuneration is recorded in the generation of income account as a component of compensation of employees. Employees are then recorded as paying social contributions of equal value as current transfers to social security funds, other schemes, etc., in the secondary distribution of income account." (1993 SNA, 7.44)

[9] In the case of pension funds, investment returns on the funds' assets in the form of interest and dividend are considered the income of beneficiaries in the national accounts. In the case of life insurers, this is limited to actuarial reserves and other policy-holder assets, excluding the companies' own equity.

[10] Wherever possible, payments toward life insurance plans which increase the equity of the policy-holder, such as endowment insurance, are not treated as an outlay on consumption of services since they augment assets which households receive on a later date or which can be borrowed from. In the national accounts, consumers are shown as paying a fee to operators of pension fund based on the assets under management, as is the case for investment (mutual) funds. These fees remain as outlays of households.

[11] In Survey of Household Spending reimbursed expenditures such as work-related expenses or expenditures covered by insurance are excluded from the estimates and, where an insurance settlement was used to repair or replace property, the survey includes only the deductible amount paid for an item.

[12] "One specific source of household economic resource, which is increasingly important in OECD countries, is realised holding, or capital, gains. Selling off assets that have risen in value can sometimes enable a household to meet its everyday needs for food, clothing, shelter, and the like. This is particularly the case among the aged who may have intentionally built up assets during their working lives in order to draw them down after retirement – in other words they are smoothing their incomes over their lifetimes." (Canberra Group, 2001, p. 67)

[13] "Income distribution statistics are primarily concerned with a particular set of micro-economic issues and require the construction of statistics which reflect the circumstances of individual households. The SNA is concerned with macro-economic issues and the household sector is but one sector of interest. It follows, for example, that some recommendations in SNA93 that are targeted at non-household sectors but impact on the household sector in aggregate may have to be treated differently in compiling household income distribution statistics." (Canberra Group, 2001, p. 16)

[14] The data on capital gains income is obtained from CRA income tax data.

[15] The government sector and NPISH are excluded from the present matrix because we do not have data on comparable attributes for these groups.

[16] Statistics Canada, Micro Economic Studies and Analysis Division

[17] Input-output tables compile these taxes with an extensive commodity detail for each paying industry and category of final demand.

18 Import duties are included in the valuation of transactions in both valuation systems used in the Canadian System of National Accounts: in modified basic price import duties are included in transaction values, whereas in purchaser prices all taxes shown in Table 5 are included (as also are all margins). Sales taxes, both provincial and GST/HST, apply to the value of transactions including all other taxes, namely, import duties, federal, provincial and municipal taxes. This means that, in the calculation of tax rates in Table 6, the tax base used for the rate on import duties is producer prices less duties; that for federal, provincial and municipal taxes, the base is producer prices (including import duties); and that for provincial sales taxes (PST) and federal (goods and services) sales taxes include all previously mentioned taxes. While in Québec the provincial sales tax is applied to transaction prices including GST, this is not shown in the present table.