

**Unclassified**

**COM/STD/DAF(2009)13**

Organisation de Coopération et de Développement Économiques  
Organisation for Economic Co-operation and Development

**26-Oct-2009**

**English - Or. English**

**STATISTICS DIRECTORATE  
DIRECTORATE FOR FINANCIAL AND ENTERPRISE AFFAIRS**

**Cancels & replaces the same document of 22 October 2009**

**WORKING PARTY ON FINANCIAL STATISTICS**

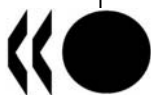
**DRAFT SET OF ANALYTICAL FINANCIAL INDICATORS FOR THE CANADIAN SYSTEM OF  
NATIONAL ACCOUNTS**

**To be held on 2-4 November 2009  
OECD Conference Centre, Paris  
Beginning at 2 p.m. on the first day**

*This document has been prepared by Patrick O'Hagan, Statistics Canada and will be presented under item 4.b of the draft agenda*

**JT03272887**

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## DRAFT SET OF ANALYTICAL FINANCIAL INDICATORS FOR THE CANADIAN SYSTEM OF NATIONAL ACCOUNTS

### I. Introduction

1. The recent financial crisis has underlined the importance of frequent, timely and detailed financial statistics. Of increased importance are macroeconomic statistics on financial activity and wealth, in particular the statistics found in the SNA **Financial Account** and **Balance Sheet Account**. One of the more analytically useful ways of presenting these data is in the form of indicators, whether in tables or graphs. The global nature of the financial crisis suggests that having internationally comparable financial indicators could be beneficial.

2. This short note outlines a draft set of macro-financial indicators for Canada. Many of these indicators are currently and regularly used in the analytical texts that accompany the quarterly releases of the national accounts, in particular the financial and wealth accounts. Data to construct these indicators are drawn primarily from the quarterly *Financial Flow Accounts* and quarterly *National Balance Sheet Accounts*. Also used are the quarterly *Income and Expenditure Accounts*, which are fully integrated with the financial transactions in the sector accounts<sup>1</sup>.

### II. Indicators constructed from balance sheet accounts

3. Sector account statements of asset and liabilities offer a number of possibilities for constructing analytically-meaningful indicators of sectoral or economy-wide financial position or performance. Growth rates of major assets and liabilities constitute an important indicator of change in the economy. This paper will largely focus on various financial ratios. These indicators can be organized by sector, by asset or by functional type. Financial ratios are focussed on composition, liquidity, leverage, etc. This following discussion will be structured around the institutional sectors.

#### *Household sector indicators<sup>2</sup>*

4. The growth rates of major assets and liabilities, including residential real estate, financial assets, assets dedicated to retirement saving, marketable securities especially equity, consumer and mortgage debt, as well as net worth are standard financial indicators for the household sector.

#### *Composition of assets and liabilities*

5. The composition of assets and liabilities of households is important to follow in the context of changes in market conditions, such as interest rate or stock price fluctuations. These factors can be

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1 In Canada, sector accounts are available on both a raw and seasonally adjusted basis, with the latter having limited institutional sector detail and lower asset detail.

2 If household asset and debt micro data are available, some interesting indicators (by income and age class) can be constructed from these and integrated with macro-financial indicators.

important drivers in changes in net worth as well as exposure and risk. Ratios calculated along the lines outlined below provide useful information on the change in financial position of the household sector.

6. Non-financial assets in relation to total and/or financial assets can be compiled. In Canada, while residential real estate remains the single largest household asset, non-financial assets have steadily lost ground to financial assets since the early 1990s, such that the latter account for more than 50% of total assets since that time.

7. Breakdowns by term structure and type of investment among financial assets are essential to monitor, in terms of the overall financial position. Deposits and short-term investments in relation to total financial assets provide a reasonable indicator of liquidity. The shares in financial assets of (i) fixed income versus equity and (ii) discretionary (e.g., deposits, marketable securities) and non-discretionary (insurance and pension assets) continues to generate interest. Fixed income assets have declined in relation to equity and insurance and pension assets over the last 20 years, as institutional investors have grown and investment patterns have shifted toward corporate shares and investment funds.

8. Another increasingly requested split among assets is related to those earmarked for retirement (pension funds and individual retirement saving plans) relative to total financial assets. Retirement saving has grown significantly over the last 20 years in Canada and eventually gave rise to the need for a Pension Satellite Account<sup>3</sup> to articulate pension flows and stocks in the SNA.

9. The structure of liabilities can also be considered. Short-term (generally, consumer credit) versus long-term (generally, mortgages) debt may be useful to monitor, given the different interest rates applied to these and the different types of assets financed by each. Further breakdowns by type of consumer credit (in ratio form), such as credit card balances, lines of credit and other types of instalment loans has also been a frequent user request.

### *Leverage*

10. There are a few interesting leverage ratios that can be calculated from balance sheet and related data for households. A standard measure is household debt to personal disposable income, which can also be coupled with estimates of interest paid<sup>4</sup> on this debt relative to personal disposable income. In Canada, while debt has increased steadily over the last several years, the interest burden associated with this debt has not followed the same pattern.

11. Household debt to net worth provides another perspective on leverage. Despite the increased pace of borrowing over the years, this ratio has not materially increased given the steady trends of asset appreciation. Debt to total assets is another option.

12. A more specific ratio is mortgage debt relative to residential real estate. By this measure, home equity has expanded significantly over the last several years in Canada.

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3 Please refer to the note *Canadian SNA Pension Satellite Account* presented at the 2007 meeting of the OECD WPFS-WPNA.

4 Canada has developed a *Yield Flow Account* (interest-dividend matrix) corresponding to the balances sheet account sectors-instruments. Only select portions of this product are published at this time, including interest on household debt.

### *Non-financial corporations' indicators*

13. The growth rates of selected assets and liabilities, such as fixed capital, inventories, liquid assets, accounts payable-receivable, marketable debt instruments and equity are of particular interest for non-financial corporations.

14. Ratios are focussed on corporate non-financial assets and their relationship to financial assets as well as capital structure. Capital structure has very much to do with the composition of financial assets and liabilities, and measures such as liquidity, and leverage. In Canada, corporations' financial assets have taken on increased importance relative to non-financial assets, reflecting the strong growth of corporate saving over the last 15 years. This development along with the evolution of financial market conditions have driven changes in the composition and size of financial assets of the corporate sector.

### *Non-financial assets*

15. Given the size of non-financial assets it is sometimes useful to examine changes in the composition of assets – in particular, non-residential capital, machinery and equipment and inventories relative to total non-financial assets.

### *Liquidity*

16. It may be useful to look at the structure of those assets to assess whether liquidity has indeed increased for the corporate sector, especially given the growth in financial assets. One approach is to look at deposits and short-term assets to total financial assets, either including or excluding accounts receivable. The ratio of deposits and marketable securities to total financial assets provides an indication of increased diversity of financial assets for corporations. In Canada, both liquidity and diversification have expanded substantially.

17. Similar calculations can be undertaken for liabilities. As interest rates have continued to decline over the years, there has been a tendency towards increased corporate issues of long-term debt (bonds) in favour of short-term debt (paper and loans).

18. The basic liquidity calculation is total short-term assets to total short-term liabilities. If inventories are excluded this becomes an aggregate acid test ratio. By this measure, liquidity of Canadian non-financial corporations has measurably increased over time, despite periods of robust investment as well as merger and acquisition activity.

### *Leverage*

19. The classic measure of leverage is the corporate-debt-to equity ratio. This ratio compares the level of externally-financed debt to the level of externally-financed equity plus internally generated funds (retained earnings). This measure has trended downward in Canada, with a few minor interruptions, since 1989. This calculation can also be undertaken with debt and equity at market values.

### *Equity valuation*

20. The development of balance sheet data market value estimates also allows for the calculation of approximate and aggregate measures of Tobin's Q – equity at market value in relation to the (replacement

value) book equity or net worth<sup>5</sup>. This measure declined sharply between the second and fourth quarters of 2008 in Canada.

### ***Financial institutions' indicators***

21. In general, the growth rates of financial assets by major type are analytically useful to review for financial institutions. Of particular interest in this regard are fixed income investments – both marketable securities versus non-marketable instruments, long-term and short-term investments, equities and foreign assets.

#### *Size of the sector*

22. For assessing the relative size of the financial sector (or its sub-components) the standard measure is Goldsmith's *Financial Intermediation Ratio*. This is also widely used in international comparisons.

#### *Structure of assets*

23. Understanding changes in the concentration of assets among financial institutions, related to liquidity and diversification as well as potential exposure and risk, is possible. It is also informative to consider the proportion of various types of instruments that different types of institutional sectors hold relative to each other and to the totals for the economy.

24. The indicators that can be generated depend on the coverage by asset class and by sector for different types of financial institutions<sup>6</sup>. Large institutional investors that constitute collective investment schemes (e.g., pension funds, investment funds) are linked to household assets, and make it possible to disaggregate certain assets of households and gain a better understanding of exposure and risk. For lending institutions other considerations (e.g., capital adequacy) give rise to a different set of indicators. Suggested indicators for a few broad types of financial institutions are presented below.

#### Insurance and pension funds

25. Given the different structure of assets between insurance and pension funds, it is necessary to construct separate indicators for each of these institutional investors. Among those indicators is useful to look at the concentration of both equity and foreign investment in the overall portfolio, given the degree of market risk associated with these types of investments. Both asset types may be affected by stock market fluctuations, while the second is also affected by exchange rate volatility. In Canada, foreign investments have been the fastest-growing components of the assets of institutional investors.

26. It is also informative to look at fixed income investments in total financial assets, given declining yields and lower risks on some of these instruments. As well, the composition between short and long-term financial assets provides some indication of the ability to quickly react to market changes and shocks.

27. For both of these types of institutional investors, the actuarial liabilities in relation to the derived net liability (assets at market value *LESS* other liabilities), which relate to household assets may be of interest to some users.

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5 Canada produces both book and market value sets of balance sheet accounts, with non-financial assets at current values (replacement cost).

6 Canada has 20 unique sub-sectors of the total financial institutions in the Financial and Wealth Accounts.

### Investment funds

28. On the asset side, the indicators are quite similar to insurance and pension funds, relating to composition and liquidity. Ratios that identify short-term to long term investments, marketable versus non-marketable instruments, fixed income versus equity and the proportion of foreign investment in overall assets are likely of most interest.

29. The growth in the proportion of unitholders' equity that is related to tax-sheltered individual retirement saving plans may be useful to identify. The ratio of unitholders' equity at market and at book value can shed some light on the asset base relative to financial market fluctuations, in particular stock markets.

### Depository institutions; other lending institutions

30. Like all other sectors, banks are domestically-consolidated in the SNA-based financial statistics. The functions of depository / lending institutions suggest some additional indicators may be of interest. These could include: Foreign currency loan assets to total loan assets; foreign currency deposit liabilities to total deposit liabilities; capital to total assets; deposit liabilities to loan assets; capital plus deposits to loans plus investments; non-performing loans or allowances to total loans; liquidity ratio; net financial derivative position to total assets; and, profit or saving (profit after distribution and taxes) to equity.

31. The composition of loan assets – consumer, business, mortgages – are useful to understand. Given the strong growth in the holdings of marketable securities investments, the structure of investments, as suggested for other institutional investors (above) is also of interest.

### Issuers of asset-backed securities

32. In this sector, it is useful to compare the relative size of various types of securitized receivables (to total securitized receivables). Given the increased incidence of assets that are not receivables from originators, an estimate of layering (and derivatives) can be constructed by considering other assets (deposits, securities and other) to total financial assets. The changing structure of the liabilities (short-term, long-term) can be analyzed in the context of the structure of the receivables that back them.

33. To assess the importance of securitization in the economy, estimates of types of receivables to the total for that instrument (e.g., consumer credit, mortgages) can be constructed. On the other side of the ledger, a similar calculation can be undertaken for short-term and long-term asset-backed securities in relation to total corporate bonds and short-term paper outstanding.

### ***Government sector indicators***

34. Gross and net debt of government continues to attract considerable attention. These are often expressed relative to GDP. It is also informative to break total liabilities down into its components. Breakdowns of interest can include short-term paper versus bonds of total government sector credit market debt; saving bonds issued directly to households as a proportion of total bonds; the percentage of foreign currency liabilities; and the relative size of unfunded pension liabilities in total liabilities, as well as the ratio of actuarial values to accrued values for these liabilities.

35. On the asset side, government sectors in Canada are becoming more diverse investment-wise and some of the same ratios suggested for financial institutions can be applied here. In addition, other ratios can include; The share in total assets of liquid assets especially with respect to changes in the surplus/deficit and in conjunction with borrowing in markets; and the share in total assets of (less liquid)

investment in their government business enterprises in relation to changes in the number and roles of government enterprises.

36. Calculations can be presented for various levels of government.

#### *Non-resident sector indicators*

37. Ratios of direct, portfolio and other assets (e.g., banking assets) of non-residents to their total assets shed light on the changing nature of foreign investment in the economy. These ratios may be further broken down to identify, for example, the shares of government and corporate bonds in total inward investment in debt securities.

38. Understanding the nature of Canadian investments abroad (non-resident liabilities) is of growing interest, and similar ratios can be constructed to highlight this phenomenon.

#### *Economy-wide indicators*

39. A number of different types of analysis can be undertaken at the economy-wide level.

##### National balance sheet

40. The national balance sheet is the sum of the balance sheets of the domestic sectors of the economy – households, business and government. The classic ratio for shedding light on the structure of the economy in terms of financial development is Goldsmith's *Financial Inter-relations Ratio* – the ratio of financial assets to non-financial assets on the national balance sheet. This is a very useful ratio in international comparisons over time.

41. It is also useful to look at the composition of non-financial assets – national wealth – at the economy-wide level. For example, the changes over time in the share of residential real estate and consumer durables in national wealth sheds some light on the well-being of households, distribution issues aside.

42. If a consolidated national balance sheet is calculated, the percentage of net foreign assets in national wealth can be derived. Conversely, if there is a net foreign debt to national wealth represents the percentage claim on national wealth by non-residents.

##### Credit market debt of domestic non-financial sectors

43. Credit market debt can be broken down by components, with ratios for private versus public sector liabilities or household debt to corporate debt. In addition the components of the debt can be analysed, including government bond debt relative to overall government debt or credit market totals. The role of negotiated loans to other forms of external financing can also be examined.

44. The relative indebtedness of domestic sectors – households, government (and sub-sectors) corporations (and sub-sectors) – can be compared as a ratio to GDP.

##### Structure of money and capital markets

45. The balance sheet account matrix allows for the construction of an extensive series of indicators that describe the structure of money and capital markets. For example, the size and extent of the market for federal government short-term paper can be examined in detail by looking at the trends in this instrument and by breaking out the investors in terms of fluctuations in their holdings (share of their

holdings) over time. Investors can include banks, pension funds, investment funds, governments, households and non-residents. A similar analysis can be undertaken for other instruments such as corporate bonds, provincial government bonds, asset-backed securities<sup>7</sup>, etc.

46. In addition, it may be useful to analyze the ratios of the market value of marketable debt securities to the book values for these same instruments, data permitting.

### **III. Indicators constructed from financial accounts**

47. Sector accounts flows of assets and liabilities offer a somewhat different but complimentary set of potentially useful indicators on the state of the sectors of the economy. It is often the case that the actual transactions themselves are essential to follow as a complement to real economic activity and as reaction to market events.

48. It can be somewhat more challenging to develop a set of financial ratios, due to the fact that financial transactions can be negative. Nevertheless, there are a series of indicators that shed light on economic behaviour, with a general focus on sources and uses of funds. Again, these indicators can be organized by sector, by asset or by functional type. This following will structure these around institutional sectors.

#### ***Household sector indicators***

##### *Sources and uses of funds*

49. One of the more overlooked but interesting indicators relates to personal saving in the context of the capital and financial account. Household saving is derived as current income less current expenditure. However, it can also be calculated from the investment side as net non-financial capital acquisition *PLUS* net financial asset transactions *LESS* net transactions in liabilities<sup>8</sup>. In terms of relation to the saving rate, all components can be scaled by personal disposable income, with borrowing presented as an inverted line. This calculation underlines the uses of saving, and can cast a different light on the interpretation of the saving rate. In Canada, changes in liabilities have been as important as changes in financial asset investment, which is often mistaken as the sole use of saving.

##### *Structure of investment flows and borrowing*

50. The structure of investment flows can be followed by breaking investment into three basic components – fixed income instruments, equity / investment funds and insurance and pensions – all relative to total financial asset flows. In addition, if the individual and group retirement saving sub-components can be identified this split sheds light on discretionary and non-discretionary saving. Retirement investments can also be cast relative to disposable income, shedding further light on the saving rate.

51. On the liability side, it is useful to look at the relative composition of borrowing flows. The ability to go beyond the short-term and long-term analysis will depend on the detail available for the components of household debt.

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7 Identifying ABS holders constitutes work in progress.

8 Paying down debt is a use of saving while net new borrowing is a negative use of saving (source of funds).



*Data accuracy*

52. It may be useful to monitor the relative size of the statistical discrepancy in the financial accounts. The household sector measurement error can be scaled to total financial transactions or total income.

*Flows versus capital gains/losses*

53. The existence of the components of the other changes in assets account (OCAA) can allow for a split of changes in asset positions between transactions and revaluations. Even if the OCAA is not available, an approximate split can be obtained by subtracting the financial flows from the change in assets. The ratio of transactions to total change for any asset, or for saving to first difference in net worth, provides an indicator of the relative size of capital gains/losses.

***Non-financial corporations****Internal and external financing*

54. The ratio of saving (undistributed earnings) to total sources of funds (borrowing plus equity issues) provides an indicator of internally-generated sources of funds in any period. Borrowing relative to total sources of funds shows the reliance on external debt-financing.

*Composition of funds raised and of investments*

55. The structure of corporate financing is often followed by analysts, as financial conditions evolve. Ratios can be constructed that display the changing use of short-term and long-term debt as well as equity as a percentage of total funds raised.

56. The higher levels of financial assets of non-financial corporations in Canada from a decade of strong earnings, suggests that monitoring the financial investments by major type is useful to follow. Ratios of liquid assets flows and/or longer-term assets flows to total financial assets can be constructed. More generally, the ratio of financial investment transactions to non-financial investment flows or to total investment flows is an indicator of the degree of surplus funds.

*Data accuracy*

57. The non-financial corporate sector measurement error can be scaled to total financial transactions.

***Financial Institutions****Structure of investments and funds raised*

58. The main focus of indicators would be on the analysis of the composition of financial asset transactions of financial institutions. For example ratios to total asset flows can be constructed on acquisitions of debt versus equity, short-term versus long-term securities foreign versus domestic investments. For depository institutions, similar ratios can be constructed as those suggested for balance sheets, largely linking liability transactions and relationship to asset flows.

*Flows versus capital gains/losses*

59. The other changes in assets account (OCAA) can allow for a split of changes in asset positions between transactions and revaluations, important given recent swings in financial market yields and prices. The ratio of either transactions to total change for any asset, or for saving to net worth, provides an indicator of the relative size of capital gains/losses. The change in the value of the asset components of pension funds, for example, shed considerable light on changes in the net worth of households.

**Governments**

60. Indicators would focus on the analysis of the composition of financial asset and liability transactions (shares relative to total transactions) similar to what was proposed for the balance sheet account. Calculations can be presented for various levels of government.

*Data accuracy*

61. The government sector(s) measurement error (s) can be scaled to total financial transactions.

*Flows versus capital gains/losses*

62. The ratio of transactions to total change for any asset is an indicator of the relative size of capital gains/losses and other adjustments (e.g., earnings of enterprises, actuarial adjustments on unfunded pension liabilities).

**Non-residents**

63. The main focus of any indicators would be on the analysis of the composition of financial asset and liability transactions (shares relative to total transactions), similar to what was proposed for the balance sheet account.

*Data accuracy*

64. The non-resident sector measurement error (BOP net errors and omissions) can be scaled to total financial transactions.

*Flows versus capital gains/losses*

65. Fluctuations in the exchange rate as well as global stock markets have given increased prominence to understanding that nature and extent of revaluations. The ratio of transactions to total change for any asset (or for asset-liability totals) provides an indicator of the relative size of capital gains/losses by type.

**Economy-wide**

National saving

66. The national saving rate is the aggregate saving of domestic sectors – households, business and government – in relation to national income (as opposed to income arising from production). It is useful to consider that relative shares of households, business and government in national saving. In Canada, these shares have shifted substantially in the last 20 years.

67. The share of national saving to net economy-wide non-financial capital acquisition is another indicator of the health of the economy – that is, whether sources from within the economy are sufficient to finance investment.

*Data accuracy*

68. The sector measurement errors as well as the aggregate saving-investment discrepancy relative to GDP is useful in understanding the relationships of these discrepancies to each other.

*Changes in the value of non-financial assets – transactions or capital gains/losses*

69. Various assets can be examined. One relevant example is a comparison of the ratios of transactions and capital gains/losses, respectively, to changes in residential real estate.

#### **IV. Summary and future work**

70. Most analysts would likely agree that there is a need to better follow and understand changes in the economy that take place on the financial side. Aggregate economic activity in terms of production, final expenditure and income flows are essential to follow, but so is the changing nature of financial activity and changes in the composition and value of assets. These are often overlooked, but can be substantial and with significant effects in reaction to economic and financial market events and over business cycles.

71. A well articulated and timely set of indicators drawn from financial statistics can shed additional light on economic behaviour and provide a general sense of sectoral strengths and weaknesses to support analysis on the real side of the economy. This note has suggested a series of potential indicators that can underline the evolution of structural changes and short-term swings in financial activity and wealth. These include measures such as the following:

- exposure to foreign markets and stock markets;
- vulnerability reliance on credit and effects of the credit crunch;
- investment behaviour over the cycle (structure of investments);
- liquidity and leverage;
- gains/losses in net worth;
- etc.

72. The addition of non-financial assets and net worth to balance sheet accounts allows for a broader set of indicators. So does the combination of the capital account and the financial account. Fully articulated estimates of corporate sector income and outlay would also be useful in terms of extending financial analysis.

73. The development of financial indicators would benefit from the development of the comprehensive *Other Changes in Assets Account*. This is a work in progress for most agencies. Improved details on financial derivatives and other contingencies (e.g., loan allowances) would also be useful.

74. In addition, the development in the context of the SNA of a *Yield Flow Account*, or an interest-dividend flow matrix, would add a further dimension to financial indicators. Canada has done some work in this area, as have a few other statistical agencies.