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Market Valuation of Equity in the International Investment Position: Canada's Experience

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1. Background

There have been a series of projects over the past four years to improve the Canadian International Investment Position (IIP) and the Canadian National Balance Sheet Accounts (NBSA)[2] in response to user demands for improvements in data quality and timeliness. The first major improvement came in June 2003, when both the IIP and NBSA responded to the demands for more timely data by moving to a quarterly frequency. The move to quarterly frequency provides users with a more complete set of macro accounts information on a quarterly basis but, for the international accounts, with less detail than that available in the annual IIP.

The challenge of producing market value estimates for equity has been attacked in two stages: the first stage was completed in June 2004 with the release of market value estimates for tradable securities, both inward (liabilities) and outward (assets), in the NBSA and the IIP. A supplementary international investment position is calculated, which incorporates the new market value data on securities[3]; however, the book value estimates continue to be the core set of data for IIP purposes. This two step approach supported improvements to the estimates of the household balance sheet in the NBSA and responded to a significant demand for financial assets at market value. It also allowed Statistics Canada more time to deal with the more difficult task of estimating values for unlisted shares.

At the same time, there was renewed debate at the international level on appropriate methods to estimate the market value of unlisted equity investments, including inter-company (direct) investment[4]. While it is recognized that market price is the appropriate concept for both listed and unlisted equity, the international community has (in recognition of the practical estimation challenges for unlisted equity) adopted a more flexible approach. What has emerged is a short list of acceptable approaches. There is however as yet little experience in applying them.

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[1] Eric Simard and Eric Boulay are both senior economists in the Balance of Payments Division of Statistics Canada.

[2] The IIP is produced by the Balance of Payments Division of Statistics Canada, while the NBSA is produced by the Income and Expenditure Accounts Division. The two divisions are both under the direction of the National Accounts Branch of Statistics Canada and work very closely on financial issues.

[3] Market value estimates for debt securities in the IIP have been published for many years based on the liability information from our security-by-security database and more recently on assets from the CPIS. These estimates are not discussed in this note.

[4] An international task force on the valuation and measurement of equity (TFVME) was established by the OECD. Statistics Canada hosted the initial meeting in April, while the wrap-up session took place at the OECD in October of 2005.

These developments have contributed to a decision to delay implementation of the second phase of the Canadian project on market valuation of equity. However, in an effort to improve Canadian estimates and to contribute to the international effort to improving market value estimates, Canada released aggregate provisional market value estimates of foreign direct investment (FDI) in May 2006.

This note provides an overview of the methods used to develop market value estimates of portfolio and direct investment equity for the Canadian IIP. After a short introduction, the paper will first briefly describe the approach developed for portfolio shares as this information is also relevant in the direct investment estimates.

2. Introduction

Market prices are the prescribed basis for valuation in the international accounts. Market prices refer to current exchange value, i.e., the values at which goods and other assets, services, and labour are exchanged. Stocks of financial assets and liabilities should be valued as if they were acquired in market transactions on the balance sheet reporting date.

Many financial assets are traded in markets on a regular basis and therefore can be valued by directly using the price quotations from these markets. For financial assets and liabilities that are not traded in organized markets, or are traded only infrequently, it is necessary to estimate fair values that approximate market prices.

In most countries, only book value for FDI is available to IIP compilers. Given that market value is the appropriate measure for FDI, these countries have to develop an approach to convert book value estimates to reflect current period prices. No single approach has been prescribed by international standards. Flexibility is encouraged in the choice of methods, and no ranking of methods has been established. Recent international efforts have compiled a short list of appropriate approaches. The exact choice of method is left to the compilers depending on data availability and market conditions in each economy.

Approaches differ for those countries already producing market value estimates for foreign direct investment. Australia, for example, asks respondents to their surveys to provide an estimate of their investments at market value. The United States uses an aggregate approach based on stock exchange prices. Ireland and Greece are other examples where stock exchange prices are used as a source to compile market value estimates.

3. Portfolio Investment at Market Value

Inward investment

For non-resident holdings of Canadian equity, annual survey results (which collect holdings at book value) are re-valued using market capitalization ratios described in the next section. Market capitalization ratios are derived from market value information available from the Toronto Stock Exchange (TSX) and book value information from Statistics Canada surveys. For the largest corporations, calculations are undertaken at the Canadian enterprise[5] level. These estimates are constructed using annual data, where the most extensive book value benchmark data area available for conversion to market value.

Construction of capitalization ratios

An electronic file from the TSX containing market value information for all companies listed on the exchange on the last business day of each quarter is used. The file is edited to include only domestic issues (i.e. issues for companies incorporated in Canada) expressed in the form of common and preferred shares.

The book value for all enterprises covered by a Statistics Canada (STC) balance sheet survey is extracted. This survey collects data from Canadian businesses based on Canadian Generally Accepted Accounting Principles (GAAP). The following components from the businesses balance sheets are used to calculate the book value of equity:

$$BV = Share + CS + RE$$

Where:

BV: Book value
Share: Share capital (common and preferred shares);
***CS*:** Closing balance of contributed surplus (inclusive of appraisal credits and other equity changes);
RE: Closing balance of retained earnings.

The TSX data are then matched to STC book value data. The original matching was based on names but an edited file is now maintained and adjusted each quarter. Where an enterprise has more than one share issue, the market value of the respective share issues are added together to give a total market value for the enterprise. Market-to-book ratios are then calculated by dividing the market value of an enterprise by its book value using this formula:

[5] The Canadian enterprise (institutional unit) used for both the national and international accounts is the consolidated Canadian enterprise. That is the consolidation of all majority owned Canadian legal entities.

$$\textbf{\textit{Market capitalization ratio}} = \frac{MarketValue}{BookValue} = \frac{MktCap}{Share + CS + RE}$$

Where:

MktCap: Market capitalization from the TSX;
BookValue: Described above in the text.

This dataset was then subjected to various edits to validate the data, including a review of outliers. However, one aspect of the dataset that should be monitored more closely in the future is the inclusion of revisions performed on quarterly book value estimates over time. The book value estimates used to derive the market capitalization ratios come from current quarterly survey results but have not been updated to reflect new information that may have been captured such as late responses or revisions[6].

Outward investment

Portfolio investment held abroad is measured using the Survey of Canadian Portfolio Investment. Canada has been conducting this year-end position survey since 1997. This survey is part of an effort coordinated by the International Monetary Fund (IMF) to improve measurement of foreign securities held worldwide.

The Canadian survey adopted a security-by-security approach and collects market value information of both domestic and foreign securities. The survey is directed to large institutional investors in the country. The large part of individuals holdings are considered to be covered by the survey, as investments channelled through Canadian mutual funds or other asset pooling vehicles are captured.

This approach proved to be efficient as the collection of domestic holdings, in addition to foreign holdings, represents a reliable source of information for converting some sectors of the National Balance Sheet at market value. It also allowed improvements to the quality of the estimates on foreign holdings, as foreign securities incorrectly classified as domestic securities by respondents could be identified and properly reclassified.

Canada has relied on respondents to report their securities at market prices and not used commercial security databases to assess market prices of securities at year-end. Starting in 2005, however, Canada has integrated information from a commercial securities database to better identify key survey classification variables and to systematize its survey process in order to improve quality and timeliness.

[6] In recent years incidences of corporations restating their books for past periods has compounded the revisions issue.

Most of the holdings reported by survey respondents are equities listed on world stock exchanges for which market prices are readily available. Edits are performed to ensure all prices are converted to Canadian dollars at period-end using the appropriate exchange rate. There are however an increasing number of private placements being observed for which market prices are not available.

For these specific placements, acquisition costs are usually reported and no attempt is made to estimate a market value. In some cases, respondents also provide fiscal year-end data that may differ from the survey reference date. Again, no attempt is made to adjust the market value of these holdings.

Results

The implementation of a year-end survey at market value shed some lights on the quality of the book value estimates carried in the past years, especially for outward investment. Integrating market value information to the IIP has led to a new appreciation of book value estimates for earlier periods, which may not have conformed as well as hoped to the intended definition of book value. This series may be subject to further revisions to make the dataset more consistent.

Table 1: Foreign portfolio investment positions at year-end (equity)

	2002	**2003**	**2004**	**2005**
	Millions of Canadian dollars (except ratios)			
Canadian Portfolio Investment Abroad				
Book Value (BV)	216,307	196,920	195,573	189,175
Market Value (MV)	320,980	357,622	384,419	422,791
MV/BV Ratio	1.48	1.82	1.97	2.23
Foreign Portfolio Investment in Canada				
Book Value (BV)	80,617	84,738	104,191	107,598
Market Value (MV)	142,504	196,400	250,085	314,712
MV/BV Ratio	1.77	2.32	2.40	2.92

4. Direct Investment at Market Value

The Canadian methodology to convert the book value estimates of FDI is based on the use of capitalization ratios for both listed and unlisted companies with some restrictions such as the exclusion of small companies. At this point, only two total aggregates (one for outward, one for inward FDI) are released as provisional annual estimates from 2002 to 2005.

The approach can be summarized as follows: Capitalization ratios are applied to the equity portion of the position, the market value of the debt portion is left at book value. For equity, if the Canadian or foreign subsidiary or affiliate is listed on a stock market, its appropriate capitalization ratio is used; however, if the subsidiary or affiliate is not listed on a stock market, a capitalization ratio is imputed by taking either the ratio of the parent or the Canadian industry average ratio.

Capitalization ratios

The capitalization ratios come from the same sources as the ones applied to estimate the market value of foreign portfolio investment in Canada. A capitalization ratio was established for each individual company at year-end.

This method gives a set of ratios for listed companies. These ratios are also used to generate Canadian industry average ratios used for unlisted companies. These averages include all Canadian listed firms except for extreme ratios that were considered outliers[7].

Table 2: Canadian Industrial Average Ratios

	2002	**2003**	**2004**	**2005**
	Ratios			
Energy and Metallic Minerals	1.68	2.10	2.24	2.46
Finance and Insurance	1.91	1.72	1.71	2.11
Machinery and Transportation Equipment	1.69	2.09	1.68	1.72
Services and Retailing	2.24	2.36	2.46	2.33
Wood and Paper	1.34	1.22	1.32	0.95
Other Industries	1.18	1.92	2.15	2.41

[7] Ratios over 10 and under 0.5 were considered outliers. These levels have been chosen arbitrarily and may be reviewed with further research.

Treatment of small companies

FDI investments, both inward and outward, are relatively skewed. Therefore at one end of the distribution there are a small number of (relatively large) enterprises that account for most of the value while a large number of (relatively small) enterprises at the bottom of the distribution account for very little value. FDI enterprises whose cumulative FDI equity position did not exceed 2.5% of the total equity value of foreign direct investment were considered small (these companies represent roughly 80% of all FDI companies). The market value of these small firms has been left at book value. While the impact of the small companies is not significant it may well be that the book value, as defined for the STC Balance of Payments surveys (which includes accumulated earnings), is a reasonable estimate of market value for these small firms.

Automobile Sector

The high degree of foreign ownership coupled with the small number of automobile manufacturers in Canada results in industry capitalization ratios that are not considered representative. For this sector, market value estimates for both foreign direct investment in Canada (FDIC) and Canadian direct investment abroad (CDIA) were based on information for the global parent company. More specifically, information on price and book value per share of the consolidated enterprise were extracted from annual reports. A capitalization ratio was derived and applied to the equity value of the Canadian affiliate to derive an inward estimate. The same ratio was then applied to all its foreign affiliates to obtain an outward estimate.

Methodology for Foreign Direct Investment in Canada

The methodology for estimating foreign direct investment in Canada at market value is:

- Canadian affiliates listed in Canada: at the company level, the capitalization ratio was applied to the equity portion of the FDI position[8];

- All other Canadian affiliates: industry average ratios based on Canadian companies were applied to the Canadian affiliates' equity value (with the auto sector exception noted earlier).

Methodology for Canadian Direct Investment Abroad

The methodology for estimating Canadian direct investment abroad at market value is:

- Foreign affiliates listed on foreign stock exchanges: a capitalization ratio based on data from a proprietary database on market information was applied to the equity portion of the FDI position[9]. Very few cases were based on this method due to a lack of information;

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[8] This is the position as reported on the STC Balance of Payments surveys.

[9] This is the position as reported on the STC Balance of Payments surveys.

- Foreign affiliates not listed on a foreign market with its Canadian parent listed in Canada on the TSX: at the company level, the capitalization ratio of the Canadian parent was applied to the equity value of its foreign affiliates (only when the Canadian parent was in the same industry). If the affiliate abroad was in a different industry than the Canadian parent, an industry average capitalization ratio based on the Canadian market was used;

- All other foreign affiliates: an industry average ratio based on the Canadian companies listed on the TSX was used.

The use of ratios based on the Canadian parent or industry may not reflect the trend observed in foreign markets. The possibility of using foreign stock indexes to adjust the market value of CDIA in major countries will be examined in future research.

Data Characteristics

For outward FDI (Canadian direct investment abroad), over 50% of the market value position of the foreign affiliates is based on the capitalization ratio of the Canadian parent and about 40% is based on the Canadian industry average.

As a consistency check, the market capitalization of the Canadian parent was compared to the sum of market value of all its foreign subsidiaries and its participation in foreign associates. There were a number of cases where the total of the estimated market values for the foreign affiliates exceeded the total for the Canadian parent. In these cases, the values of the foreign affiliates are reduced such that the estimates did not imply a negative value for the Canadian parent. These cases may reveal inconsistencies in the data used for these estimates[10]. However, it is also simply possible that the market has placed a lower value on this company than the accounting models would suggest. There could also be cases where the market value is well above the value from accounting models but no assessment of such cases has been attempted. These inconstancies will be further investigated in the future.

For inward FDI (foreign direct investment in Canada), very few Canadian affiliates of foreign companies are listed on the Canadian stock market. On average, just over 80% of the inward market value position is based on industry average ratios. Until the potential data inconsistencies mentioned above are resolved, it is assumed that the data on inward FDI suffers from the same degree of inconsistency and have been adjusted accordingly. For more details on the dataset, refer to Appendix 1.

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[10] This issue arose particularly in the case for the Canadian banking sector. Consequently, it was decided for the release of the first set of market value estimates, to keep this sector at book value until the data is investigated further.

As is the case for portfolio investment, the development of market value estimates shed some light on the accuracy of the book value FDI series. Some adjustments and revisions may be undertaken in the future if necessary to ensure consistency between book and market valuations.

As a check on the reasonableness of the ratios derived from the Canadian data, the table below compares Canadian and United States (U.S.)[11] ratios of market value to book value.

Table 3: Market value to book value ratios at year-end

	2002	2003	2004	2005
	Ratios			
Canadian estimates				
Canadian direct investment abroad	1.31	1.54	1.56	1.74
Foreign direct investment in Canada	1.47	1.61	1.66	1.86
U.S. estimates (derived)				
U.S. direct investment abroad	1.25	1.54	1.60	1.70
Foreign direct investment in the U.S.	1.52	1.76	1.78	1.71

Provisional Results

The provisional estimates are available for the years 2002 to 2005. Canadian direct investment abroad at market value totaled $808.3 billion at the end of 2005. Over the three year period, Canadian direct investment abroad at market value increased by 41%. At the same time, the book value estimates increased only 7%.

On the other hand, foreign direct investment in Canada at market value was $771.3 billion at year-end 2005. While the book value estimate increased by about 17% over the three year period, the market value estimate increased by 47%. Almost half of this increase was recorded between 2004 and 2005.

[11] U.S. ratios (market value estimates / historical cost estimates) are calculated from foreign direct investment data published in the "*Survey of Current Business*", September 2006, Bureau of Economic Analysis.

Table 4: Foreign direct investment positions at year-end

	2002	2003	2004	2005
	Millions of Canadian dollars (except ratios)			
Canadian Direct Investment Abroad				
Book Value (BV)	435,494	411,887	451,438	465,058
Market Value (MV)	572,624	632,790	705,799	808,256
MV/BV Ratio	1.31	1.54	1.56	1.74
Foreign Direct Investment in Canada				
Book Value (BV)	356,819	364,708	380,299	415,561
Market Value (MV)	525,200	588,444	630,536	771,327
MV/BV Ratio	1.47	1.61	1.66	1.86

5. Further developments

These market value estimates are a first attempt to provide additional analytical data to FDI users. The next steps will be to refine the approach described above, to estimate quarterly market values and build time series going as far back as 1990[12]. More emphasis will also be devoted to the analysis of individual companies and to the country distribution of foreign direct investment.

The first aspect that will be covered is the review of all major transactions. For listed and especially for unlisted companies, a recent transaction price can provide a very good approximation of the current market value especially if the transaction is close to the evaluation period and is between independent parties. The transaction price will be used to approximate the latest market value of some companies.

Another important aspect to cover is the trend of foreign market indexes. For CDIA, the use of ratios based on the Canadian parent may not reflect the trend observed in foreign markets. The possibility of using foreign stock indexes to adjust the market value of CDIA in major countries will be examined in future research. The United States revalue U.S. parents' equity in foreign affiliates using end-of-year stock price indexes and adjusting for exchange rate effects, changes in annual investment and correcting for the effect of retained earnings on stock market prices during the year.

As there is relatively little international experience in using these techniques, further consultations with other compilers and international agencies will be undertaken.

[12] Quarterly estimates of portfolio investment at market value are already available back to 1990 in the Canadian IIP.

When an improved set of quarterly FDI estimates at market value becomes available, it will be included in the International Investment Position tables. At that time a net IIP position at market value will be presented in the main IIP table.

APPENDIX 1: Additional Tables on the Dataset
(Values in millions of Canadian dollars)

Foreign Direct Investment in Canada

	Number of Units	Units as % of Total	Book Value	Market Value	Market Value as % of Total
2002					
Ratios of 1 (small)	4,967	74%	31,452	31,452	6%
Canadian Ratios	57	1%	20,572	44,625	9%
Foreign Ratios	10	0%	19,921	73,814	14%
Industry Ratios	1,714	25%	284,874	375,309	72%
Total	**6,748**	100%	**356,819**	**525,200**	100%
2003					
Ratios of 1 (small)	4,964	74%	28,630	28,630	5%
Canadian Ratios	52	1%	21,943	50,782	9%
Foreign Ratios	10	0%	16,993	21,962	4%
Industry Ratios	1,671	25%	297,142	487,070	83%
Total	**6,697**	100%	**364,708**	**588,444**	100%
2004					
Ratios of 1 (small)	5,026	75%	30,620	30,620	5%
Canadian Ratios	53	1%	25,179	66,327	11%
Foreign Ratios	8	0%	17,408	18,734	3%
Industry Ratios	1,605	24%	307,092	514,855	82%
Total	**6,692**	100%	**380,299**	**630,536**	100%
2005					
Ratios of 1 (small)	4,730	71%	7,993	7,993	1%
Canadian Ratios	54	1%	30,855	96,488	13%
Foreign Ratios	15	0%	15,355	17,717	2%
Industry Ratios	1,872	28%	361,359	649,129	84%
Total	**6,671**	100%	**415,561**	**771,327**	100%

Canadian Direct Investment Abroad

	Number of Units	Units as % of Total	Book Value	Market Value	Market Value as % of Total
2002					
Ratios of 1 (small)	4,682	85%	21,141	21,141	4%
Canadian Parent Ratios	317	6%	248,752	305,492	53%
Foreign Ratios	6	0%	9,076	52,674	9%
Industry Ratios	485	9%	156,525	193,316	34%
Total	**5,490**	100%	**435,494**	**572,624**	100%
2003					
Ratios of 1 (small)	4,729	85%	20,955	20,955	3%
Canadian Parent Ratios	336	6%	241,118	353,680	56%
Foreign Ratios	6	0%	7,868	14,843	2%
Industry Ratios	490	9%	141,946	243,312	39%
Total	**5,561**	100%	**411,887**	**632,790**	100%
2004					
Ratios of 1 (small)	4,749	85%	23,921	23,921	3%
Canadian Parent Ratios	327	6%	253,201	376,434	53%
Foreign Ratios	7	0%	8,097	9,745	1%
Industry Ratios	495	9%	166,219	295,699	42%
Total	**5,578**	100%	**451,438**	**705,799**	100%
2005					
Ratios of 1 (small)	4,692	81%	4,403	4,403	1%
Canadian Parent Ratios	358	6%	258,386	424,182	53%
Foreign Ratios	13	0%	9,687	9,697	1%
Industry Ratios	712	12%	192,583	369,974	46%
Total	**5,775**	100%	**465,058**	**808,256**	100%

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