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SPPI Mini Presentation

Investment Banking and Securities Dealing in Canada

by

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1 Introduction

In Canada, development of Services Producer Price Indexes (SPPIs) has largely been on an industry basis following the North American Industry Classification System (NAICS)¹ as a frame of reference. Most of the SPPIs are sampled from firms on the Business Register, a sampling frame that identifies firms by industry, not by product. In general, SPPIs align with overall output measures, and development has targeted industries based on size (contribution to GDP), or those which provide a high level of services to the business sector.

This paper will focus on the Investment Banking Services Price Index (IBSPI), and development of the Securities Dealing Services Price Index (SDSPI), which cover a portion of ISIC 6499 – Other financial service activities, except insurance and pension funding activities, n.e.c. (see Table 1). Section 2 provides a description and characteristics of the industry, Section 3 summarizes business performance and output measurement at Statistics Canada, Section 4 presents measurement of the services producer price index, while Section 5 evaluates fitness of use, and presents lessons learned and future work, and Section 6 concludes.

2 Descriptions and characteristics of the industry

2.1 Definition of the industry

This paper focuses on NAICS 52311 – Investment Banking and Securities Dealing, which comprises establishments primarily engaged in originating, underwriting, and/or distributing issues of securities. These establishments trade on their own accounts, generally on a spread basis; that is to say revenues are generated from differences in the buy and sell prices of a given security. These activities fall under what is commonly called the ‘sell side’ and can be described as follows:

- *Securities underwriting* - raising investment capital for the new issue of a security. The underwriter buys the security from the issuer and distributes shares to investors and broker-dealers.
- *Security distribution* – acting as a market maker for a given security by buying and selling shares from their own account.

Investment banking activity includes new issuance of debt, new issuance of equity, mergers and acquisitions (M&A) and other corporate advisory services. These services are used by firms, trusts, governments², and structured funds that are looking to raise capital by selling equity or by issuing debt. The firms and institutions do not go directly to markets themselves to raise capital, instead they employ the services of an investment bank to raise the capital for them. Typically, the investment banks charge a percentage commission for their services, and often a much smaller additional fee. On large transactions, this additional fee is relatively trivial as a percentage of the total commission charged, but on smaller transactions the fee could be around 10 percent of the commission charged.

¹ The current NAICS is 2017 version 2.0.

² The federal government does not employ investment banks to sell their bonds, but the provincial and municipal government do.



Investment banking activities in Canada are mostly conducted by subsidiaries of Canada’s large banks, with recent competition from American investment banks. Deals often involve more than one large bank or smaller financial institution working together in a consortium.

Securities dealing establishments are known as market makers. They buy and sell from their own account and are required to provide liquidity in the market.

The concordance of the International Standard Industrial Classification of Economic Activities Revision 4 (ISIC Rev. 4) to the NAICS Canada 2017 is shown in Table 1. As shown, the relationship between ISIC and NAICS is complex for this industry. ISIC includes several other activities which fall under different NAICS classifications.

Currently in Canada, there is an index disseminated for Investment Banking, and a separate index in development for Securities Dealing. These activities only cover a portion of ISIC 6499.

Table 1: Concordance of ISIC to NAICS 2017

ISIC Rev. 4			NAICS Canada 2017	
Code	Title	Explanatory notes	Code	Title
6499	Other financial service activities, except insurance and pension funding activities, n.e.c.	Other nondepository credit issuing including pawn shops and pawn brokers, making loans based on the anticipated value of crops being grown by farmers, etc.	522299	All other non-depository credit intermediation
		Investment banking and securities dealing	523110	Investment banking and securities dealing
		Commodity contract dealing; foreign currency dealing	523130	Commodity contracts dealing
		Intermediation n.e.c. (e.g., investment clubs; venture capital companies; gas and oil royalty dealers; buying and selling mortgages (rediscounting)); buying income tax refunds; viatical settlement companies; venture capital companies and own account investing	523910	Miscellaneous intermediation

NOTE: FROM [HTTP://WWW.STATCAN.GC.CA/ENG/SUBJECTS/STANDARD/NAICS/2012/CONCORDANCES-2012-4-3](http://www.statcan.gc.ca/eng/subjects/standard/naics/2012/concordances-2012-4-3) ACCESSED JULY 11, 2017 AND LAST MODIFIED APRIL 8, 2015. THERE WERE NO CHANGES TO NAICS BETWEEN 2012 AND 2017.

2.2 Market conditions and constraints

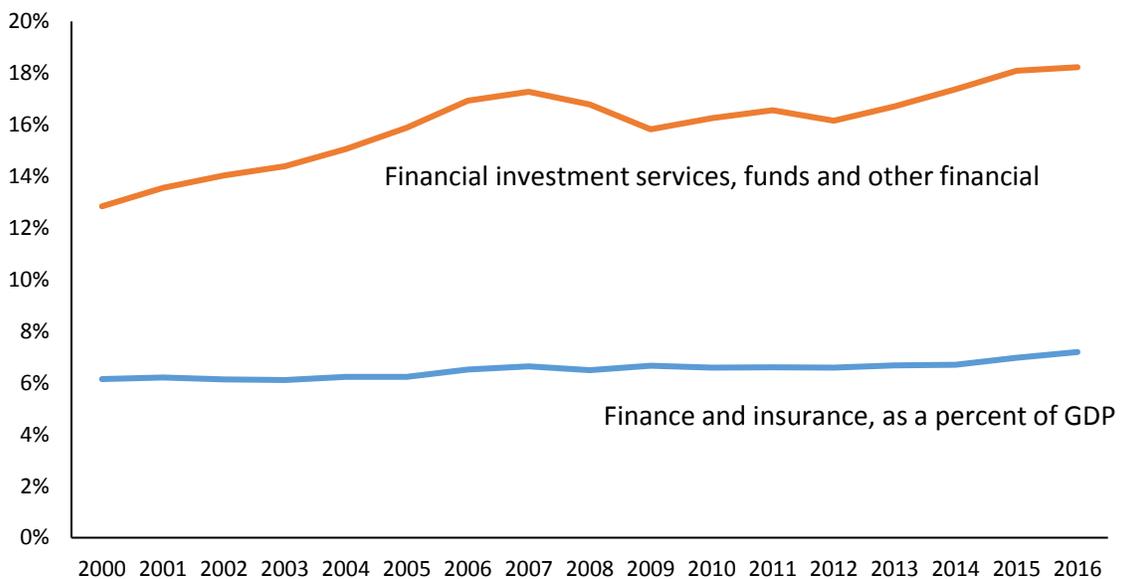
2.2.1 Size of the industry

Financial services are an important part of any developed economy. Baily and Elliott (2013) describe the three major roles of this industry: providing credit, providing liquidity, and providing risk management services. Well-functioning financial markets encourage growth by allowing firms to fund projects and households to make large purchases such as new homes. In Canada,

as of May 2017, the finance and insurance sector contributed \$126 billion to GDP (2007 constant dollars) and represented 7.3 percent of GDP at basic prices.³ The subsector which includes investment banking and securities dealing services increased its contribution to the Finance and Insurance sector by over 40 percent over the same period (see Chart 1 below), and as of December 2016 stood at just under one-fifth of finance and insurance GDP. Indeed, Financial investment services, funds, and other financial vehicles, the subsector of which includes investment banking and securities dealing services, increased its contribution to GDP from 0.8 percent to 1.3 percent from 2000 to 2016.

The financial services sector comprises 36.6 percent of firms that make up the TSX composite index, as of August 2017.⁴ Five of the ten largest firms that trade on the TSX are in this industry.

Chart 1: Financial services a growing share of finance and insurance sector's GDP



SOURCE: STATISTICS CANADA. TABLE 379-0031 - GROSS DOMESTIC PRODUCT (GDP) AT BASIC PRICES, BY NORTH AMERICAN INDUSTRY CLASSIFICATION SYSTEM (NAICS), ANNUAL (DOLLARS), CANSIM (DATABASE). (ACCESSED: AUGUST 20, 2017)

NOTE: FINANCIAL INVESTMENT SERVICES, FUNDS AND OTHER FINANCIAL VEHICLES REPRESENTS AN AGGREGATION OF NAICS 2017 SUBSECTORS 523 AND 526 AND IS THE LOWEST LEVEL OF DATA PUBLISHED. THIS SUBSECTOR ALSO INCLUDES A PORTION OF THE NON-BUSINESS SECTOR INDUSTRIES NP999999 AND GS911 TO GS913.

2.2.2 Regulatory environment

Each province and territory in Canada has independent securities commissions and regulatory offices, which oversee financial products, trading and intermediation activities within their own jurisdictions. These offices work in concert with the Investment Industry Regulatory Organization of Canada (IIROC) who oversees securities firms and their employees.

All thirteen regulators also belong to the Canadian Securities Administrators (CSA), an informal organization that facilitates coordination between its members through initiatives such as the

³ Statistics Canada. Table 379-0031 - Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), monthly (dollars), CANSIM (database). (accessed: August 20, 2017)

⁴ https://web.tmxmoney.com/index_sector.php?qm_symbol=^TSX (accessed: August 15, 2017)

‘passport system.’ This system allows for decisions made in one jurisdiction to carry over to others, with the notable exception of Ontario whose regulator has chosen not to participate. Instead, the Ontario Securities Commission (OSC) decides on a case-by-case basis whether or not to accept the decisions of other jurisdictions. The CSA also maintains several databases for the purposes of regulatory disclosures and filings.

Changes in regulation can have a marked impact on the revenue sources within the industry, thereby impacting on price movements, as presented in the discussion on weights in the IBSPI in section 4.2.1.

2.2.3 Products

The primary function of participants in this industry is to be the intermediary between buyers and sellers of securities. Liquidity and stability is also provided to the securities market by being the buyer or seller of last resort.

2.2.4 Primary Services

The services provided by participants in this industry are: dealer or trading services; investment banking services including underwriting of new and additional stock issues; and mergers and acquisition advisory services. In addition, services include, buying and selling mutual fund shares for their clients and managing client’s accounts. One of the primary services provided is investment advice in conjunction with other services. Clearing and account administration are among services provided to members of this industry.

While dealers and brokers perform similar functions by acting as intermediaries between buyers and sellers, there is a difference. Dealers own the securities they trade and receive compensation based on the difference between the dealer’s purchase and selling price for a security. Brokers, on the other hand, do not own them and are usually paid commissions based on either a flat fee or a percentage of a transaction’s value. Dealers are also required to act as market makers, i.e. they must stand ready to buy and sell securities to facilitate market trading.

2.2.5 Out of Scope Revenues

The industry derives a portion of its income from the interest, dividends and unrealized capital gains from the securities held in the company’s portfolio. The interest, deemed ‘coupon interest’ should be separated from other sources of interest, because such revenue is derived from lending money and securities, which is part of their business and will be priced. All other interest, dividends and capital gains earned from investments are not in scope for the SPPI.

Also revenue gained from investing for the company’s own long-term investment account is not in scope. The revenue source is deemed ‘proprietary trading.’ This term is not to be confused with principal trading, and other trading terms that are sometimes used interchangeably in the industry.

2.3 Specific characteristics of the industry

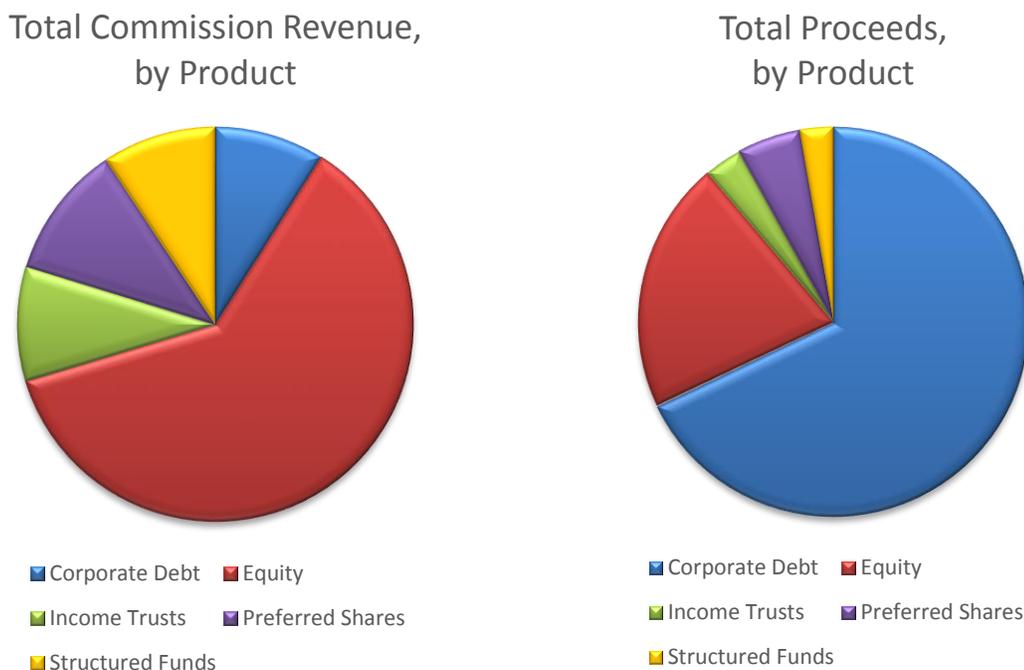
Investment banking involves underwriting of new securities, mergers and acquisitions advisory services, private placements and affiliated services. Underwriting involves advising the issuer on the terms of offering including setting the market price, buying the securities from the issue, and

distributing the securities to the public. There are two forms of underwriting: firm commitment and best-efforts. In a firm commitment, the underwriting firm agrees to purchase the entire issue at a lower price than the market value. The difference between prices is the gross spread, and serves as compensation to the underwriter. In a best effort agreement, the underwriter agrees to use all efforts to sell as much of an issue as possible to the public. However, if the underwriter is unable to sell all securities, it is not responsible for any unsold inventory. Best effort agreements are used mainly for securities with higher risk, such as unseasoned offerings. Mergers and acquisitions (M&A) include leveraged buyouts (LBO), restructuring and recapitalizing of companies, and reorganization of bankrupt companies. Investment bankers provide M&A services by: finding M&A candidates; advising acquiring or target companies; and assisting acquiring companies to obtain funds. Compensation is in the form of a fee, based on the size of the deal. Private placements involve a broker's assistance in placing a large amount of new issue stocks with a select number of buyers. For these services, an investment banker charges a fee. However, it is most common that the fee will be calculated as a percentage of the transaction. When an investment bank commits its own funds, this activity is considered merchant banking. Merchant banking can include bridge financing, offering credit and debit cards, managing portfolios, and doing research.

The deals that exist within the investment banking industry are somewhat homogenous in nature, although identical transactions are rare. For example, a company raising \$100 million in an equity sale is a fundamentally similar transaction to a company raising \$60 million. However, each transaction will almost always differ in its amount, timing, and issuer. In most cases each transaction is unique while maintaining fundamental homogeneity. More detail is provided in section 4 below, in the measurement of the SPPI and how we categorize deals.

Demand for services in investment banking is heavily influenced by market conditions. In bull-markets, when the stock market is rising, there is generally higher demand for selling equity and enrolling the services of investment banks to complete these transactions. The reason being that companies can raise more funds when stock prices are higher for an equivalent sale of percentage equity. Companies prefer to sell debt to raise funds when interest rates are low. The selling of equity is a larger share of commissions earned (61.5 percent compared to debt at 8.9 percent) and has more influence over the average commission being charged (See Chart 2).

Chart 2: Commissions are mostly generated by equity deals, yet more money is raised using debt, 2010-2016



SOURCE: FP INFOMART

The investment banking industry is facing competition from American investment banks and a new kind of transaction deal. The current type of deal offered by Canadian investment banks is known as a ‘bought-deal’ and the investment banks receive about a 4 percent commission on offerings of equity. The American approach, known as a ‘block-deal’ or ‘block trade net pricing model’, results in a much lower commission of less than 2 percent. This shift towards competition and new types of deals could result in an overall drop in investment banking services prices.

A securities dealer executes a trade by buying and selling using their own account. The price at which a dealer is willing to buy securities is referred to as the ‘bid’ price, while the price at which they are willing to sell securities is called the ‘ask’ price. The difference between the ask price and the bid price is called the bid-ask spread, which can be viewed as the price charged by dealers.

In practice there is a great deal of overlap between firms that engage in securities brokerage and securities dealing to the point which they are typically referred to as ‘broker-dealers.’ When a firm is acting as a broker, it is matching their client with a counterparty in exchange for a commission or fee. The broker never assumes ownership of the security and thus is unaffected by changes in its price. On the other hand, a dealer buys and sells securities from its own account and is exposed to fluctuations in price. It is compensated for this inventory risk by charging a markup on securities it sells (‘bid-ask spread’). The size of the spread, which is the magnitude of the difference between the bid and ask prices, could be affected by several factors, as presented in section 4.3.2. In general, the more risky and illiquid the security is, the greater the spread will be.

Investment Banking firms work together on most deals and transactions, whereas dealers might try to fill demand working in concert with other dealers but might not. Investment Banking is

exclusively business to business (B2B) by its nature⁵, whereas Securities Dealing can be B2B or business to consumer (B2C), and is therefore a business to all (B2A) service.

3 Business performance statistics and output measurement

3.1 General framework⁶

Each quarter Statistics Canada administers a survey of financial statistics to approximately five thousand of the largest enterprises in Canada. The data collected by the Quarterly Financial Statistics (QFS) for Enterprises program comprise financial statements prepared by incorporated businesses to record their financial position and performance. Annualized data from the QFS are combined with data from a survey of provincial or federal level government business enterprises (GBE) that operated in the business sector and administrative corporate taxation data which are collected for single legal entities then rolled up to the enterprise level. These combined data form the Annual Financial and Taxation Statistics for Enterprises (AFTS).

The objective of this annual series is to cover business activity within a calendar reference period. The data presented comprise financial statements typically prepared by incorporated businesses to record their financial position and performance. The data include: asset, liability and equity items encompassed in a balance sheet, revenue and expense items as reported on an income statement, a reconciliation of profit to taxable income and taxes payable, along with several common financial performance ratios.

These statistics are used in two broad ways. First, they provide a measure of financial position and performance of incorporated businesses by industry aggregations. They are used by a wide variety of economists and industry analysts in both the private and government sectors. Second they are used as the benchmark for the quarterly estimates of corporate profits in the Canadian System of Macroeconomic Accounts (CSMA).

Output is defined generally as goods and services produced by an establishment, a) excluding the value of any goods and services used in an activity for which the establishment does not assume the risk of using the products in production; and b) excluding the value of goods and services consumed by the same establishment except for goods and services used for capital formation or own final consumption. In general, all goods and services that are produced and used by the same establishment are excluded from the measure of output. Exceptions occur and, for example, output is recorded if the goods and services being produced are used for capital formation of the establishment. Similarly output is recorded for products entering inventories even if eventually they are withdrawn from inventories for use as intermediate consumption in the same establishment in a later period. Business performance statistics and output measurement are described in more detail in sections 3.3.1 and 3.3.2, respectively.

⁵ In this context, B2B includes governments.

⁶ Generic definitions from <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=2510> (accessed: September 18, 2017), <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=1401> and http://www.statcan.gc.ca/eng/nea/gloss/gloss_o#Output (both accessed: August 18, 2017).



3.2 Measurement issues⁷

The product definition for investment banking and securities dealing services in the Central Product Classification (CPC version 2) is not further broken down into sub-products. The CPC version 2 explanatory note for subclass 71200 - Investment banking services, includes “securities underwriting services; guaranteeing the sale of an issue of securities at a stated price from the issuing corporation or government and reselling it to investors; and, engaging to sell as much of an issue of securities as possible without making a guarantee to purchase the entire offering from the issuer.” There is no separate classification for securities dealing services although the activities of dealers are included in the subclass, which corresponds to the NAICS classification of the industry, and similarly, a portion of ISIC 6499 (see Table 1 above).

Canada is implementing the North American Product Classification System (NAPCS) 2017 which provides additional breakdowns of security services. Comparing the CPC version 2 to NAICS 2017 and NAPCS 2017, the CPC aligns well with NAICS given that investment banking and securities dealing is defined as a unique service. Within the NAPCS, investment banking activities fall under subclass 761611 – Securities origination products, while securities dealing services are aggregated with brokerage in the remaining subclasses under the Investment products class. The exception is 761616 - Foreign currency wholesale brokering and dealing which does not include securities dealing activities.

Canada NAPCS 2017 version 1.0

761 - Financial services (except insurance)

76161 - Investment products

761611 - Securities origination products

7616111 - Securities origination products

761612 - Brokering and dealing of money market instruments

7616121 - Brokering and dealing products, negotiable certificates of deposit

7616122 - Brokering and dealing products, commercial paper issued by financial institutions

7616123 - Brokering and dealing products, commercial paper issued by non-financial institutions

7616124 - Brokering and dealing products, bankers' acceptances

7616125 - Brokering and dealing products, Treasury bills

7616126 - Brokering and dealing products, other money market instruments

761613 - Brokering and dealing of other debt instruments

7616131 - Brokering and dealing products, corporate bonds and asset-backed securities

7616132 - Brokering and dealing products, national government notes and bonds

7616133 - Brokering and dealing products, provincial and local government notes and bonds

7616134 - Brokering and dealing products, foreign government notes and bonds

761614 - Brokering and dealing of equities

7616141 - Brokering and dealing of equities

761615 - Brokering and dealing of derivatives

7616151 - Brokering and dealing products, futures contracts, exchange-traded

7616152 - Brokering and dealing products, option contracts, exchange-traded

7616153 - Brokering and dealing products, forward contracts, traded over-the-counter

7616154 - Brokering and dealing products, swaps, traded over-the-counter

⁷ A specific evaluation of securities dealing as it relates to brokerage is in Ketita, Opsitnik and Xie (2016).



- 7616155 - Brokering and dealing products, option contracts, traded over-the-counter
- 7616156 - Brokering and dealing products, other derivatives contracts, traded over-the-counter
- 761616 - Foreign currency wholesale brokering and dealing
 - 7616161 - Foreign currency wholesale brokering and dealing
- 761617 - Brokering and dealing of investment company securities
 - 7616171 - Brokering and dealing of investment company securities
- 761618 - Brokering and dealing of other financial instruments
 - 7616181 - Brokering and dealing of other financial instruments
- 761619 - Brokerage correspondent products
 - 7616191 - Brokerage correspondent products

The CSMA is currently using a product classification for financial services that comes from a Canadian provisional version 0.1 of NAPCS 2012, which doesn't vary significantly. This version includes a subclass for investment products which is broken down into two detailed products: securities origination; and, brokering and dealing. This classification concept aligns well with businesses in this industry, who consider themselves to be 'broker-dealers.'

One major challenge arises in the classification of targeted units for sampling. Depending on the program and level at which units are targeted, data comparisons could be challenging. For example, if performance programs (that feed output) target enterprises, and prices programs target establishments, it's necessary to ensure that the data collected for the enterprise level programs is appropriately broken out such that prices are able to align with the data that feeds output. Furthermore, sampling for prices programs needs to consider the activities of enterprises whose data ultimately feeds the output for different industry / commodity aggregates in the national accounting framework in order to ensure sufficient coverage.⁸

Finally, if sampling from a frame that is industry based, depending on the level of index development, challenges could arise. For example, Statistics Canada's Business Register uses NAICS. Investment Banking and Securities Dealing is one NAICS, resulting in one code on the frame, for all units, regardless of their activity. However, the CSMA splits the output of these two services into separate commodities (see Appendix). Therefore, deflators at a finer level of detail are required, while sampling for separate activities poses a challenge.

3.3 Description of methods for measurement

3.3.1 Business performance statistics

Statistics Canada manages the Quarterly Financial Statistics (QFS) for Enterprises and the Annual Financial and Taxation Statistics (AFTS) for Enterprises. These programs provide a measure of the financial position and performance of incorporated businesses by industry aggregations. The quarterly program also provides information on financial holdings and transactions in the CSMA sector account, which comprise the National Balance Sheet Accounts and the Financial Flow Accounts, while the annual program serves as a benchmark for the quarterly estimates of corporate profits in the CSMA.

⁸ See Ketita, Opsitnik, Xie (2016) for a detailed discussion of these issues within the brokerage industry.



The statistical unit for these programs is the enterprise. An enterprise is a business or a family of businesses under common ownership and control for which a set of consolidated financial statements is produced on an annual basis. The QFS covers incorporated financial and non-financial business enterprises. Excluded are business enterprises controlled by governments and non-profit enterprises, which are included in the annual program. The AFTS, however, excludes enterprises classified to Management of Companies and Enterprises (NAICS 55)⁹; Religious Organizations (NAICS 8131); Political Organizations (NAICS 81394); Public Administration (NAICS 91); as well as Funds and other Financial Vehicles (NAICS 526).¹⁰

The Investment Banking and Securities Dealing industry reports information for Bank subsidiaries on a booked-in-Canada basis to Statistics Canada. Variables collected are underwriting fees for new issues, securities commissions and fees, and other commissions and fees. These data are used to estimate the output for the investment banking, and the securities brokerage and securities dealing commodities in the Banking and other depository credit intermediation industry. No other schedules are used to collect data for the program from this industry.

SPPI development originally focussed on the ability to use the data reported in the calculation of a price, however, these data are not designed for this purpose. They are aggregated data reported on financial statements and are not appropriate for the calculation of a service price. Furthermore, when analyzing QFS or AFTS data for this industry, a major challenge is that performance data is consolidated for the enterprise, and fall under NAICS 52211 – Banking, for the largest establishments in Canada which are affiliated with Canadian banks. These data could be consolidated with several other activities of these financial institutions, and often reflect the idiosyncrasies of each reporting institution's practices.

3.3.2 Output

Since this industry is highly regulated, there is a wealth of administrative and alternative data sources that are available to the public for analysis. In particular, the CSMA derives output from the AFTS (see section 3.3.2) and from the Investment Industry Association of Canada's (IIAC) Securities Industry Performance Report. Using this high quality information imposes no additional burden on respondents.

Supply and use tables

The Supply and Use Tables (SUTs) focus on measuring the productive structure of the Canadian economy. Products are classified according to the Supply and Use Product Classification (SUPC) and industries are classified according to the Input-Output Industry Classification (IOIC), which are closely linked to the NAPCS and NAICS classifications noted above.

The SUTs trace the production of products by domestic industries, combined with imports, through their use as intermediate inputs or as final consumption, investment or exports. The system provides a measure of gross value added by industry—total output less intermediate inputs. These tables can be used to calculate economy-wide gross domestic product (GDP) either

⁹ NAICS 55 is surveyed as part of the QFS but not included in the published estimates.

¹⁰ While the quarterly program is a sample survey with a cross-sectional design, the annual program covers all incorporated businesses within the domestic economy of Canada with the exception of those listed. Furthermore, the only for profit enterprises that the AFTS includes are the ones serving businesses.

directly, by summing value added over the industries, or indirectly, by summing to the economy-wide cost of primary inputs (income-based GDP) or by computing the grand total of the flow of products into final use categories (expenditure-based GDP)—the link to the national income and expenditure accounts.

The SUTs provide a wealth of information about the structure and evolution of the Canadian economy data, which are produced annually with a lag of up to 3 years after the reference year due to large amount of data that is required to compile the SUTs. As a means of providing more up-to-date information to users for current analysis, two industry-based programs – measuring monthly real GDP by industry and annual real GDP by industry by province and territory, are available.

Since the SUTs provide a very detailed picture of the Canadian economy, these accounts are used for structural analysis and productivity studies as well as in a dynamic economic modeling for examining the impact of exogenous shock on economic variables. The SUTs also provide the benchmark estimates of GDP to various GDP programs in the branch, tying them together as a coherent set and providing the ‘full information’ estimates upon which they are based.

CSMA Output Concepts

SNA 2008 defines the ‘output’ as goods and services produced by an establishment, a) excluding the value of any goods and services used in an activity for which the establishment does not assume the risk of using the products in production; and b) excluding the value of goods and services consumed by the same establishment except for goods and services used for capital formation or own final consumption.

The gross output of an industry is the value of goods and services produced by an industry. It is generally equal to the value of the industry’s sales plus any increases (less any decreases) in the value of physical change in stocks of finished products and work in progress. Output is a gross concept and the term ‘gross’ essentially means ‘before deductions.’ For measuring financial intermediation services engaged in security dealing services, however, some exceptions are followed.

For financial services involving the purchase and sale of bonds, equities or currencies as a ‘market maker’, the financial services margins are considered to be the output. The markets for financial assets of these kinds typically operate with the market maker offering assets for sale at an ‘ask’ price and offering to buy assets at a ‘bid’ price. The ‘ask’ and ‘bid’ prices are moved up or down in response to excess demand or supply. To calculate the output of the market maker, a ‘mid’ price is calculated as the average of the ‘ask’ and ‘bid’ prices. When assets are sold by the market maker at the ‘ask’ price, the output is the resulting revenues minus the revenues that would have resulted if the assets were sold at the ‘mid’ price. Similarly, when assets are bought by the market maker at the ‘bid’ price, the resulting revenues are calculated as the revenues it would earn by reselling at the ‘mid’ price minus the amount paid for the assets at the ‘bid’ price.

The output of the investment banking services is based on the value of the explicit fees charged in engaging for two main activities: underwriting services in equity and debt markets and corporate advisory services such as mergers and acquisitions (M&A), while the output of the security dealing services is a combination of the following:



- a. The value of the explicit fees.
- b. The financial services margins earned from engaging in market making activities.

The SUTs currently measure output of investment banking services under a commodity, investment banking services (MPS523001). Output of securities dealing services and securities brokerage services are combined under another commodity, security brokerage and securities dealing services (MPS523002). The output of the security brokerage services is based on the value of the explicit fees for arranging trades between security buyers and sellers without taking the risk of holding securities on their own account.

These commodities are produced by two industries: Banking and other depository credit intermediation (BS5221A0), and Financial investment services, funds and other financial vehicles (BS52A000).

Output¹¹ is calculated using the Investment Industry Association of Canada (IIAC) securities performance industry publication, which includes income for both banks and non-banks. In order to dissect the amount allocated to the banking industry versus the non-banking industry, the SUTs use data from the QFS, which contains surveyed revenue details of banks on a booked-in-Canada basis. These data are used to calculate the amount of output produced by the banks, under the Banking and other depository credit intermediation industry, while the difference between IIAC reports and the data reported in QFS are used to determine output for the non-banks, under the Financial investment, services, funds and other financial vehicles industry.

4 Measurement of SPPI

4.1 General framework

SPPIs are used to measure the volume of services produced in the Canadian economy, which allows for a more accurate measure of real economic activity and productivity. The primary purpose of the IBSPI is to provide supplemental information to help inform the deflation of output, while the SDSPI is in development.

¹¹ Of the IIAC revenue categories, the securities brokerage and dealing services revenues include commission (less mutual funds), fixed income and equity trading, fees, other. Commission revenue are reported gross of payouts to other brokers and includes soft dollar deals. Trading revenues include trading profits/losses as well as dividends earned from securities traded on the open market or from market markets' own inventory accounts. Includes adjustment of inventories to market value. Fees include proxy fees, portfolio service fees, segregation and/or safekeeping fees, RRSP fees and etc. Other revenues include foreign exchange profits/losses and all other revenue not reported above. The investment banking services revenues related to underwriting services include underwriting and/or management fees, private placement fees, trading profits on new issue inventories [trading on an "if, as and when basis"], selling group spreads and/or commissions. Corporate advisory fees include corporate restructuring, privatization, and M&A fees.

These indexes have been developed uniquely given the need for separate deflators to fit the CSMA framework. Furthermore, different data sets are available for different purposes, which supports this approach. As such, the following discussions related to the SPPI have been separated into the IBSPI, which is published, and the SDSPI, which is in development.

Finally, the development of a broad Financial Services Price Index (FSPI) is of interest to the Bank of Canada in order to provide supplemental measures of inflation to inform monetary policy. As new FSPIs become available, the construction of a broader FSPI to support the needs of additional users will be possible.

4.2 Measurement issues

4.2.1 Investment Banking

As shown in Chart 2 (section 2.3), more proceeds are raised via issuing debt than any other product, and equity financing generates more commission revenue versus other products. Also, given the distribution of deals in Canada by size, a few big deals can impact price (see section 4.3.1).

As mentioned above, this industry is highly regulated, which results in a wealth of administrative and alternative data sources that are available to the public for analysis. In particular, for investment banking, new issues of debt and equity, as well as mergers & acquisitions, are reported through the System for Electronic Document and Retrieval (SEDAR). These reports are collected and tabulated by Financial Post (FP) Infomart. FP Infomart is a third-party data provider, and using their data set imposes no additional burden on respondents as there is no survey conducted, merely a tabulation of publicly available data.

FP Infomart classifies all new issues into six product types (corporate ownership, corporate income trusts, corporate structured funds, corporate debt, corporate preferred shares, and government debt), terms of service, deal size, purpose, and client industry. In order to minimize quality change while maintaining representativeness, transactions are assigned to homogenous product categories defined by the characteristics most highly correlated with price.

In addition to data from FP Infomart, the IBSPI uses data from the CSMA in order to deflate the proceeds received by investment banks for their services. The deflation factor is derived using the implicit price index for Gross Fixed Capital Formation from the Canadian national accounts. This deflator was chosen due to its relevance given that in the data set, the primary purpose reported for seeking such services is in order to raise proceeds for capital expenditures.

In investment banking, the same transaction is almost never repeated. As such, model pricing, or pseudo model pricing might not be ideal. Therefore, to measure price movements we examined pooled transactions and average commission percentage charged. This is discussed in more detail in section 4.3.1.

Weights

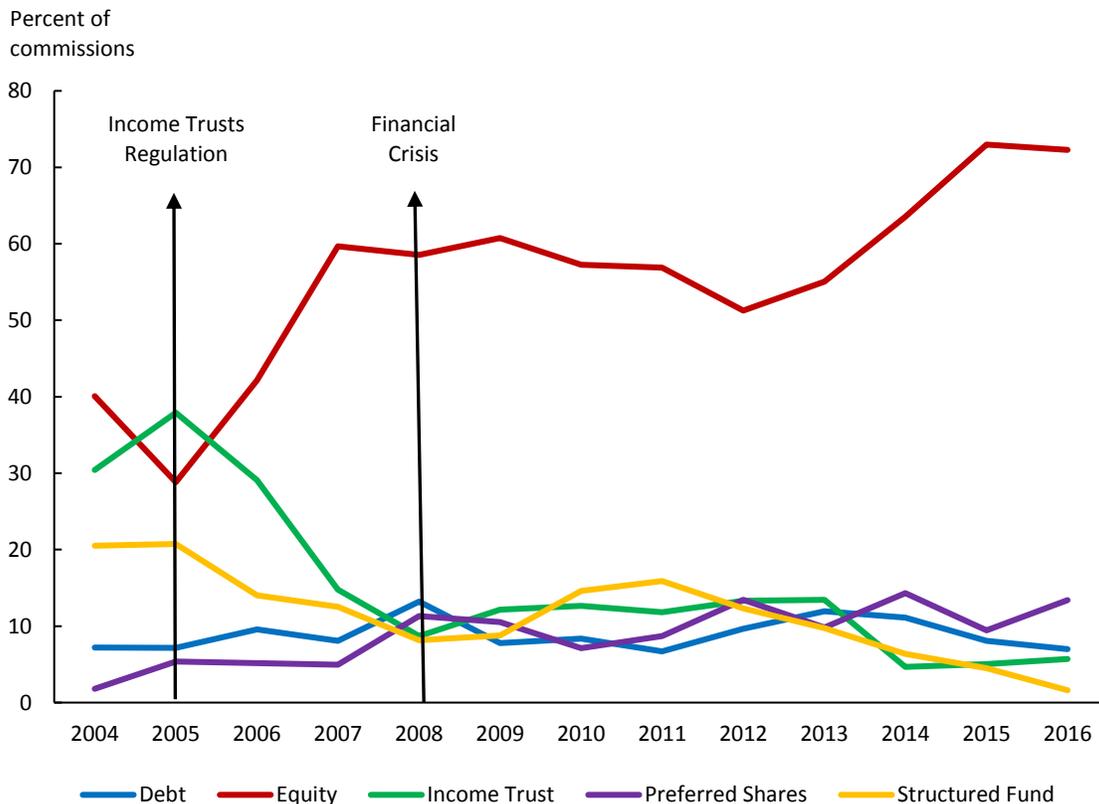
Industry revenues for investment banking are volatile partly due to business cycles; new issues and M & A activities almost dried up during the recent financial crisis. More importantly, the relative weights for each product category can vary dramatically because of regulatory changes

(e.g. income trust conversion), market conditions (e.g. favoring debt financing over equity financing in a low interest rate environment), and financial innovations.

Chart 3 below shows the change in weights over time for the product categories contained in the IBSPI. In 2006, new regulations were implemented regarding income trusts. The market began to anticipate new regulations in 2005 and since then, the popularity of income trusts has receded. The period of the financial crisis resulted in a substantial decline in corporate financing activities followed by a period of sustained low interest rates. This resulted in the increasing popularity of debt financing as opposed to equity financing.

In general, a shift that favours one method of financing over the other, ceteris paribus, will cause a change in investment banking revenue and average commission charged in the industry. A shift towards debt financing, all else equal, will result in a decrease in average commission charged, and likewise, a shift towards corporate ownership would result in an increase in average commission charged. The impact of these changes demonstrates the requirement for weights to be updated frequently in order to keep the basket representative. For this reason, and based on the fact that the information is readily available, we've chosen to update weights annually.

Chart 3: Weights are impacted by regulation and market conditions



SOURCE: FP INFOMART

4.2.2 Securities Dealing

The sources of data used in the development of a Securities Dealers Services Price Index are Bloomberg (to capture bid-ask spreads), and the Investment Industry Association of Canada (for

weights). The experimental SDSPI is a weighted average of seven representative benchmark securities which measure the different maturities of Canadian sovereign debt. The weights are based on trading volume data (provided by IIAC) and Bank of Canada's auction volume. Bond trading information is divided up into three relevant categories by maturity: 0-3 year, 3-10 year, 10+ years. Treasury bill volume is not categorized. We plan on weighting each term as follows:

- 3 Month T-bills will use 60% of the T-Bill volume share
- 6 Month T-bills will use 20% of the T-Bill volume share
- 1 Year T-bills will use 20% of the T-Bill volume share
- 2 Year bonds will use the 0-3 year volume share
- 5 Year bonds will use 50% of the 3-10 year share
- 10 Year bonds will use 50% of the 3-10 year share
- 30 Year bonds will use the 10+ year share

Weights are based on volume share within the data set. Because the 3-10 year volume data isn't further broken down, a 50-50 split between the 5 and 10 year maturities is reasonable. We can revisit this weighting if and when we can get more granular data. 3-year bonds are not included as they were last auctioned in 2014 and are thinly traded.

Rather than attempting to capture dealer spreads amongst all securities transactions in Canada, development of the SDSPI focuses only on domestic sovereign debt, specifically Bank of Canada issued bonds and treasury bills. These highly liquid, stable, and nearly riskless securities allow us to measure the pure price change of this service. Other securities would result in an index of lesser quality as stripping out the liquidity and market effects would pose difficulties. Real-return bonds are excluded due to their low volume. Canada Savings Bonds are in the process of being discontinued and are also excluded. Information on the auctions of these securities including the list of dealers is readily available on the Bank of Canada website.

4.3 Description of pricing methods and criteria for choosing the method

Developing a price index for this industry is a challenge given that several price determining characteristics can be considered in pricing the service. Furthermore, considering quality adjustment is theoretical. For example, how does one qualify better service for an investment bank or securities dealer? For investment banking, one suggestion could be to consider closing dates. The quicker a client receives the money they'd like to raise, the better the service the bank has provided. For dealing, volume could be an indicator of quality given that dealers need to make markets and, in doing so, ensuring market stability in executing deals could indicate better quality service. These only attempt to qualify a client's experience, are conjectures at best, and have yet to be considered or implemented in the prices program.

4.3.1 Investment Banking

Price determining characteristics for investment banking services:

Size of the offering/placement/deal, etc.: The prices charged for investment banking are generally a percentage of the 'deal.' The percentages generally decline the larger the deal.

Securities involved/product type: The types of securities involved in the transaction can affect the price charged. Indeed, the IBSPI considers this as a key characteristic impacting price, as explained later in this section.

Additional services performed: (Fairness opinions, firm valuations, etc.) Almost all investment banking is customized with each underwriting requiring a different scope of services. Generally the price of the services is imbedded in the spread charged, but can sometimes be assessed separately.

Company characteristics: Much of investment banking from IPO's to mergers and acquisitions is based on the valuation of the company and an assessment of its future condition, in terms of sales and growth. A generic description of the company may be necessary for repricing purposes in order to allow for escalation of the value of the company in the current market.

Complexity of the deal: Complicated deals are charged a higher price.

The following characteristics are unique to underwriting services:

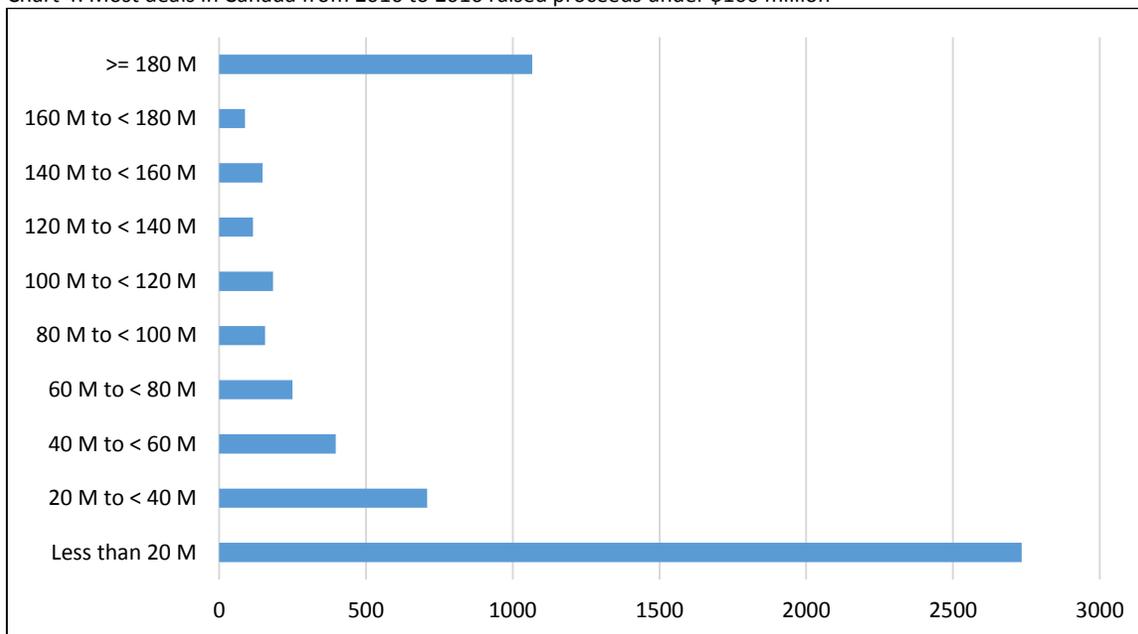
Type of public offering: (best efforts, firm commitment.) Since there is less risk involved in a best efforts underwriting, the gross spread is lower than in a firm commitment underwriting.

Role of investment banker: (manager, co-manager, underwriter, advisor.) Managers of deals will get a higher compensation than other members of an underwriting syndicate.

Multiple price measurement methodologies were considered for the IBSPI. The use of a sample survey of respondent selected transactions was deemed inappropriate for this industry since transactions, which would represent the product, are not repeated from period to period making it difficult to control for quality change. A model pricing approach was also considered; however, respondents would likely find it difficult to re-price non-repeated transactions, as summarized earlier. It was felt that the index might suffer from response error or lack of engagement by respondents, biasing the results. Also, given the nature of the investment banking industry where multiple enterprises can participate in same deals, the use of traditional establishment or enterprise sampling was not considered, since this could lead to duplication of transactions and prices in each period as multiple establishments participate in the same deals.

Also, the Canadian industry is heavily concentrated with a few big players generating the vast majority of revenues in a controlled amount of deals which are weighted toward smaller proceeds (Chart 4). Furthermore, the influence of the largest deals is apparent. Average deal size is greater than the median, suggesting that although these deals aren't frequent or numerous, they have a meaningful impact (Table 2). This also suggests that price movements will be heavily influenced by these largest deals, which are fewer in number, and breaking down such deals into more detailed categories would result in too few observations for some groups. As such, the existence of an available comprehensive data set allowed for the exploration of an alternative.

Chart 4: Most deals in Canada from 2010 to 2016 raised proceeds under \$100 million



SOURCE: FP INFOMART

Table 2: Data show that a few big deals push average of proceeds up

Average	Median	Standard Deviation	Max	Min
\$110,242,348	\$23,000,000	\$237,575,585	\$4,419,450,000	\$15,000

SOURCE: FP INFOMART

The IBSPI is based on a near census of transactions featuring all new issues of financial securities from 2010-2016. The FP Infomart data allows product definition by type (corporate debt, ownership, preferred shares, etc.), term (best effort, market underwritten, and bought deal) and deal size. Our product definition initially focused on these characteristics in order to minimize product quality change from period to period, and also since any further differentiation (client industry, number of underwriters, etc.) would lead to excessive complexity resulting in narrow product definitions and too few transactions from period to period. We are also interested in balancing our product definition such that the unit value of commissions is representative of the industry and not some anomalous one-time event.

After investigation, it was determined that term and deal size did not significantly impact price movements and that classifying the data this way increased bias of the estimations.¹² Therefore these categories were dropped. Also, as noted earlier, the Canadian industry is highly concentrated with a few players participating in the same deals. Over the 2010 to 2016 period, there were just under six thousand deals. Breaking out this limited amount of deals reduced the amount of deals per category/period, which compromised the outlier detection process. As such, it was determined that the most significant influence on price, product type, would be retained, with a further breakdown of equity deals to resource and non-resource, as this did impact on price.

¹² Xie and Zhang (2015).



The methodology described below using the alternative data set allows for the computation of a unit value index using a near census of investment banking transactions which have been classified into homogeneous product groups. Furthermore, the use of administrative data imposes no additional burden on respondents.

The index tracks 5 product categories: equity (which is further broken down as mentioned), corporate income trusts, corporate structured funds, corporate debt, and corporate preferred shares. Weight data is from the same source as the price data, FP Infomart. Each product's commission revenue is used as weights.

For each product category, the price is calculated as an average percentage commission (i.e., total commission income¹³ divided by total proceeds):

$$P_{i,t} = \frac{C_{i,t}}{V_{i,t}}$$

where $P_{i,t}$ is the price for product i in period t , $C_{i,t}$ and $V_{i,t}$ are total commissions and total proceeds for product i in period t .

In order to maintain a constant unit of measure, we must adjust the total proceeds to account for changes in purchasing power over time. This gives the following:

$$P_{i,t} = \frac{C_{i,t}}{V_{i,t}/(d_t/d_0)}$$

where d_t/d_0 is the ratio of the Implicit Price Index for Gross Fixed Capital Formation in period t relative to the base period.¹⁴

We then aggregate price relatives using the following formula:

$$I_0 = 100$$

$$I_1 = I_0 * \sum W_{i,0} P_{i,1}/P_{i,0}$$

$$I_t = I_{t-1} * \sum W_{i,t-1} P_{i,t}/P_{i,t-1}, \text{ for } t > 2$$

where I_t is the index number in period t , $W_{i,0}$ is the base year weight for product i , and $W_{i,t-1}$ is the weight for product i in year $t - 1$.

¹³ Sometimes underwriters are compensated by special broker warrants besides cash commission. The monetary value of such warrants is usually marginal compared to the cash compensation and very difficult to estimate due to lack of information. Hence broker warrants are not considered as part of the price. In some rare cases, issuers offer common shares instead of cash to cover the underwriting cost. We then calculate the value of such common shares and treat them as cash compensation.

¹⁴ We chose the Implicit Price Index for Gross Fixed Capital Formation as the deflator because the funds raised through new issues are mainly for capital expenditure purposes. See: Hajjar, Opsitnik, Xie (2016)

For the product type that contains multiple products (equity), a sub-index is calculated by aggregating the underlying products using the same weighting method described above.

Data is tabulated by FP Infomart continuously. FP Infomart sends Statistics Canada the collected information quarterly. The IBSPI is constructed annually.

4.3.2 Securities Dealing

For dealers, several price determining characteristics exist, and the following apply to bonds¹⁵:

Bond rating: (AAA, BB, high yield, etc.) A bond's rating reflects the probability that the firm will default on the bond indenture provisions. The better the rating, the less risk the dealer takes in holding the bond, and smaller the spread.

Par value: (\$1,000, \$10,000, etc.) The par value is the amount that will be paid out when the bond matures. The mark-up charged on the purchase or sale of many standard government bonds is a fraction of the par value.

Coupon rate: The coupon rate is the bond's interest payment per dollar of par value. The coupon rate affects the current price of the bond. As market interest rates go down, bond prices go up as demand for bonds with higher interest rates rises.

Maturity date: Term to maturity may be price determining. The greater the term, the greater is the risk of price change and, consequently, the greater the spread.

Type of issue: (on-the-run, off-the-run, new issue, previous issue, etc.) The spreads for bonds will be smaller or greater depending on how new the issue is. On-the-run Treasury issues are the most recently auctioned issues for a given maturity. Previously auctioned issues are referred to as 'off-the-run' issues. Off-the-run issues are less liquid and trade less frequently and thus have a higher spread.

Type of corporate bond: (mortgage, collateral, debenture, etc.) Safer bonds with more collateral will typically have lower spreads.

Provisions of bond: (callable, convertible, exchangeable, etc.) The characteristics of the bond make it more or less attractive to buyers, thereby affecting the price charged for issuing the bond.

In the development of the SDSPI, the approach we are taking for building a time series for bond spreads is to hold the current (remaining) maturity as constant as possible. This is done by using the benchmark bond for each term. A bond typically becomes benchmark after its last auction, which is usually when its outstanding amount first reaches the target range. Exceptions to this are treasury bills which become the benchmark after their first auction.

This will introduce some kinks in the data although the observed prices show fewer kinks than one would expect. The advantage of this approach is that it is efficient and straightforward to

¹⁵ Development of the SDSPI has focussed on bonds, therefore these price determining characteristics are presented. Additional characteristics exist for equity.



implement. Alternatively, we could build a database of all bonds and choose from them the one that has the closest current maturity. For example, we could use a 30-year bond with two years remaining maturity as a stand-in for a two-year bond. It is not clear at this time if this would produce significantly different results and due to time/resource constraints, the simpler method is recommended.

5 Evaluation of measurement

5.1 Investment Banking

Statistics Canada measures the commodity output by using the investment banking service fees obtained from the IIAC's Annual Securities Industry Statistics, which breaks down revenues into three components: fees for new issues of equity, fees for new issues of debt, and fees for corporate advisory services (including M&A).

The Investment Banking Services Price Index only covers new issues of equity and debt and does not include debt issues from the government.¹⁶ Also, our current data set lacks information regarding corporate advisory fees, and instead relies on transactions for issuing debt and equity to cover industry pricing. The reason for this is that corporate advisory fees, which includes mergers and acquisitions does not need to be reported but all the transactions for issuing debt and equity must be reported.¹⁷ Data regarding the issuing of debt from municipal and provincial governments is not currently available, but likely will be in the future.

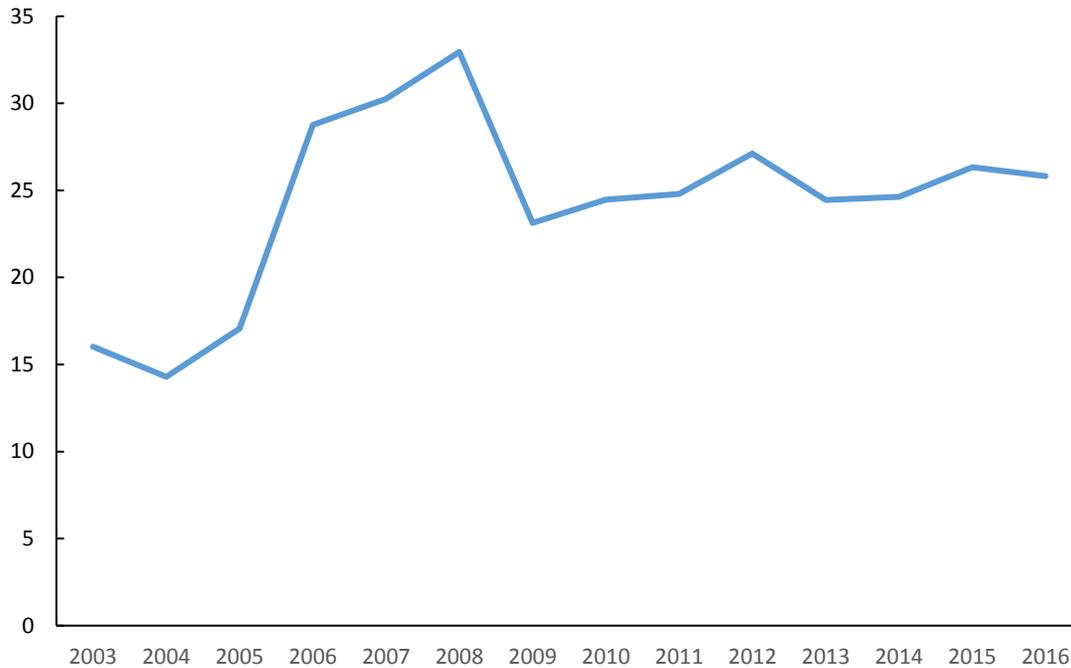
With regard to M & A and other corporate advisory services, these accounted for around a quarter of investment banking revenues in 2016 (see Chart 5). Statistics Canada is still in search of relevant administrative or alternative data for M & A, but due to its own pricing characteristics, a different methodology will need to be developed for this service line when a viable data source is identified.¹⁸

¹⁶ The federal government does not employ investment banks to sell their bonds, but the provincial and municipal governments do.

¹⁷ Investment Industry Association of Canada (IIAC). 2016.

¹⁸ Hajjar, Opsitnik, Xie (2016)

Chart 5: Corporate Advisory Services accounted for 14 to 33 percent of Investment Banking revenues



SOURCE: INVESTMENT INDUSTRY ASSOCIATION OF CANADA’S SECURITIES INDUSTRIES PERFORMANCE REPORT

Using FP Infomart’s database for comparison, total quarterly commission income was computed excluding deals with no reported commissions and with abnormal levels of commission. On average, reported commissions on new issues in the sample accounted for 80 percent of all new issue fees in the IIAC report. When we consider overall investment banking revenue, which includes M&A and corporate advisory services, new issue commissions cover 60 percent of total investment banking revenue.¹⁹

5.2 Securities Dealing

The CSMA measures output for the securities dealing industry as part of overall securities services commodity which includes brokerage. Output is derived from the IIAC Securities Industry Performance report as the sum of commissions (excluding mutual funds), fixed income trading, equity trading, fees, and other (as defined by the IIAC). This sum is for both securities dealing and security brokerage.

The current measurement approach using the IIAC report creates an issue because the output of securities brokerage is combined with the output of the securities dealing. Although the prices program is developing two indexes, one for securities brokerage services and another for securities dealing services, the sources of information for these programs differ from those used in the accounts. Knowing which service lines to apply the individual indexes to will allow for deflation targeted at a lower level of aggregation, vis-à-vis output calculation. This is especially important given that the services provided by dealers are uniquely priced to those provided by brokers and, therefore, the development and application of separate indexes is recommended.

¹⁹ Hajjar, Opsitnik, Xie (2016)



However, where broker-dealers operate as one and contribute to output as one, weighting indexes to use at a higher level of deflation (for example, at the output commodity level) might not be straightforward.

Furthermore, output includes capital gains, which, strictly speaking, is not securities dealing as we have defined it in the SDSPI.²⁰ Finally, the bid-ask spreads used in the experimental SDSPI are estimated using government bonds only, and it is possible that this may not be applicable or representative of other types of securities dealing. The output measurement includes all forms of securities dealing.

5.3 Lessons learned and future work

There are several approaches one could take in the estimation of price indexes for financial services. In general, some services cover a multitude of types of transactions with varying degrees of flexibility in service pricing. Furthermore, with the introduction of new products and automation, ensuring expanded coverage and relevance of these programs could be challenging, especially in industries where adjusting for service quality is difficult at best. Following are our lessons learned, and a few specific areas to note for future work.

5.3.1 Lessons learned

Statistics Canada is structured such that programs from different areas within the department feed the national accounts. Data from business performance statistics are used in the calculation of output, and prices inform real output and productivity measures. The benefit of this approach is that unique areas contribute by function within one department which allows for close collaboration of staff engaged in analyzing same industries.

Specifically, within the FSPI program, the initial phase in development of an index is to understand fully the related output concept and all data sources that feed the program such that it's possible to explore potential sources of data for use in the prices program. Where data exist that aren't appropriate for prices, a complete understanding of output allows for exploration of other sources which align well with output and which also serve to measure prices of services produced in the industry.

Given that the financial services industries are heavily regulated in Canada, there are numerous quality sources of administrative data as well as several private sector firms that compile and sell available data. Using administrative or alternative data is an efficient means of estimating prices in difficult to measure activities like investment banking. For securities dealing, the number of transactions is immense, and the data sets offer detailed information. Therefore, these sources provide an effective way to ensure broad coverage of transactions. As such, we've been able to expand the FSPI program quite efficiently, from both a cost and calculation perspective.

²⁰ Although some capital gains can be included, it is assumed to be negligible. The supposition is that capital gains are not part of production and average to zero in the long term, as it is not the dealers' main objective to earn profits from capital gains, but through market making activities (spreads).

5.3.2 Coverage

Increasing or aligning coverage would benefit both prices programs. In investment banking, a source of information to price corporate advisory services, including M&A, would ensure broader coverage, as would the inclusion of government issues. The former will likely only be addressed through implementing a survey using a different methodology, while the latter is currently being investigated through obtaining information from municipal ledgers.

For securities dealing, expanding the prices program to include spreads for different securities (equity and other derivatives) could align the price data closer to the output data.

Within both activities of this industry, and financial services in general, services continuously evolve. Over the last year we've seen the introduction of new products which could impact the industry and the price of services here in Canada. Keeping abreast of developments and ensuring the indexes consider these developments when pricing and weighting services will ensure our products remain relevant.

5.3.3 Calculations

Disaggregating output estimations of securities brokerage activities from securities dealing would allow for the application of specific indexes in the calculation of real output. As it stands, options could be to apply the indexes to separate revenue streams as reported by IIAC such that each index could deflate one or more revenue types used in output. Alternatively, weighting the indexes according to predominant activity across revenue streams used to calculate output could be considered. This combined weighted index could then be applied to output. These approaches will need to be investigated.

5.3.4 Data sources

Although Statistics Canada's programs benefit from the availability of several high quality data sources, there continue to be issues with alignment and coverage. Having access to data that meets the needs of various programs, or participating in the definition of administrative or alternative data sets could increase coherence across programs and lead to better measures of real output and productivity.

6 Conclusion

In this paper, we discussed the general framework for the programs at Statistics Canada which measure performance, output, and the price of services in the Investment Banking and Securities Dealing industry. Financial services, which constitute an important part of any economy, support growth and continue to develop. With this, ensuring that policy makers, academic researchers, and the public have accurate statistics reflecting the evolution of the industry and services provided, through the programs at Statistics Canada, remains crucial.

The Investment Banking Services Price Index (IBSPI) and development of a Security Dealing Services Price Index (SDSPI) came from the desire to create a broader FSPI, which falls under the Services Producer Price Index program. Accurately tracking prices allows for the correct deflation

of revenue figures and estimation of production for national accounts, and accurate measures of productivity, or output per worker-hour.

Indeed, we have presented the difficulties of measuring prices in particular, in an environment where data sources exist, yet industry products are hard to define and continue to evolve. Within the current framework, the next steps will be to experiment with other data to expand coverage of the current IBSPI to include issues of government securities, and to secure weight information for the SDSPI.

References

Baily, Martin Neil and Douglas J. Elliot. 2013. "The Role of Finance in the Economy: Implications for Structural Reform of the Financial Sector." The Brookings Institution.

FP Infomart. A division of Postmedia Network Inc. <https://www.fpinformart.ca/>

Ketita, Nassim, Lucy Opsitnik and Min Xie. 2016. "Development of a Securities Brokerage Services Price Index in Canada". September 2016.

Krochmalnek, David. 2007. "Industry Synopsis NAICS 52311 & NAICS 52312, Investment Banking, Securities Dealing and Brokerage." Internal Report.

Mazin, Yana, Judi Lepage, Lucy Opsitnik and Min Xie. 2012. "Services Producer Price Index Development: Progress and Recommendations Report." Internal report. December 2012.

Mazin, Yana. 2010. "SPPI Development – Securities Brokerage." Internal report. August 2010.

Investment Industry Association of Canada (IIAC). 2016. "2016 Q1 Securities Industry Performance." www.iiac.ca. (Report downloaded July 11, 2016).

Investor Economics. 2015. "Retail Brokerage and Distribution Advisory Service - Winter 2015 Edition."

TMX Group Ltd. 2016. "A Capital Opportunity: A Global Market for Financial Services Companies." www.tsx.com (Accessed July 16, 2016).

Xie, Min and Qi Zhang. 2015. "Experiment Investment Banking Service Price Index (IBSPI)." Internal report. June 2015.



Appendix: Coverage of Statistics Canada's suite of Financial Services Industries Price Indexes (FSPIs) in the CSMA

Commodity	Industry			
	Banking and other depository credit intermediation	Non-depository credit intermediation	Activities related to credit intermediation	Financial investment, services, funds and other financial vehicles
Banking and other depository credit intermediation services - explicit charges	X			
Deposit intermediation services indirectly measured (FISIM)	X			
Residential mortgage intermediation services indirectly measured (FISIM)	X	X		
Other loan intermediation services indirectly measured (FISIM)	X	X		X
Non-depository credit intermediation services - explicit charges (fees)	X	X		
Other services related to credit intermediation	X		X	
Investment banking services	X			X
Security brokerage and securities dealing services	X			X
Portfolio management services (MER)	X			X
Investment counselling services				X
Holding company services and other financial investment and related activities	X			X
Trusted pension fund services				X
Mutual funds (cost of service) and other similar services--loads & trailers				X