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Sector Paper: ISIC 6499  
Other financial service activities, except insurance  
and pension funding activities, n.e.c.

by

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This paper summarizes the experiences of participating national statistical offices in measuring output and prices for this industry, at the 32<sup>nd</sup> Voorburg Group meeting in Delhi, India 2017, and aims to identify best practices. The international experience within this industry is limited. The sources of information for this paper comes from three countries alone; the United States, Canada and India.

## *1. Description and characteristics of the industry*

### *1.1 Definition of the industry*

ISIC 6499, Other financial service activities, except insurance and pension funding activities, n.e.c., includes the following activities<sup>1</sup>:

- other financial service activities primarily concerned with distributing funds other than by making loans:
  - factoring activities
  - writing of swaps, options and other hedging arrangements
  - activities of viatical settlement companies
- own-account investment activities, such as by venture capital companies, investment clubs etc.

The contributed country mini-presentations for this industry discussed the North American Industry Classification System (NAICS) and the National Industry Classification of India (NIC). The NIC adhere closely to the ISIC for this industry while the NAICS is substantially different. The NAICS is broken down in more detail than the ISIC, and activities classified in ISIC 6499 are classified into several different NAICS codes, even on the 4 digit level.

This paper focuses on two different activities included in ISIC 6499, namely investment banking and securities dealing, which both translates into NAICS 523110. Investment banks provides services such as new issuance of securities, facilitating mergers and acquisitions (M&A) and other corporate advisory services. Securities dealers trade securities on their own account, i.e. they purchase securities for and sell securities from their own inventories. Therefore they assume risk in these transactions.

The difference between securities dealing and securities brokerage can sometimes be confusing. Brokers do not take legal ownership of securities and do not assume any trading risk. In addition, similar terms can sometimes refer to different things in different classifications and within different statistical agencies. Securities brokerage activities is not included in ISIC 6499. Such activities belong to ISIC 6612<sup>2</sup>.

### *1.2 Market Conditions and Constraints*

In all developed economies the financial sector is an important part of the economy. However, economic statistics for financial services is not as developed as for other services statistics. In the EU e.g., financial services are not regulated by Eurostat either in STS (Short Term Statistics, i.e. monthly or quarterly indicators) or SBS (annual indicators), and the economic statistics that

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<sup>1</sup> ISIC Rev.4, <https://unstats.un.org/unsd/cr/registry>

<sup>2</sup> Sector paper for ISIC 661 is available at <http://voorburggroup.org/papers-eng.htm>

are produced for financial services are not using any industry or product classification. Since there are no sample frame or weight information available, price indices for financial services are usually not produced by most countries. In the countries contributing to this paper, the United States, Canada and India, the financial sector is fairly large. Both Canada and India are reporting a growth in financial services as a share of GDP in recent years.

### *1.3 Specific characteristics of the industry*

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.

Generally, 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, managing clients' accounts, investment advice, and clearing and account administration; except in the US, where these additional services are primary to the securities brokerage or the investment advice industries (ISIC 661).

Also, 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.

Producing output and price statistics in this area requires specialist knowledge of the financial industry. The terminology used and the way business is done differs from most other industries, and therefore experience in finance is necessary. An analyst with some training in finance (such as a Certified Financial Analyst) is recommended when developing measures of both output and prices for financial services.

## *2. Turnover/Output Measurement*

### *2.1 General Framework*

Statistics Canada publishes input-output data for investment banking and securities dealing services under separate commodities within the supply-use tables (SUT), however, the output of securities dealers is combined with output for securities brokerage services. The output for these commodities fall primarily under two industries: Banking and other depository credit intermediation; and, financial investment services, funds and other financial vehicles. GDP-by-industry is published at the NAICS subsector, or three-digit, level in a special aggregate: NAICS 523 is combined with NAICS 526.

The approach in the U.S. is more consistent, where the Bureau of Economic Analysis (BEA) publishes both GDP-by-industry and input-output data for the NAICS 523 subsector, encompassing Securities and Commodity Contracts Intermediation and Brokerage, Securities and Commodity Exchanges, and Other Financial Investment Activities. They also publish input-output data at the industry group, or four-digit NAICS level: 5231, Securities and Commodity Contracts Intermediation and Brokerage and 5239, Other Financial Investment Activities.

In India, data for financial services comprise Banking, Insurance and Securities Markets.

## *2.2 Measurement Issues*

Financial institutions in the US and Canada are required to record unrealized gains and losses on tradeable securities as income. Tradeable securities are those that are not intended to be held for more than 12 months. These gains and losses should be excluded from turnover measures since they do not represent market sales of services to unaffiliated parties. Respondents sometimes erroneously report turnover data that includes these unrealized gains and losses and other non-market sales.

## *2.3 Description of Methods for Measurement*

The financial sector is usually quite regulated, which means that there is a possibility of getting large amount of data from third-party sources, e.g. regulatory bodies. This type of data could be used for measurements of turnover/output as well as in the compilation of price indices, either partly, or as the only source of measurement.

For more detailed information on turnover/output measures, see the contributed country mini-presentations and papers, that this paper is based upon<sup>3</sup>.

## *3. Measurement of SPPI*

### *3.1 General Framework*

All countries recognize the use of third-party data in the compilation of price indices. It could be used as the only source of price information, or in combination with a traditional survey method. Canada makes extensive use of third-party data, while the U.S. recently started making use of it.

The sources of weight data varies across programs. Canada relies on data on deals for its Investment Banking Services Price Index and uses commission revenue reported in the data set as weights, while for Securities Dealing, the current source of weights is trading volumes which are published by the industry association, although a source of more homogenous data is being sought.

The U.S. also reports that the introduction of third-party data in SPPI presents challenges in identifying appropriate sources for weights. However, the U.S. program also has a significant survey portion, and applies weights to sampled transactions first by the reporting establishment's turnover for the product line, then aggregates product lines into indexes, where weights data is obtained from the Economic Census of the U.S. Census Bureau. These index weights are updated every 5 years.

India reports the possibility of using industry turnover data as well as revenue data from service providers as appropriate weights in the development of their STPI.

Canada's use of third-party data results in data collection for investment banking on a quarterly basis, to allow for more frequent processing and follow-up, while the index is only calculated

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<sup>3</sup> Available at <http://voorbουργroup.org/papers-eng.htm>

annually to allow for numerous transactions within each product group. Collecting data for securities dealing is currently done more frequently, on an ad hoc basis from a third-party data source, with experimental indexes calculated on a quarterly basis. In the U.S., data is collected on a monthly basis, with the reference period for collection of prices being the Tuesday of the week containing the 13th. Follow-up takes place for missing or incomplete data. Indexes are produced on a monthly basis, as part of the U.S. PPI and SPPI programs.

In Canada and the U.S., PPIs are calculated using the formula for a modified Laspeyres index. The Laspeyres index compares the base period turnover for a set of products or services to the current period turnover for the same set of products or services.

The use of the administrative sources and third-party data makes it possible to calculate a Fisher price index, since current period weight data is available.

In the U.S., imputation for missing data is based on averaging price changes for other transactions within the same detailed index line (same kind of services) for which price reports have been received.

The use of third-party data in Canada results in very limited edit, imputation, and estimation of missing prices. An automated outlier detection method is applied, with manual intervention to review and assess each deal that is identified by the system.

### *3.2 Measurement Issues*

Canada, the U.S. and India all report similar challenges in measurement of prices for investment banking and securities dealing services. These include the existence of numerous transactions with a variety of characteristics, implying that surveying could be costly and burdensome. Additionally, targeted units provide other financial services, such as securities brokerage, portfolio management and investment advice, therefore, surveyed units would be potentially eligible for selection to numerous prices programs.

In Canada, the Investment Banking Services Price Index is calculated independently of the Securities Dealing Services Price Index, or other financial services price indexes. This is done primarily due to the structure of the supply-use tables (SUT), which is derived from a Canadian provisional version of the (North America Product Classification System (NAPCS)). The separation is not without reason; the services offered by investment banks, versus those of securities dealers are unique. Indeed, the calculation of indexes in Canada is structured such that specific price-relatives are calculated at the service line level, within each industry, then aggregated.

The U.S. also recognizes the importance of the product level and, as a result, produce indexes for dealer transactions, investment banking services, other securities dealing services as primary services, as well as an index for other receipts. This structure closely follows the NAPCS, although at a less detailed level. From there, a higher level index for the NAICS industry (Investment Banking and Securities Dealing) is calculated.

In India, a Securities Transaction Price Index (STPI) will measure prices of services related to stocks and derivatives, mutual funds, corporate bonds and initial public offerings, also acknowledging the need to separate pricing methods for different services provided.

### *3.3 Description of Pricing Methods and Criteria for Choosing the Method*

Canada, the U.S. and India all report various price determining characteristics associated with these services, as well as challenges associated with bundling. Price determining characteristics for investment banking and securities dealing differ based on the service being offered, and detailed lists of elements are provided by service type. Common price determining characteristics noted by all three include<sup>4</sup>:

- Type and price of security
- Value of the deal or offering
- Type and size of client
- Time to maturity (15-year loans, 5-year certificate of deposit)
- Trading volume

In order to mitigate issues of burden and cost while capturing as many prices as possible, Canada relies heavily on third-party data sources in production and development of investment banking and securities dealing services prices, respectively. For investment banking, a third-party data provider tabulates publicly available information on securities<sup>5</sup>, which are used along with data from the Canadian System of Macroeconomic accounts, in order to calculate a price for investment banking services. Data from the third-party is currently limited, however, which results in narrow coverage of the prices of services of investment banks. For securities dealing, third-party and industry association data are used to calculate services prices for domestic sovereign debt, which are highly liquid, stable, and nearly riskless, therefore allowing for measurement of pure price change of the service. The weight data used, however, is approximated at the product level due to current lack of suitable alternative data, which impacts on quality. As a result, other sources are being sought.<sup>6</sup>

In the U.S., firm and service sampling strategies and design support coverage, where the probability of selection of a firm is based on employment size, and sample units report on all investment banking and securities dealing activities of the firm, or a specific subset of those activities. The U.S. then divides the large financial conglomerate firms into three units: an investment banking unit, a securities dealing unit, and a unit for other securities dealing services (i.e. reverse repos, securities lending). In order to broaden coverage of transactions, the U.S. has also begun to use third-party data in its index calculations, although not exclusively used, as in Canada.

For both Canada and the U.S., implications of using or incorporating third-party data include expanding infrastructure to store and manage large data sets, as well as computational challenges, such as applying new methods being developed for big data analytics, and ensuring resource and system capacity.

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<sup>4</sup> See Baer and Murphy, 2017, and Opsitnik et al. 2017, for exhaustive lists of characteristics by service line.

<sup>5</sup> For a full list of products, see Opsitnik, et al. (2017). Currently, non-federal government debt is being explored for inclusion to the index.

<sup>6</sup> The third-party data source used in the calculation of the Investment Banking Services Price Index is working toward expanding coverage which might support broader coverage of the index in Canada. For securities dealing, more detailed data are also being sought, which would improve on the quality of the index in development.

Program design impacts significantly on price method chosen. For example, collecting aggregate data, whether through survey or administrative source results in the calculation of average prices, albeit for a broader range of transactions.

In Canada, average prices are calculated for both the Investment Banking Services Price Index and the Securities Dealing Services Price Index. In the former, unit value prices are based on total commissions and proceeds raised by types of securities, which are weighted by each product's commission revenue. The data on each deal does not repeat from period to period, so the index is calculated as an average of product prices across two periods, which assumes the products are homogeneous and repeatable across periods. For securities dealing, the data allow for the calculation of prices based on bid-ask spreads divided by the mid-point, which are aggregated using a weighted average of seven representative benchmark securities. Again, prices are calculated as averages across several potential fills each period.

Broader coverage of activities and the use of surveying allows the U.S. to calculate more specific prices at the transaction level. For investment banking, contract pricing is used for mergers, acquisitions and other advisory services. The respondent estimates the fee for a deal each period, assuming one were to occur with similar characteristics. Given inflation, the deal value is escalated periodically on the dollar value of the original sum of assets, in order to ensure consistency of the size of the deal across periods. For underwriting and placement services, the U.S. uses the estimated dollar value of the gross spread of the issue, considering the role of the investment bank, to calculate a price of the service for each bank.

For securities dealing, the U.S. also collects transaction data allowing for multiple pricing scenarios. Depending on how the firm charges its customers, the price for securities dealing services is either the dollar value of markup or the dollar value of the quoted spread. In the former, the dealer provides in subsequent periods the current market price of the security as well as the markup percent or ratio in order to calculate the current dollar value of their service. Further, the U.S. includes special calculations for prices for options, where the respondent selects an option for an underlying security, then holds characteristics of the option constant in subsequent periods to determine the dollar value of price of the service in subsequent periods. Finally, for securities lending and reverse repurchase agreements, the preferred pricing method in the U.S. is the dollar value of interest.

Considering quality adjustment in the calculation of producer price indexes for the services of investment banks and securities dealers can be challenging since there are several price determining characteristics. In Canada, data is obtained from third-party sources and the key to maintaining quality for investment banking is to have sufficient representation of transactions within repeated product groups.<sup>7</sup> In securities dealing, quality is maintained by holding the current (remaining) maturity as constant as possible, by using the benchmark bond for each term.

In the U.S., data is collected directly from the respondents allowing for quality adjustment through the repeated transaction characteristics. Besides this, the U.S. maintains quality for investment banking services by applying periodic escalation to the deal values of all sampled transactions.

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<sup>7</sup> For a full list of products and a complete discussion on quality adjustment, see Opsitnik, et al. (2017). Currently, non-federal government debt is being explored for inclusion to the index.

Similar to the U.S., India applies cut-off sampling, however, here it is used to target the largest participants by service line. For example, for investment banking, India intends to collect data from the top 10 left lead managers, while for other services they will target different participants for prices, although it is quite possible that these targeted units also provide numerous services, as in the U.S. and Canada.

### *3.4 Evaluation of Comparability of Price Data with Output Data*

For all countries contributing to this paper, the primary use of the price indexes is for deflation – to arrive at real measures of economic activity and productivity, and all three countries have or are developing indexes that follow a product based structure.

Firms within this industry derive a large portion of their income from interest, dividends, and capital gains from securities held in their own accounts. However, these activities are not considered output generating activity and are not in scope for the Producer Price Index (PPI).

Although recognizing common descriptions of the services of enterprises in the Investment Banking and Securities Dealing industry, all three countries differ in coverage of activities in their respective indexes. For investment banking, Canada currently only covers non-government securities<sup>8</sup>, while the U.S. more broadly measures mergers, acquisition and corporate advisory services, as well as the full range of underwriting and placement services.

For securities dealing, Canada, originally experimented with spreads for domestic sovereign debt<sup>9</sup>, which are highly liquid, stable, and nearly riskless securities, allowing for the estimation of the pure price change of the service. The U.S., on the other hand, covers all dealer spreads earned on equity trades, trades of corporate, treasury, and municipal debt securities, options and other derivative securities, as well as all other non-equity securities, stock loans and reverse repurchase agreements.

In its STPI, India intends to measure the explicit costs of services by security (stocks and derivatives, mutual funds, corporate bonds and initial public offerings). These products are similar to the services covered in Canada and the U.S., although brokerage services are included in India.

### *4.0 Evaluation of Measurement*

In Canada, the use of alternative data for both output and price of services for investment banking and securities dealing would suggest comparability, but challenges remain stemming from differences in the data sources, how prices are calculated, and what is reported in the data sets used in pricing. As a result, the current Investment Banking Services Price Index only covers new issues of equity and debt and excludes services prices for debt issues from government<sup>10</sup>, corporate advisory, or mergers and acquisitions. For securities dealing, coverage differences are reducing given current exploration which includes not only Canadian sovereign debt, but recently expanded to non-federal government debt and corporate debt and equities. Canada is also currently experimenting with derivatives.

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<sup>8</sup> Canada is currently experimenting with adding non-federal government debt.

<sup>9</sup> Since the Mini-presentation delivered to Voorburg Group in 2017 (see Opsitnik, et al. 2017), Canada has recently expanded coverage in its development work to include non-federal government debt, and corporate debt and equities, and is currently experimenting with derivatives.

<sup>10</sup> Ibid.



Another challenge for Canada occurs given the aggregation of output data for securities dealing and brokerage services. The prices program is developing two indexes based on the different characteristics of services provided by these two industries, and will need to determine how to apply the indexes to arrive at accurate measures of real output.

Both Canada and the U.S. report disparity between output and price measures related to own account activities of securities dealers. Net gains and losses stemming from own account trading are included in output data, but excluded from the PPIs of both countries.

Finally, the U.S. Economic Census and the Bureau of Labor Statistics (BLS) have different methods for delineating survey units, where the former classifies establishments based on their primary business activity and includes in the resulting economic census data for the industry only establishments primarily offering investment banking or securities dealing activities. This results in significant secondary production of different industries being included (or missed) in the calculation of output in each industry. In order to mitigate the impact, the BLS creates distinct reporting units by product line for the largest financial institutions, therefore including the diverse activities of these larger institutions in the calculation of their PPIs. The result is some misalignment between the coverage of the census data and the PPIs.

*5.0 International Progress*

The following table summarizes international progress on measuring prices and output for this industry as compiled by John Murphy of the U.S. Census Bureau from country-provided progress reports.

	Number of Countries
PPI details >= CPC	2
PPI details >= CPC soon	0
Turnover details >= CPC	1
Turnover details >= CPC soon	0
Turnover details >= CPC soon	2
Industry-level turnover collected	3
Detailed turnover and prices well aligned	1
Detailed turnover and prices well aligned soon	0
Industry level turnover and prices well aligned	0
Industry level turnover and prices well aligned soon	0
No industry coverage	21

Worth noting is that just one out of the 22 countries reporting have detailed turnover and prices well aligned.