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Globalization**Developing an extended and more agile International
Accounts program: The Canadian Multinationals Program*****Prepared by Statistics Canada¹***Summary*

Statistics Canada has undertaken work in recent years to enhance statistics on multinational enterprises (MNEs) to better understand and assess their importance in the foreign and Canadian economies. This work culminated with the release, in November 2019, of a comprehensive Canadian MNEs program, including sub-national level data on activities of foreign and Canadian multinationals in Canada. Despite their relatively small number, multinationals play an important role in terms of sources of jobs, capital and new technologies in the country. This paper describes the innovative approach used in the creation of this rich dataset as well as its various dimensions and some key results.

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I. Introduction

1. Multinational enterprises (MNEs) play a pivotal role in global trade and investment. Statistics Canada has undertaken work in recent years to enhance statistics on multinationals to better understand and assess their importance in foreign and Canadian economies. This work led to the release, in November 2019, of a comprehensive Canadian MNEs program, including sub-national level data on activities of foreign and Canadian multinationals in Canada.
2. Despite their relatively small number, multinationals play an important role in terms of sources of jobs, capital and new technologies in the country. This paper describes the innovative approach developed for the creation of this rich dataset as well as its various dimensions and some key results.
3. Traditionally, the conceptual framework of the external accounts was focused on better understanding the size and nature of products, services and investment exchanged between countries. While measuring economic activity between countries is and will remain crucial in the future, policy needs have evolved rapidly in recent years towards assessing the impact of global activity within domestic economies and better measuring the extent to which local economic agents benefit, or could benefit further, from this activity. Access to more sub-national level data is required to support this analysis.
4. In order to better address these evolving needs, a number of initiatives have been launched at the international level in the context of a broader external accounts framework. Several countries have started to develop new products that can be seen as extensions to their core external accounts program. Statistics Canada has put in significant effort in modernizing its framework to better reflect the changing global economic activities and meet users' data requirements.
5. A brief overview of the evolving context leading to the development of an extended and more agile International Accounts program will be presented in the section II of the paper. Improvements to the Balance of Payments with a focus on Activities of Multinational Enterprises (AMNEs) will be covered in the Section III and IV, with some results presented in the section V of the paper. Section VI will cover the modernization of the disclosure avoidance methods, a key element in meeting the data granularity required by the users.

II. An evolving context

A. A changing world

6. The world in which we live is rapidly changing. It's becoming more complex and intertwined. With the globalization of our economy and changing views of societal issues – more than ever – objective quality data must drive evidence-based policy and decision making.
7. At the same time globalization has changed the way firms operate, with complex corporate structures and operational arrangements which allow funds to move through multiple jurisdictions before reaching their final destinations and maximizing operational profits.
8. Canada has a relatively small open economy, and over the last 90 years, Statistics Canada has developed and disseminated a rich set of data that measures Canada's transactions with the rest of the world. While these data have served policy makers, academics and citizens well, the data are losing their relevance in the globally interconnected world in which firms and individuals find themselves. Until recently, our statistics did not tell the full story of Canada's role in the global economy.

B. Changing data requirements of users

9. It is clear that as the world changes, users require stronger tools to enable them to understand these highly complex international transactions. At the same time big data is growing, data users are more literate and are looking to data to guide innovation and make business decisions. While globalization has made users focus on international markets, they want to do so with more granular data.

10. It is no longer enough to simply report what we trade and where it goes or where it comes from. Policy makers want to know who is trading, what Canada's value added is in the global value chain, how exposed we are to global financial markets and what the outcome of foreign direct investment is both inside and outside of Canada. Simply, Canadians are no longer satisfied with the 'what' and 'where' but are asking Statistics Canada about the 'who' and the 'why'.

11. This is an important story to tell since roughly a third of our gross domestic product (GDP) is generated by multinational enterprises. More than 10 per cent of all Canadian jobs are linked to foreign direct investment in Canada. Non-residents hold more than \$1.5 trillion in Canadian government and corporate bonds. If we do not have the proper tools to examine that changing role, we cannot develop appropriate policy that leads to a strong and stable Canadian economy.

C. A changing statistical agency

12. Over the last decade, Canadians and businesses increasingly want to be informed and expect to have high quality, real time data. There is a growing cadre of data savvy users while at the same time, the public are consuming information in an entirely different manner. There is also a proliferation of data providers who are ready to furnish data that have traditionally been the domain of Statistics Canada.

13. Statistics Canada is well aware of the rapidly changing world and evolving need of users. In response, Statistics Canada has recognized the importance of modernizing its operations and its approach as a statistical agency. Statistics Canada's modernization initiative is centred on four basic pillars: user centric delivery service, leading-edge methods and data integration, statistical capacity building and leadership and sharing and collaboration.

14. User centric delivery means that users have the data they need when they need it with the tools and knowledge required to fully leverage the information.

15. A focus on leading edge methods has brought about a shift from relying primarily on surveys as a collection vehicle to taking an "administrative data first" approach. This involves looking internally and externally to all possible administrative data sources. Leading edge methods also implies a focus on new methods such as machine learning, data linking, modelling and "nowcasting" which increase the scope and quality of data that can be produced.

16. Statistical capacity building is more outward oriented and focuses on ensuring that users have the tools and knowledge to understand and use our statistics to their greatest advantage. Many government departments in Canada recognize the importance of data and are in the process of developing data strategies. Statistics Canada would like to play a leadership role in these data strategies and would like to help users have the tools and knowledge necessary to fully leverage our data.

17. This is underpinned by the notion of a modern and flexible operation which will reduce costs, streamline processes to allow for a more agile corporation.

III. An Enhanced Balance of Payments

18. While the primary focus of the Balance of Payments remains rooted in the macroeconomic accounts, the need for change has become clear.

19. As mentioned, the International Accounts and Trade program was created at a time when simple two-way merchandise trade accounted for the vast majority of transactions and was the primary focus of policy makers' interest. Now interest has evolved and users are increasingly interested in a variety of other elements, many of which are complex in nature. The International Accounts program must evolve to reflect this new world.

20. Statistics Canada has begun to pursue further initiatives that are extensions of the core international accounts, while remaining fully grounded in their traditional concepts. The goal of these supplementary data is to better reflect the changing world, and to meet evolving user requirements.

21. The supplementary nature of these emerging products provides additional flexibility to compilers to construct experimental – but not less relevant – datasets as they are usually not bounded by more stringent statistical frameworks (i.e. the residency or economic territory definitions), as is the case for official external accounts. They also offer the potential to better respond to users' needs for more sub-national data.

22. To enable the development of supplementary data sources, a project was initiated: Enhancing the International Accounts. The importance of this exercise was fully recognized by our government partners and long-term funding was secured.

23. All areas of the Balance of Payments have been enhanced and will continue to be expanded with an ambitious timeline that is in line with users' priorities. Given the backdrop of modernization, the emphasis was on the creation of an innovative statistical infrastructure maximizing the use of existing micro-data and record linkage techniques while being able to connect the details with established macro aggregates. This approach provides us with the agility required to better meet user needs. Client feedback and developments in international standards have also influenced the setting of priorities.

24. Over the last years, Statistics Canada have developed a number of innovative data products that help tell the story of Canada's changing role in the global economy. The outcome of this proposal includes addressing data gaps and enhancing statistics in the following areas:

(a) International trade in services including international trade in digital services and products – an area of growing importance.

(b) Properly measuring global production and addressing data gaps associated with global value chains and mismeasurements in Canada's estimate of gross domestic product due to the growing amount of goods production abroad by Canadian producers.

(c) Providing more detail regarding Canada's foreign direct investment flows including increased industrial, geographic and directional detail.

25. All of these products are considered extensions of Balance of Payments data and concepts and are based on the original Balance of Payments source data. Development of the extensions, in many cases was made possible by the availability and accessibility of a core Balance of Payments program.

26. While these data gaps are not specific to Statistics Canada, the centralized nature of the agency and its modern approach has provided some unique opportunities to address these gaps. The end result is a new set of very granular statistics – including sub-national detail – with high data quality standards at a relatively low cost, enhancing the ability of the organization to support evidence-based policy decision making.

27. While improvements have been made in many areas of the Balance of Payments, the focus for this paper will be put on the AMNEs program, focusing on the key enablers of their creation.

IV. Multinationals Enterprises in Canada

28. Statistics Canada has been publishing estimates of Canada's direct investment abroad and foreign direct investment in Canada since 1926. The traditional view of measuring foreign direct investment was to measure the origin and level of foreign investment. These

measures remain important both within and outside the Balance of Payments framework and Statistics Canada continues to refine these estimates in order to produce a more robust financial account.

29. Today, however, more and more people want to better understand the outcomes associated with foreign-investment with respect to jobs, trade and financial stability. This has given rise to a new and expanded set of foreign affiliate statistics which highlight the importance of foreign-owned firms in the Canadian economy. This program has been expanded to measure the economic and financial activity of both foreign and Canadian multinational enterprises (MNEs) in Canada and helps measure the extent of the globalization phenomenon within the Canadian economy.

30. While the multinational concept uses the majority owned concept, differing from the foreign direct investment (FDI) threshold of 10 per cent, the difference is considered minor since the vast majority of FDI firms in Canada are in fact majority owned.

31. The multinational enterprise in Canada program is built upon a strong foundation of various data sources which allows for a rich analysis. It provides further insight on the impact of foreign MNEs in Canada and has recently been expanded to allow for the comparison with domestic enterprises both in terms of performance and contribution to the Canadian economy.

32. Once again, the ability to link together a number of data sources is one of the strengths of this program. In this case data linkages are primarily done at the enterprise level, given that the data are largely financial in nature. The primary data sources used to identify Multinationals and ownership chains include the International Investment program, more specifically foreign direct investment (FDI) surveys various tax schedules and the Inter-Corporate Ownership program. Economic and financial variables are sourced from a variety of statistical programs linked to the frame of MNE and benchmarked to national accounts totals.

33. The extensive linkages provide a comprehensive portrait of MNEs both on an immediate and ultimate basis for a number of economic and financial indicators and dimensions

- Geographic location
- Industry
- Number of employees
- Assets and liabilities
- Operating revenues and expenses
- R&D personnel and expenditures
- Exports and imports for goods and services
- Gross domestic product at basic prices (value added)
- Gross fixed capital formation

34. All these variables allow policy maker's insight into the contribution of multinationals and the outcomes of their presence.

35. Linking the data are an effective and cost-effective way to add dimensions to datasets. Once the initial work has been done to link at the enterprise level, there are economies of scale to adding extra variables. Quality control work is still done to ensure that any additional variables are well linked, are of good quality and are coherent across the series of variables.

36. The Business Register is a central repository of information on businesses operating in Canada. It is used as the principal frame for many of Statistics Canada's economic statistical programs. The Business Register provides consistent and standardized data at the enterprise and establishment levels for each year under consideration. It is used as the primary universe for the MNE program, to which all other data is linked.

37. While the data series come from a number of different areas at Statistics Canada, the integrated nature of the agency allows for the easy sharing of data sources all on a common infrastructure. Furthermore, the centralized Business Register provides common identifiers for enterprises and clearly details which data sources can be leveraged. For example, the international accounts program has added flags for multinationals and for traders to help

enrich the analysis of other survey programs by providing another variable for analysis. Generally, program areas are willing to share their data through a common infrastructure and provide their subject matter expertise to the linkage exercise.

38. Recently, Statistics Canada has gone further to complete the picture of multinationals in Canada by adding Canadian multinationals. This enriches the analysis by providing a point of comparison for the performance of foreign multinationals and the benefits that they bring to the Canadian economy. It answers the question of whether these multinationals are bringing jobs to the Canadian economy along with many others. Who is boosting GDP? Are their profits being reinvested here or going back to their home country? Are they exporting more? Are they concentrated in specific industries, specific provinces? Non-multinationals are also included in the analysis to see the full economy impact and as an extra point of comparison.

39. Taking the framework and foundation of the FDI program, and extending it by making micro-macro linkages can be beneficial to both the core program and help answer whether domestically engaged firms behave differently from those that are internationally engaged as well.

40. These extensions also help us to further refine our analysis in a way that would not be ideal with the traditional framework alone. For instance, the FDI program is sampled to be as efficient as possible, focusing on larger units. At the same time, policy experts are focused on small and medium enterprises (SMEs) and their promotion. Extended programs such as the multinationals can use the micro-macro framework to identify SMEs, thereby allowing breakouts of information by size of firm. Given their flexibility, these programs can be further extended to view the data through other lens such as Gender based analysis, a focus of the current government.

41. The intersection of the MNE Program with the Canadian Trade by Enterprise Characteristics (TEC) program multiplies even more the level of granularity available for MNE data. Having access to a central business register with data at the enterprise and establishment level and a number of other indicators allows linking all the information together and gain a full portrait of traders.

42. With the availability of establishment data more accurate sub-national data can be produced. This subnational data allows users to better understand the regional variabilities in trade activities and pinpoint opportunities for development. There has been strong user demand for even more granular data. Trade by enterprise characteristics data by the 35 Census Metropolitan Areas of Canada were produced for the first time in 2019. These data provide users with a portrait of traders by major city that can be compared to other cities and even with non-census-metropolitan areas.

V. The activities of multinational enterprises in Canada – Few statistics available

43. Although multinationals are small in numbers, they were responsible for nearly one-third of Canada's total GDP, employed close to a quarter of the total workforce in the country (or over one third of the employment in the corporate sector) and accounted for about 80 per cent of the total export and import nationally in 2018.

44. Of the 4.4 million of Canadians workers employed by multinationals in 2018 in the corporate sector, foreign multinationals accounted for a larger share than Canadian multinationals (53 per cent versus 47 per cent). In the United States, foreign multinationals employed far fewer workers than US multinationals.

45. Between 2010 and 2018, the GDP of the Canadian economy grew by 33.3 per cent. As a comparison, the growth in the GDP for foreign multinationals was 29.6 percent and 34.0 per cent for Canadian multinationals.

46. Foreign MNEs accounted of almost one third of manufacturing jobs in Canada but less than 5per cent in the utility sector.

VI. Granularity and confidentiality

47. Statistics Canada has developed a number of new products recently to better illustrate Canada's role in the global economy and the impact of trade and foreign investment in the Canadian economy, at the national and provincial level. While the world becomes more and more globally integrated, demand from users is to have access to more granular data, at the provincial, regional and even city level in order to properly assess the impact of globalization in their local economy and to take advantage of the structural and economic changes in their community.

48. In Canada, the development of these products coincided with the desire of the statistical agency to modernize its operations in order to become more user-centric and make better use of leading-edge methods and data integration. All these new products were developed against the backdrop of the modernization initiative undertaken by Statistics Canada. They involved the creation of an innovative statistical infrastructure maximizing the use of existing micro-data and record linkage techniques while being able to connect the details with established macro aggregates.

49. At the same time, Statistics Canada is fully committed to respecting the confidentiality of its respondents/administrative data sources. In fact, its reputation and ongoing success rely on that. How do we provide users with the increased granularity that they require while at the same time continue to respect confidentiality that is central to Statistics Canada's values? How do we reconcile the two?

50. Statistics Canada's approach to confidentiality has also been modernized and the requirements have been looked at in a more nuanced manner. Traditionally, confidentiality was introduced through a rigid set of rules that took the most conservative approach; the first instinct would be to make the data (and much of the grouping data) confidential. While this approach was safe, and the risk of identifying a firm's data was nil, this resulted in too much of the data being suppressed, thereby reducing the usability of the data.

51. We have tried to move the needle slightly and looked at protecting confidentiality in more innovative ways. Random Tabular Adjustment (RTA) is being increasingly applied to our surveys in order to minimize suppression. RTA applies random adjustment to sensitive estimates by perturbing the data with random noise. A balance must be found so that confidential data cannot be identified and the overall picture and quality of data is improved. In certain areas such as the National Accounts, it was felt that the many adjustments already made to the data to align with SNA concepts were in fact acting as an RTA and the potential firms engaging in the activity was large.

52. As a result of these renewed methodologies, many data cells have been made available, greatly enhancing the usability of the data and meeting user requirements for greater granularity. Nonetheless, when linking data, the confidentiality rules of the supplying data program are always protected in order to ensure that nothing that has been suppressed by the supplying data program will be revealed through the data linking. This is vital for the ongoing success of the program. The confidentiality plan was vetted with the source programs and the approach is regularly reviewed to see if the number of cells released can be increased.

VII. Conclusion

53. As society evolves, several challenges compel statistics agencies to modernize and adopt new methods to continue to meet the growing needs of data users and remain relevant. They expect more granular and specific information to be delivered faster without compromising quality. To answer these new imperatives, Statistics Canada is enhancing its International accounts programs. As illustrated in this paper with the MNEs Program, Statistics Canada now produces granular statistics at industry and sub-regional level and can attach detailed characteristics to the trader. This helps measure the extent of globalization in the Canadian economy.

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