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Globalization and the future of economic statistics

Statistical products of National Institute of Statistics and Geography of Mexico as a contribution for the analysis of globalization based on business statistics and microdata linkage

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Summary

Nowadays, national statistical offices (NSOs) and international organizations (IOs) face some challenges in developing statistical products. The demand for more and granular information is necessary for users to make well-informed decisions, test some models and theories based on reality, and particularly, to support the design and assessment of public policies. One example is the study of the globalization phenomena through analysing its effects in international trade, production, employment, among other areas. The use of new data sources and innovative tools such as the microdata linkage has brought new products and further breakdowns in the existing statistics, enabling less response burden and minimal costs in budgetary constraints.

This document aims to show four statistical products developed by the National Institute of Statistics and Geography of Mexico (INEGI) as a result of its participation in several international fora for contributing to the analysis of globalization and supporting users in this relevant field. A key element in the elaboration of these new products is the cooperation with other NSOs and IOs for sharing experiences to measure the new challenging environment of the globalization. The document is presented to the Conference of European Statisticians for discussion.

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I. Introduction

1.   Nowadays, national statistical offices (NSOs) and international organizations (IOs) face some challenges in developing statistical products, which help in better understanding the diverse socio-economic phenomena and addressing their impacts. Among these is to offer more granular information without breaching confidentiality of the informants, as well as the usage of new tools and sources to satisfy user demands. The demand for more and granular information from users is increasing to make well-informed decisions, test models and theories based on reality, and particularly, to support the design and evaluation of public policies. One example is the study of the phenomena of globalization through analysing its effects in international trade, production, employment, and other economic variables.

2.   The use of new data sources and innovative tools such as the microdata linkage has brought new products and further breakdowns in the existing statistics, enabling less response burden and minimal impacts in budgetary constraints. For instance, using and merging sources like business statistics and business-related statistics has allowed to produce timely, relevant and efficient information to meet main users' needs. In consequence, microdata linkage by using the Statistical Business Register (SBR) as the backbone for producing business statistics and economic statistics has gained relevance in the NSOs and IOs.

3.   In this regard, INEGI has taken advantage of the microdata linkage among several sources to produce new products with different breakdowns, by using the Mexican Statistical Business Register (RENEM, by its acronym in Spanish) which merges statistical information from economic surveys, and several administrative registers, as well as the economic censuses. The 2019 Economic Census, in addition to the taxpayer identification number, includes some questions to identify more variables, such as the social security number, and the register number of the Federal Electricity Commission (state-owned electric utility of Mexico) with the purpose of facilitating microdata linkage.

4.   The cooperation and institutional arrangements with NSOs and IOs (such as Istat, OECD, UNECE and UNSD) has allowed elaborating new products, which have been maintained and updated following the progress and dynamism of the globalization issues to address the current users' needs. INEGI has produced four statistical products for measuring the globalization, based on the microdata linkage and the use of SBR. For instance, one of them is a result from the collaboration with the statistical offices of North America, which is an example of inter-institutional arrangements formalized in a Memorandum of Cooperation which establishes the steps for developing a North America Regional Supply and Use Tables (SUTs) and a regional Trade in Value-Added (TiVA) database, supported by the elaboration of a methodological document, as well as by the exchange of data and experiences through a collaborative site.

5.   This document is structured as follows: the second section introduces four statistical products developed by INEGI that contribute to a better analysis of globalization; the third section presents the relevance of these statistics to the main users; and finally, the fourth section mentions the way forward and some conclusions.

II. Four statistical products of National Institute of Statistics and Geography of Mexico as contribution to the analysis of globalization

A. Mexican Profile of Manufacturing Export Enterprises

6.   Based on the statistics on Trade by Enterprise Characteristics (TEC), the Profile of Manufacturing Export Enterprises (PEME, by its acronym in Spanish) comprises a theoretical framework that uses micro-data linking from different sources and provides information regarding the characteristics of manufacturing enterprises involved in export and import activities, with the purpose of contributing to the analysis on the effects international merchandise trade in the production and employment in Mexico. Additionally, it supports policy makers by offering more robust information on Mexican foreign trade through the

characteristics of manufacturing enterprises and also by providing basic statistics for the measurement of some other statistical products, such as the Value Added of Global Manufacturing Export, and the Extended Supply and Use Tables in the framework of national accounts.

7. SBR is key for merging different data sources (such as Economic Censuses and Manufacturing Surveys) with customs registers´ data, by considering the business name and the physical address information, where the enterprise is considered as the statistical unit. Therefore, based on the linked information, the Profile of Manufacturing Export Enterprises presents information through three main sections:

(a) North American Industry Classification System (NAICS) economic activity sector and subsector. The results included the number of exporting and importing enterprises, the value of exports and imports by economic activity sector and subsector, including the following breakdown: a) strata by number of employees, b) strata by production value, and c) according to the number of partner countries.

(b) Geographical areas and selected countries. Exporting and importing enterprises are presented across geographical areas and selected countries, according to the size of the enterprise.

(c) Range of exports and imports. The number of enterprises and value of exports and imports, disaggregated by strata according to the number of employees and production value.
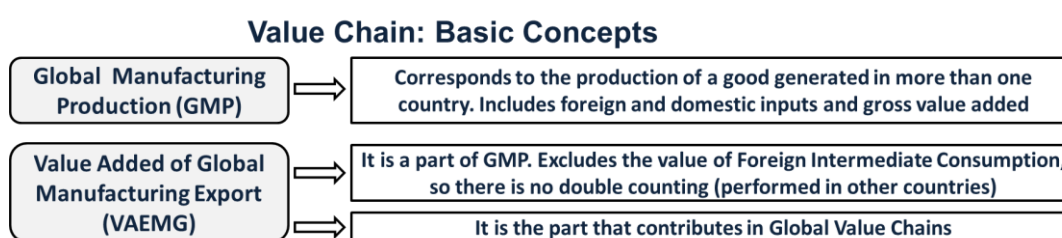
8. Further information on the methodology and some PEME outcomes are available in: https://www.inegi.org.mx/programas/peme/

B. Value Added of Exports for Global Manufacturing

9. The Mexican national accounts system produces and disseminates specific statistics on these Global Value Chains related firms, referred to as Global Manufacturers (GM). One of those statistics is the Value Added for Exports of Global Manufacturing (VAEMG, by its acronym in Spanish), which displays the domestic value-added content of the manufacturing enterprises located in Mexico that participate in global production, i.e., in Global Value Chains (GVC).

Figure 1
Value chain: Basic concepts

10. Based on the methods used for calculating VAEMG, this value-added indicator for GM should be considered as a good first proxy or benchmark of Trade-in-Value Added (TiVA). Nevertheless, these methods do not consider the foreign value added in domestic intermediate consumption and exports or the Mexican value-added content in the imports from upstream activities in GVCs. A full accounting of these value-added contents would be feasible by integrating the Mexican GVC Supply and Use Tables data with the global extended TiVA accounting frameworks. In this sense, VAEMG can be estimated in two ways: 1) as the sum of the domestic intermediate consumption used by GMs in their production of goods and services in Mexico and the gross value added of GMs; and 2) as the difference between total exports and total imports of GMs (UN, 2019).

11. The main source of this statistical product is the Goods and Services Account of the Mexican National Accounts System, the Supply and Use Tables and the Input-Output Tables. Moreover, this data is also supported by information from the microdata linkage of SBR with

other economic sources such as the Economic Censuses, Manufacturing Surveys and other Administrative Registers.

12. Further information on the methodology and some VAEMG outcomes are available in: https://www.inegi.org.mx/temas/pibval/

C. Extended Supply and Use Tables

13. Following the Organisation for Economic Co-operation and Development (OECD) methodology, INEGI has developed the Extended Supply and Use Tables (eSUTs) to offer more granular information, which explains the inter-sectoral relationships in the Mexican economy, providing insights on the firm heterogeneity. The eSUTs are an extension of the National Supply and Use Tables (SUTs) containing a set of figures that describe the size of the inter-sectoral flows, displaying variables such as production, imports, intermediate and final demand. These statistics offer users relevant and granular information to better understand international trade and its relation to the economic activity, as well as its competitiveness.

14. The eSUTS introduce data of each economic activity (NAICS) by:

- Profile size by number of employees (small, medium, and large)

- Trading status identified by exporter profile (economic units that reported international transactions) and non-exporter profile (identifying formal and informal production)

- Ownership profile, which classifies the economic units in accordance with the control of the economic unit (Domestic owned, Domestic owned affiliate, Foreign owned affiliate and Foreign owned).

15. To identify the afore-mentioned profiles, the eSUTS take advantage of the microdata linkage of SBR with economic surveys, customs records and particularly with the Economic Censuses, which include a section to identify the participation of foreign capital in the economic units. These sources complement the National SUT, which is the cornerstone in the development of this statistical product.

16. In 2018 INEGI published for the first time the Mexican eSUTs for the 2013 benchmark year, which will be released every five years. Some outcomes from 2013 show that in Mexico, 63% of the total production was elaborated by enterprises with exporter profile, the domestic control ownership was roughly 55% for those economic units, and four out of five were large-sized establishments (more than 250 employees).

17. Further information on the methodology and some eSUTs outcomes are available in: https://www.inegi.org.mx/temas/coue/.

D. North American Trade in Value-Added

18. The North American Trade in Value-Added (NA-TiVA) is an initiative promoted by the statistical agencies of Canada, Mexico and the United States, which aims to produce a regional database on Trade in Value-Added (TiVA) for experimental statistics, to measure and support the analysis of the interconnectivity, as well as the contribution of each sector of every economy in the regional GVCs.

19. The NA-TiVA initiative was formalized through a Memorandum of Cooperation (MoC)[1], which describes the objectives, deliverables, and timeline of the work program, and highlights the importance of data sharing and transparency of cross-border statistical

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[1] This project was formalized on October 13, 2016 with a signed Memorandum of Cooperation (MOC) between the statistical agencies of Canada (Statistics Canada), Mexico (National Institute of Statistics and Geography, INEGI), and the United States (U.S. Trade Representative, U.S. International Trade Commission, Census Bureau and the Bureau of Economic Analysis).

collaboration. It elaborates on the need for a common website, a methodological document ("White Paper") that captures the concepts and methods used for the multi-country accounts and the deployment of staff for every agency participating in the NA-TiVA initiative, as well as, the methodologies followed by other worldwide initiatives to ensure international comparability.

20.   Among the deliverables established in MoC, the NA-TiVA initiative seeks to develop regional Supply and Use Tables (SUTs), as well as Inter-Country Input-Output (ICIO) Tables, to analyse the interconnectivity within the three countries of the region by industry and products traded. The construction of these tables is based on the national SUTs and Input-Output Tables (IOTs) developed and provided by each country, consisting of raw data for the subsequent harmonization efforts, which aim to a common data set at detailed level, as well as product and industry classifications.

21.   Additionally, trade statistics are an essential input for the construction of the regional SUTs; however, this data should be reconciled through the application of a methodology focused on reducing bilateral trade asymmetries, by taking advantage of the use of additional data from each country´s customs records.

22.   The NA-TiVA Team has already published a first version of the methodological document White Paper (2018), which includes the underlying methods and strategies for producing the NA-TiVA statistics. Currently, the Team is working on updating the White Paper and the production of the first results of the TiVA indicators. In addition, the Team is in constant communication with representatives from other initiatives such as APEC and OECD (where INEGI jointly contributes with other participating statistical agencies) to ensure homogeneity and comparability. INEGI is also working on a translation to Spanish of the White Paper with the purpose of enabling our main users to consult it.

23.   More information on NA-TiVA can be found at:
https://www.usitc.gov/publications/332/working_papers/na-tiva_white_paper_for_posting_2-26-2018.pdf

III.   Relevance for public policy

24.   These statistical products contribute to better understand the effects of globalization in international trade, employment, gross domestic product, and competitiveness by offering more granular information. Some examples of the contributions for policymakers in Mexico (UN, 2019) through the aforementioned products are:

- Stimulating vertical integration of Mexican firms in GVC

- Estimating the impacts of ruptures of GVC due to external and/or internal shocks

- Identifying the potential for closer upstream integration with domestic firms, particularly for Small and Medium Enterprises (SME), and for the creation of innovation clusters that can drive technology spillovers and widespread diffusion of best practices

- Providing a view of the overall benefits of foreign direct investment (FDI) on jobs and wages (also including upstream jobs and wages within the value-chain supplying Mexican firms)

- Stressing the benefits to foreign direct investors in Mexican firms

- Highlighting the potential impact on intermediate imports that trade barriers may have on business competitiveness, and in turn, highlighting the domestic value-added content of a country's imports in the exports of Mexican firms from cross border trade in goods and services related to the production arrangements of the GVC

- Illustrating significant differences in production processes (and productivity) between GM and non-GM firms and thus highlighting the importance of innovation and intellectual property in driving growth, productivity and value-added creation

- Providing a more discrete view of the nature of the integration within GVC and, in turn, displaying the potential risks of disruptions in the economy on upstream or downstream activities in GVC from regulatory and tax policies

- Offering insights on the densification and upgrading processes of networks and the introduction of new research and development, as well as technologies.

IV. Some conclusions and the way forward

25.   The statistical products presented above aim to provide additional elements to the analysis of the globalization effects in the Mexican economy, particularly to estimate the role and contribution of the Mexican firms in international trade, as well as in GVCs.

26.   Microdata linking (by taking advantage of SBR as the backbone for producing basic statistics) plays a key role in the construction of these statistical products. In this sense, improving data collection processes, as well as looking for new tools and sources for developing new statistical products with more detailed information, must be a common task within NSOs to meet user´s data requirements, particularly for those responsible for designing and assessing public policies.

27.   Therefore, INEGI carries out numerous public consultations to know users' current information requirements. Additionally, the Institute participates in several national and international meetings, initiatives and projects, with the purpose to exchange experiences and best practices for developing new statistical tools that contribute to the production of additional breakdowns and new statistical products to attend the current user's needs, offering additional insights to understand the new global configuration caused by the effects of globalization and digitalization.

28.   Finally, INEGI has also been strengthening the microdata laboratory with the objective of offering users (particularly academic and public sectors) more granular information, while ensuring confidentiality and data privacy of firm's respondents.

V. References

INEGI. (2015). Perfil de las empresas manufactureras de exportación 2015: Síntesis metodológica. Aguascalientes, México. Instituto Nacional de Estadística y Geografía.

Consulted in May 2020 from:
http://internet.contenidos.inegi.org.mx/contenidos/Productos/prod_serv/contenidos/espanol/
bvinegi/productos/nueva_estruc/702825070571.pdf

INEGI. (2018). Valor agregado de exportación de la manufactura global. Aguascalientes, México. Instituto Nacional de Estadística y Geografía.

Consulted in May 2020 from:
http://internet.contenidos.inegi.org.mx/contenidos/Productos/prod_serv/contenidos/espanol/
bvinegi/productos/nueva_estruc/702825100896.pdf

INEGI. (2018). Sistema de Cuentas Nacionales de México: cuadros de oferta y utilización extendidos 2013: año base 2013: fuentes y metodologías. Aguascalientes, México. Instituto Nacional de Estadística y Geografía.

Consulted in May 2020 from:
http://internet.contenidos.inegi.org.mx/contenidos/Productos/prod_serv/contenidos/espanol/
bvinegi/productos/nueva_estruc/702825106638.pdf

UN. (2019). Accounting for Global Value Chains: GVC Satellite Accounts and integrated Business Statistics (Final draft). New, York, U.S. United Nations.

Consulted in May 2020 from:
https://unstats.un.org/unsd/business-stat/GVC/

USITC. (2018). An overview on the Construction of North American Regional Supply-Use and Input-Output Tables and their applications in Policy Analysis. The U.S. International Trade Commission.

Consulted in May 2020 from:
https://www.usitc.gov/publications/332/working_papers/na-tiva_white_paper_for_posting_2-26-2018.pdf