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An overview of the Profile of Manufacturing Enterprises in Mexico

Prepared by Carlo Rodrigo López Carbajal, National Institute of Statistics and Geography (INEGI), Mexico

I. Introduction

1. Trade by enterprise characteristics (TEC) provides additional insights to analyze the main features of the interactions among the enterprises involved in international trade. The United Nations International Merchandise Trade Statistics Supplement to the Compilers Manual (2008) addresses the relevance of TEC statistics since they support the analysis of the effects of international trade on production, employment and enterprise performance. Likewise, TEC seeks to provide: more granular data on businesses whose importance in international trade is substantial, the share of small and medium-sized enterprises in total trade, as well as information on trade value by partner country.

2. Based on the TEC, the National Institute of Statistics and Geography (INEGI by its acronym in Spanish) has developed the Profile of Manufacturing Enterprises (PEME by its acronym in Spanish) which focus on the manufacturing sector (due to its relevance in the Mexican economy representing the 85% of the total trade in Mexico during the last decade). This project seeks to provide information concerning the main features of the manufacturing enterprises involved in the exports and imports of Mexico. Therefore, it represents an important element for the contribution to the analysis of the impacts related to the international merchandise trade on the production and employment in the country.

3. This paper aims to provide a general overview of the methodology followed to construct the figures derived from the Profile of Manufacturing Enterprises project. In this sense, the second section analyses the definition and objectives that this project follows. The third section studies the methodological process by considering each step followed. The next section includes some important outcomes of the microdata linking workflow and relevant figures of PEME. Finally, the fifth section comprises the conclusions.

II. Definition and objectives

4. The Profile of Manufacturing Enterprises comprises a theoretical framework that uses micro-data linking from different sources to produce a set of figures, strengthening and improving the quality and efficiency of the statistical infrastructure.

5. Moreover, this project provides relevant information on the characteristics of enterprises with export and import activity focusing in manufacturing goods and contributing to the analysis of the effects of international merchandise trade in the domestic production and employment in Mexico.

6. The identification of these characteristics on enterprises involved in the foreign trade of goods is the result of linking the Statistical Business Register (SBR) of Mexico with customs records and manufacturing surveys which allows to construct robust databases.

7. The main objectives are:

Support to policy-makers with more robust information on Mexican foreign trade by manufacturing enterprise characteristics

Provide basic statistics for the measurement on Value Added of Global Manufacturing Export in the framework of national accounts

III. Methodological process

A. Defining the statistical unit

8. Since the goal is to identify the characteristics of the manufacturing units in Mexico that are engaged in international trade, it is relevant to comprise the data into enterprises¹ as the core statistical unit.

9. Due to the information compiled through traditional sources (surveys and administrative data) has the establishment as the statistical unit, linkage procedures take place through matching key fields such as the registered names and Tax IDs. This linkage results in setting the enterprise as the core statistical unit of analysis and the identification of enterprises that have one or more establishments.

10. Furthermore, as the Guidelines on Statistical Business Registers (UN, 2015) point out, such linkage is necessary to ensure that it is possible to match and combine information from various administrative sources and that there is no duplication in the resulting coverage. (4.2) Therefore, there is a “one to many” matches between the enterprise codes of the SBR and the identification codes of each international trade in goods register.

B. Data integration

11. The information collected from the Manufacturing Annual and Monthly Survey, the Economic Census and the Manufacturing, Maquila and Export Service Industry (IMMEX) program, serve as an input for the enterprises consolidation process that feeds the SBR.

12. Once the information by enterprise is obtained through the SBR, the next step is to identify the outward-oriented enterprises by considering the value of exports (exporter enterprises), the imported commodities (importer enterprises), and the manufacturing enterprises that are affiliated to IMMEX and to the Annual Manufacturing Survey. Enterprises accomplishing at least one of these three conditions are part of the subset with outward orientation.

13. Finally, the selected data is linked to international trade in goods statistics, in order to identify the enterprises value of exports and imports of manufactured products. Moreover, this microdata linking approach not only gives a broader panorama of the exporting activity of Mexico but also provides more granular information about the actively participating economic units in the foreign sector.

C. Main concepts

14. Due to the availability of granular data in the SBR, the resulting figures about PEME present disaggregated data by economic sector, size and partner country.

(a) Economic Sector

15. The North American Industry Classification System (NAICS) is used as the official industry classifier and provides a framework for the collection, analysis and dissemination of economic statistics, allowing an accurate assessment and comparison of the North America countries.

¹ According to the 2008 System of National Accounts, an enterprise is the view of an institutional unit producing goods and services 2008 (SNA: 5.1).

16. The economic units are classified according to their main activity, defined as those that in a period of one year generate the major amount of revenues.

17. In this sense, the manufacturing enterprises are classified in the Chapters 31-33, and the data is available at the subsector level (3 digits) of NAICS 2007, as it follows:

Table I. North American Industry Classification System, NAICS 2007

Code	Description
31-33	Manufacturing
311	Food Manufacturing
312	Beverage and Tobacco Product Manufacturing
313	Textile Mills
314	Textile Product Mills
315	Clothing Manufacturing
316	Leather and Allied Product Manufacturing
321	Wood Product Manufacturing
322	Paper Manufacturing
323	Printing and Related Support Activities
324	Petroleum and Coal Product Manufacturing
325	Chemical Manufacturing
326	Plastics and Rubber Products Manufacturing
327	Non-Metallic Mineral Product Manufacturing
331	Primary Metal Manufacturing
332	Fabricated Metal Product Manufacturing
333	Machinery Manufacturing
334	Computer and Electronic Product Manufacturing
335	Electrical Equipment, Appliance and Component Manufacturing
336	Transportation Equipment Manufacturing
337	Furniture and Related Product Manufacturing
339	Miscellaneous Manufacturing

(b) Size

18. The size of the enterprise is classified according to the number of employees: Small (1 - 50), Medium (51 - 250), Big (251 - 500) and Macro (more than 501). This stratification contributes to study more accurately the relevance of the employment generation in the manufacturing enterprises that are engaged in the international trade.

(c) Partner Country

19. For imports and exports data, the information is presented by partner country and geographic zone. It is important to consider that whenever any enterprise has more than one partner country, just the most relevant will be considered according to the total value of imports of exports.

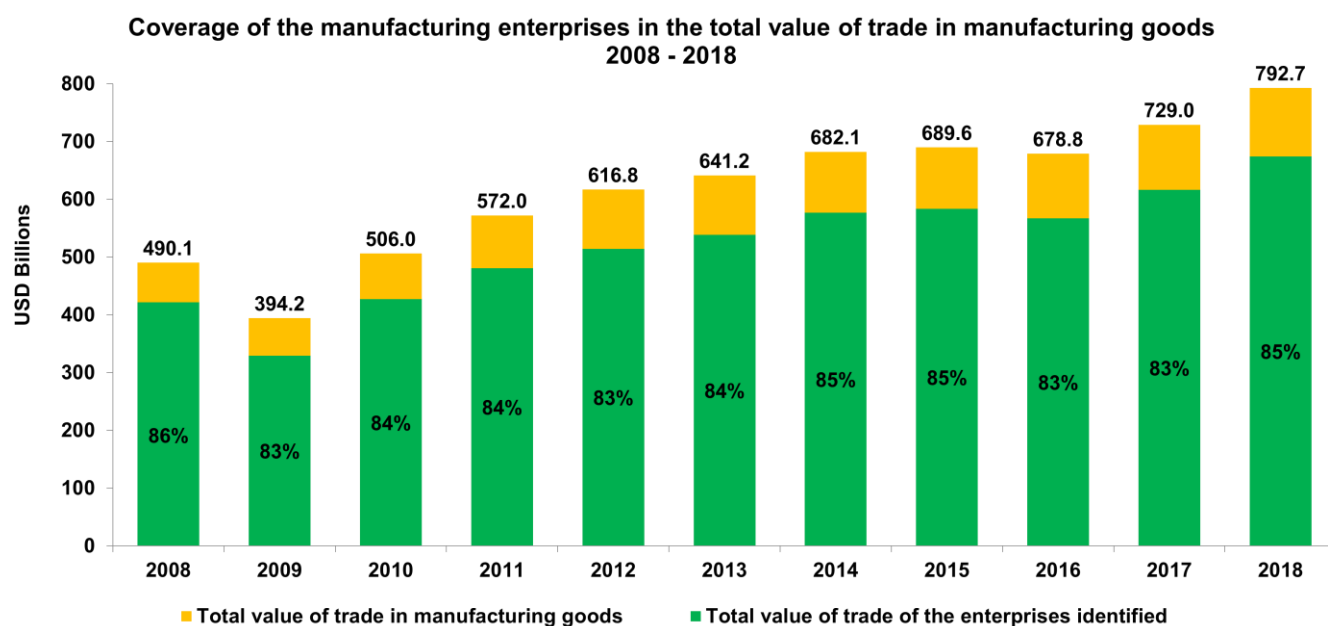
IV. Main Outcomes

20. This section shows the main outcomes of the microdata linking to construct the Profile of Manufacturing Enterprises.

21. Graph I illustrates the coverage of the manufacturing enterprises trade value in the total trade value of the manufacturing sector during 2008 to 2018, which was identified after the linkage procedure described in the Section III.A.

22. It is important to point out that the total value of the manufacturing sector has increased in about 60%, from 490.1 USD billions in 2008, to 792.7 USD billions in 2018. Furthermore, the coverage of the enterprises identified has remained on an 85% in the total traded value during selected time series.

Graph I



23. Graph II shows the share of the manufacturing enterprises by size for 2018. Most of the 6,908 enterprises identified, are Medium size (39%); whilst the least of the units are Big size (17%). This distribution of enterprises size can be compared with the total imports and exports values that are presented in Table II. The Medium size enterprises increased the imports value from 6.7 USD millions in 2016, to 7.6 USD millions in 2018. Nevertheless, they only represent about 4% of the total manufacturing imports. For the case of the exports value, they decreased its participation from 18.2 USD millions in 2016 to 17.4 USD millions in 2018; but represent about 7.5% of the total manufacturing exports. On the other hand, Macro enterprises are the most relevant in total trade, since they signify around 85% and 89% in the total manufacturing imports and exports, respectively.

Graph II

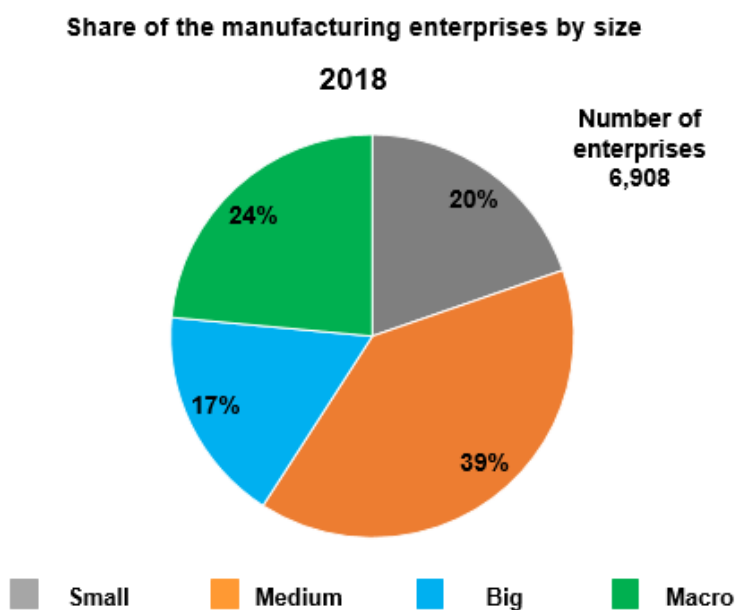


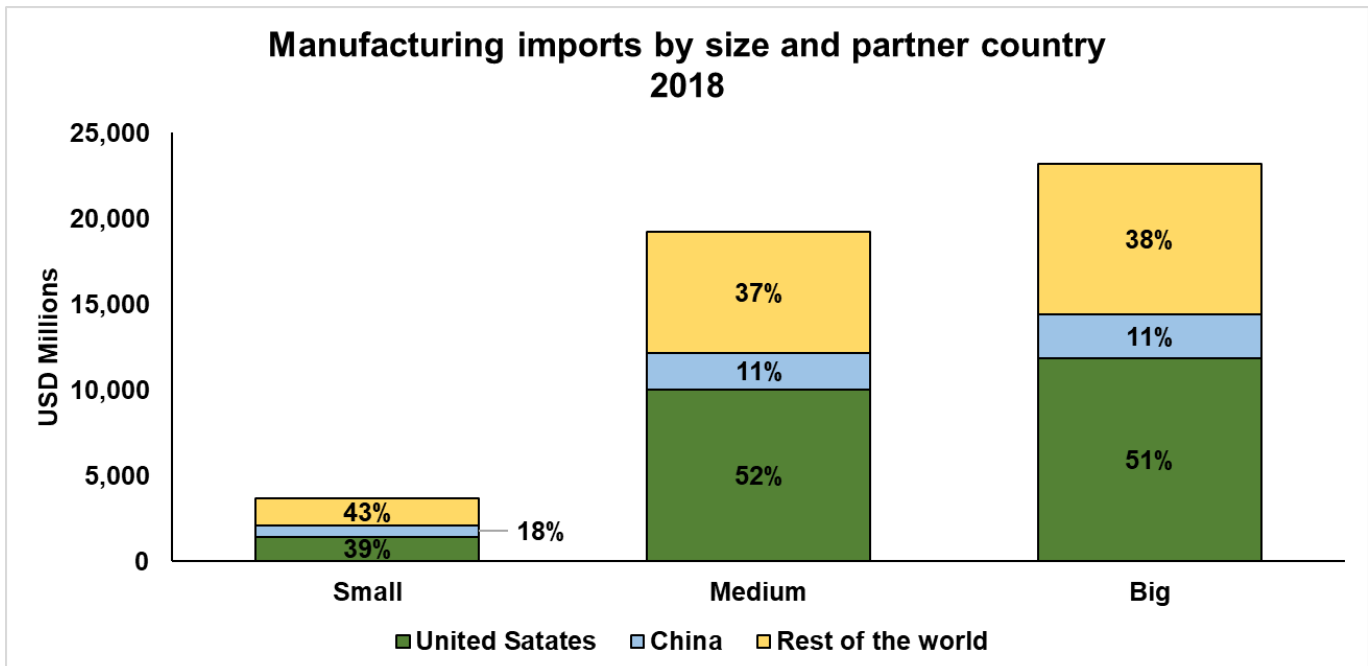
Table II. Total trade by manufacturing enterprise size

Total trade by manufacturing enterprise size (USD Millions)						
Size / Year	Imports			Exports		
	2016	2017	2018	2016	2017	2018
Small	2.4	2.8	3.1	1.3	1.6	1.6
Medium	6.7	6.9	7.6	6.4	6.5	6.8
Big	20.9	20.3	20.0	18.2	17.9	17.4
Macro	147.9	155.0	164.6	188.6	193.8	204.8
Total	177.9	185.0	195.3	214.5	219.8	230.5

24. For the case of the imports and exports disaggregated by partner country and size, the Graphs III to VI provide a general panorama of the manufacturing enterprises engaged in the international trade for 2018.

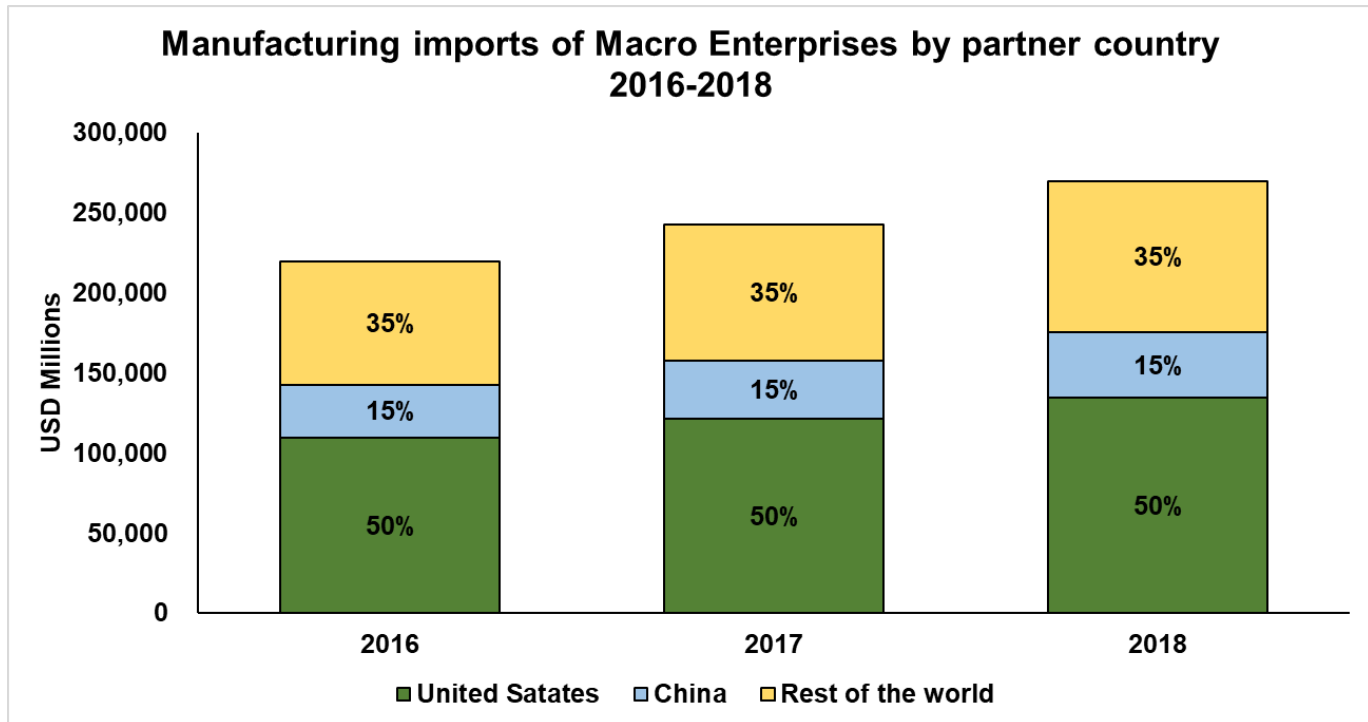
25. Firstly, Graph III and IV present the total value of imports by partner country and enterprise size for 2018.

26. Graph III shows that Small, Medium and Big Enterprises have imports values of no more than 24,000 USD millions each, and the main partner country is the United States with a participation of about 47%, while China has a participation of about 13% and the Rest of the World represents about 40% of the total partner countries, as an average for all the enterprises displayed by size.

Graph III

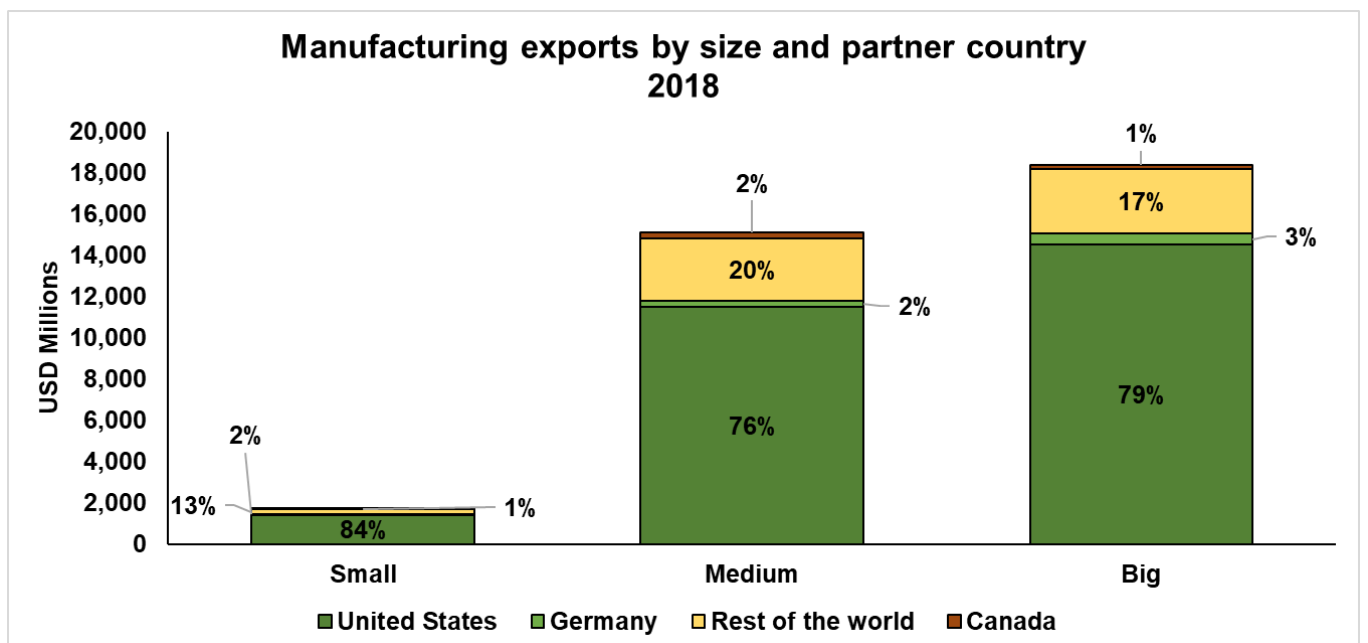
27. Macro Enterprises have a total value of imports of 269,539 USD millions in 2018, as it is shown in the Graph IV, increasing from the 219,426 USD millions in 2016. The composition about the main partner countries remains the same since 2016. The United States is the main partner country by participating with 50% of the total imports, China with 15%, Japan and South Korea with 4% each, and the Rest of the world with 27%, for all the enterprise sizes.

Graph IV



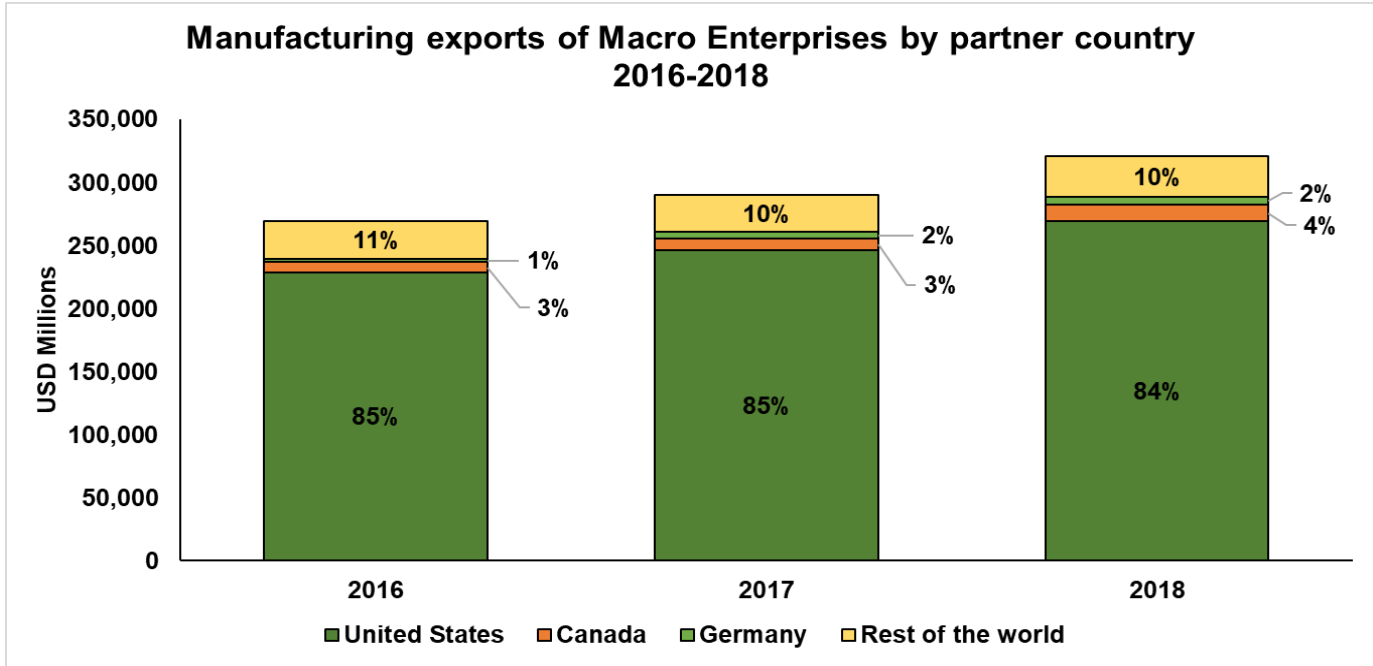
28. Graphs V and VI display the same disaggregated information for the total value of exports. Graph V shows that the exports value of Small, Medium and Big Enterprises are no more than 20,000 USD millions each and, that the main partner country is the United States with a participation about 80%, while Canada has a participation of around 2% and the Rest of the World represents about 18% for all enterprise sizes.

Graph V



29. For the case of the Macro Enterprises, Graph VI shows that the exports value is of 320,640 USD millions in 2018, showing an increasing trend since in 2016, the value was of 269,068 USD millions. The United States is the main partner country by participating with about 85% on the total manufacturing goods traded. Canada is the second partner country by participating with 3%, Germany the third with 2% and the Rest of the World with 10%, for the selected time series.

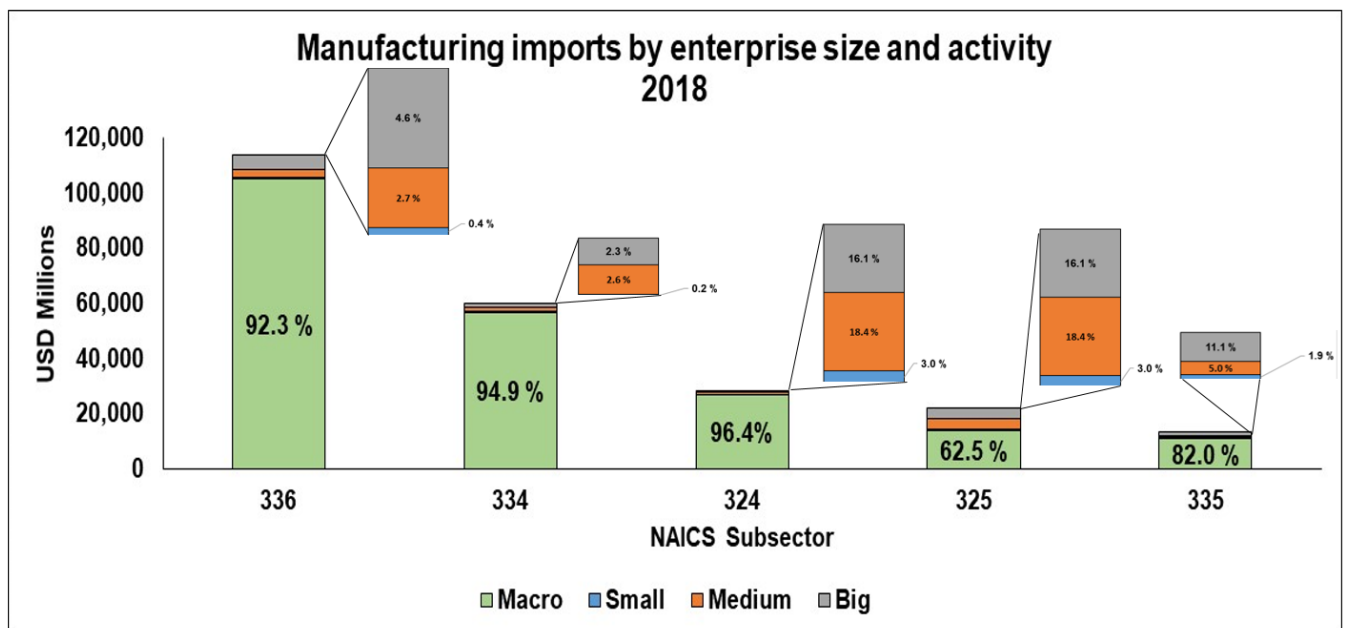
Graph VI



30. Finally, Graphs VII and VIII illustrate the imports and exports by enterprise size of the main Subsectors of the manufacturing enterprises which are: Transportation Equipment Manufacturing; Petroleum and Coal Product Manufacturing; Chemical Manufacturing; Computer and Electronic Product Manufacturing; Electrical Equipment; Appliance and Component Manufacturing; Machinery Manufacturing; and Miscellaneous Manufacturing.

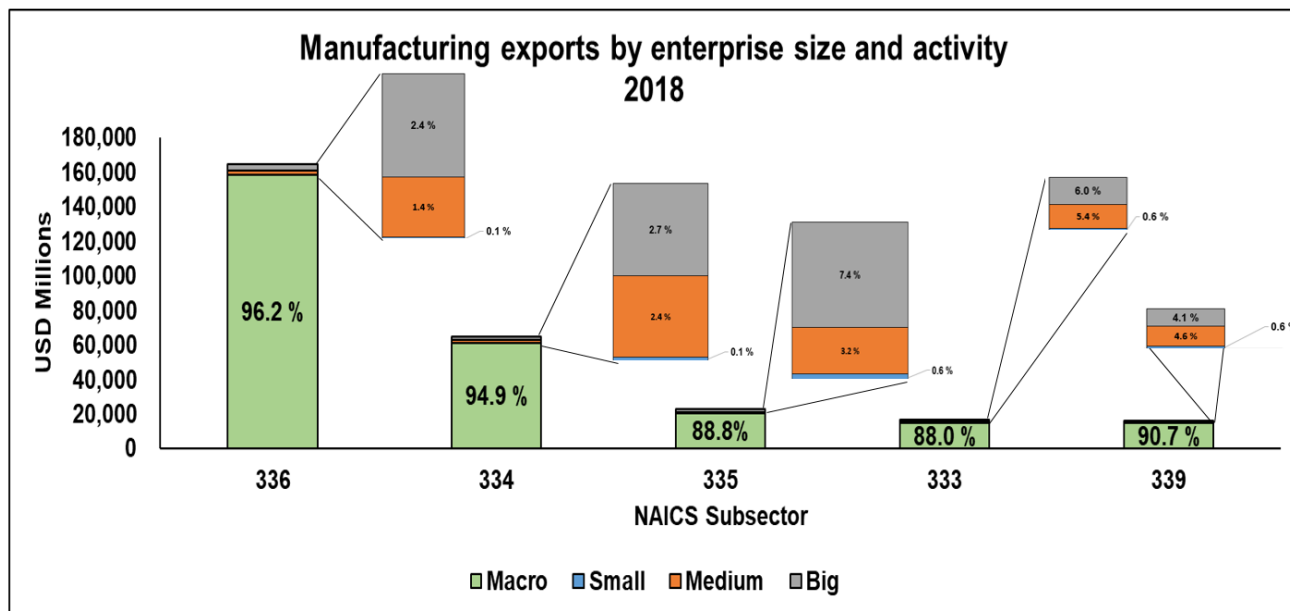
31. For the case of imports, Graph VII shows that between 82% and 95% of the total manufacturing enterprises exports value engaged in the selected economic activities, come from the Macro Enterprises in 2018, except for the Chemical Manufacturing Subsector, which has more diversification in the total imports by enterprise size. Transportation Equipment Manufacturing represents the 36% of the total manufacturing enterprises imports; while the Computer and Electronic Product Manufacturing subsector represents the 19% of the total.

Graph VII



32. On the other hand, Graph VIII shows that between 88% and 96% of the total exports value of the manufacturing enterprises engaged in the selected activities, come from the Macro Enterprises. Transportation Equipment Manufacturing is the most representative Subsector, since the exports value means the 46% of the total manufacturing enterprises exports. Although, the Macro Enterprises are also the most representative of the second largest Subsector (Computer and Electronic Product Manufacturing), representing the 18% of the total manufacturing enterprises exports.

Graph VIII



V. Conclusions

33. Profile of the Manufacturing Enterprises represents a statistical project, which is the outcome of microdata linking efforts developed by INEGI, by using different existing statistical sources..

34. The information provided by PEME shows the economic structure of manufacturing enterprises engaged in the external sector, disaggregated by main economic variables, allowing to assist in the design of public policies aimed to support and improving the analysis of the manufacturing Mexican enterprises in the context of globalization. Moreover, PEME contributes to present TEC data, in order to collaborate with the promotion of growth strategies of foreign trade as a whole.

35. Finally, the information generated in this statistical project, supports the development of new statistics, such as the *Global Manufacturing Value Added*, which is aligned with the information obtained by the National Accounts System, and the *Exports by State*, which provides detailed information about the location of the exporting statistical units.

V. References

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