Better assessing the impact of globalization on business statistics: toward an implementation of Groups and Enterprises in the Business Register

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Abstract

Until recently, in Israel, business statistics production was mainly based on legal units. In most cases, the legal unit is a good proxy of the enterprise. So far, as Israel is a young and small country, this assumption was particularly relevant, with a very high share of autonomous small companies.

During the last decades, aside the numerous small companies, family owned companies, as well as high-tech start-ups have expanded their presence in Israel and abroad. It has contributed to the development of many enterprise groups with a meaningful contribution to the Israeli economy. In addition, due to globalization and to a suitable ecosystem for innovations, many foreign enterprises groups have acquired a subsidiary in Israel and more particularly R&D centers, which serve the whole group (Intel, IBM, Google, etc.).

To better measure the contribution of the enterprise groups and the impact of globalization on business statistics, a pilot study has been recently carried out at ICBS to implement in the business register, aside the legal units database, both an enterprise groups database and an enterprises database. It aims to improve the quality of business statistics, to allow more consistent international comparisons and to contribute to more detailed national accounts.

According European existing guidelines, the setting of an enterprise groups and enterprises registers relies on the use of administrative data, D&B and OECD ADIMA databases and on an algorithm to delineate the control perimeter of the enterprise groups. For the largest enterprise groups, later on, manual intensive profiling will be performed. This renewal is supposed to change drastically our current working process to produce business statistics.

The presentation will focus on the methodology, first results and remaining challenges related to this important project.

Introduction

Since 2003, Israeli Central Bureau of Statistics refers to the business register to derive business survey frames and samples and to produce basic business statistics and business demography indicators. **The business register is mainly administrative** and covers companies, employers, self-employed and non-profit institutions as well as VAT partnerships that report monthly to the VAT authorities and to the National Insurance Institute. The Business Register is regularly enriched by information coming from annual income tax and from private data providers. Aside the self-employed identified by their national personal identifier, the main units of the business register are the **Legal unit** and the **VAT reporting unit. The legal units** are identified by a single smart administrative identifier (9 digit number).

Since the enterprise group and establishments are not administrative units, they are not included in the business register.

Until recently, the legal unit was considered as a good proxy of the enterprise. As Israel is a young and small country, this assumption was particularly relevant, with a very high share of autonomous small companies.

During the last decades, aside these numerous small companies, one has observed a surge in the number of the family owned companies, as well as high-tech start-ups, that have expanded their presence in Israel and abroad, contributing to the development of many enterprise groups with a meaningful contribution to the Israeli economy. In addition, due to globalization and to a suitable ecosystem for innovations, many foreign enterprises groups have acquired a subsidiary in Israel and more particularly R&D centers, which serve the whole group (Intel, IBM, Google, etc.). A good assessment of these trends cannot be achieved, without information in the business register about the involvement of each unit into the globalization process.

In this perspective, the ICBS has recently decided to carry out a pilot study to introduce into the business register that mainly records legal units, both an **enterprise group database** and an **enterprise database**. These two databases will complement the present business register and will allow producing all business statistics at enterprise level in the future. They will also help tackling statistic issues linked to globalization and digitalization of the economy.

This paper presents the data and methodology used to set-up into the business register an enterprise group and enterprise databases and provide the first results from this pilot study on year 2018.

1 - Why setting-up an enterprise group/enterprise register?

Israel is a small and highly opened economy. The exports and imports of goods and services have strongly increased during the last decade, respectively +55% and +34% between 2010 and 2020. In 2020, exports (114.3 billons dollars) and imports (95.2 billons dollars) of goods and services account respectively for 28% and 23% of GDP while inward direct investment (24.3 billons dollars) accounts for 6% of GDP. Moreover, in 2020 more than a third of the largest multinational groups covered by ADIMA database have at least one subsidiary in Israel.

During the last decades, numerous family owned companies, as well as high-tech start-ups, have expanded their presence in Israel and abroad. It has contributed to the development of many enterprise groups, with a meaningful contribution to the Israeli economy. In addition, many foreign enterprises groups have acquired or opened a subsidiary in Israel. In 2018, one counts about 12,000 companies with a direct foreign owner. Among them, one counts about 500 international R&D centers. They are subsidiaries of foreign enterprise groups, which purpose is to carry out R&D for the whole enterprise group.

Indeed, globalization and digitalization have provided new perspectives for the companies to fragment their production process in the domestic economy but also abroad. Moreover, it has contributed to the development of new business models, such as factoryless good producers or companies that carry out their activity through digital platforms (fintechs, e-commerce, …). All these changes have challenged the ability of statisticians and economists to picture fully business statistics and to understand the national and international economic story.

Therefore, the traditional approach based on the legal unit as a good proxy the enterprise does not remain. Many subsidiaries of enterprise groups are not behaving as real enterprises. If they are independent in a legal sense, they may not necessarily constitute independent economic units with decision-making autonomy for carrying out their activities. They are part of a larger organization, in charge of a specific function inside the enterprise group (HR or assets management, R&D, physical production, sales etc.). It is the reason why one might find in the business register some outlier units that record turnover or assets without employees or only record turnover with associates and no turnover with third parties.

Considering economic policies, working at legal unit level, can also be problematic. Incentive measures, like subsides aimed to support innovation and R&D can profit to small subsidiaries part of large enterprise groups that face less financing constraints, if one is not able to separate them from autonomous small companies.

A good assessment of these features cannot be achieved without a more global approach that requests to go beyond the legal approach and to switch to an economic approach. Aside details about legal units in the business register, one intends to set-up two additional databases containing details about enterprise groups both domestic and foreign and enterprises. It is important to stress that in this conceptual framework, the legal unit does not disappear and remains the main statistical unit's building blocks.

2 - Conceptual framework and methodology

The aim of this pilot study is to set-up, into the business register (BR), aside the legal units database, both an enterprise groups database and an enterprises database.

Main methodologic assumption

This renewal of the BR relies on the international conceptual framework and methodology detailed in international guidelines on business registers (UNECE, 2015 and Eurostat, 2021) and Eurostat profiling guidelines (2020).

In this conceptual framework, a statistical business register is supposed to include, aside legal units the following statistical units: the enterprise group, the enterprise, the kind of-activity unit and the local unit.

Here, one only focuses on the set-up of two additional databases containing respectively **enterprise groups and enterprises.**

Those datasets of enterprise groups and enterprises will include main identification details: ID, name, main activity, location, number of employees, revenue and assets as **well as their links with the legal units**, which serve as the main blocks for the delineation of the enterprise group and the enterprise.

a) According the Council Regulation (EEC) No 696/1993 of 15 March 1993 on the statistical units.

- **An enterprise group (EG**) is defined as an association of enterprises bound together by legal and/or financial links. A group of enterprises can have more than one decision-center, especially for policy on production, sales and profits. It may centralize certain aspects of financial management and taxation. It constitutes an economic entity, which is empowered to make choices, particularly concerning the units, which it comprises.

- **An enterprise (ENT)** is defined as the smallest combination of legal units that is an organizational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries out one or more activities at one or more locations. An enterprise may be a sole legal unit.

b) The EGs and the ENTs are identified through **the links of control** between **their legal units**.

- **Control over a legal unit** is defined as the ability to determine general corporate policy, for example by choosing appropriate directors.

- Each enterprise group/enterprise consists of **more than one legal unit ,** with exceptional cases, if the national part of a multinational enterprise group/enterprise has only one domestic legal unit.

c) For each enterprise group, it is important to define:

- The **Global Group Head (GGH),** which is a parent legal unit that is not controlled either directly or indirectly by any other legal unit

- The **Global Decision Centre (GDC),** which is the legal unit where the enterprise group level's strategic decisions are taken (finance, HR, R&D, operations..). The GDC is in general also the GGH but it may be another legal unit under the GGH, when it differs from the GGH. The GDC location determines if the Enterprise group is domestic or foreign.

- To delineate enterprise groups, one considers **only owners, which are companies**, except from those that are only captive financial units.

Main steps of the methodology

The methodology used for this pilot study follows **three main steps** that will be further detailed in the next parts.

In the first step, one try **to select the appropriate population in the BR** to set-up enterprise groups and enterprises. This step implies many treatments and data processing.

In the second step, one **delineates the perimeter** of the enterprise groups, (domestic or foreign) and of enterprises **through an algorithm**. In other words, one defines the list of the domestic legal units recorded in the BR that are part of an enterprise groups.

For the large majority of the EGs, there is only one ENT and the delineation and details about the EG and the ENT are the same, obtained through an algorithm. However, for the most complex groups that may be involved in many different separate activities such as the foreign conglomerates Berkshire Hathaway, GE, Philips or **large and complex** Israeli groups, one refers **to manual profiling** to define the ENTs inside the EG. ENTs and their perimeter in terms of legal units inside EGs are defined through a careful analysis of the reporting segments of the group by main activities or through direct contact with financial officers of the group.

In the third step, one collects basic information about the *enterprise groups* (Name, ID, main economic activity, name, ID and country of the global group head and global decision center, consolidated revenue, number of employees,assets, number of subsidiaries worldwide and in Israel, number and list of enterprises) and about the *enterprises* (Name, ID, Name and ID of the enterprise group, main economic activity, consolidated, revenue, number of employees).

Note that in the case of Israel, this approach is not coordinated with other NSIs such as in the European-Union and no microdata exchange is expected as this stage.

3 - The sources of data used

The definition of enterprise groups (domestic or foreign) relies on the **use of 3 available sources** at ICBS.

The pilot study has been carried out using these data sources for year 2018.

1 / the annex of the yearly company tax declaration (1)

It records the list and details of the direct owners of the company (administrative data). This file contains the ID of the Israeli companies, the ID of their owners and the share of ownership (%). If there are many owners, the sum of the shares of ownership is supposed to be equal to 100%.

Unfortunately, for the foreign owners, this file only contains the same generic ID code (ID=999999999) that is not relevant to delineate the perimeter of foreign controlled group.

To complement this administrative file, and solve the issue of identification details for foreign owners, one uses a commercial database provided by D&B.

2/ the commercial database provided by D&B (2)

It contains all the Israeli companies for which direct foreign owners, identified by their name, hold more than 10% of the capital. This database is currently used by ICBS to derive FDI and FATS statistics.

The main drawback of this source is that it only records **the direct foreign owners,** which not necessarily allow identifying **the final foreign owner of the company** especially in case of complex enterprise groups. This may cause to define more foreign enterprise groups that the real number.

In order to correct partially this bias, one refers to the OECD ADIMA database.

3/ The physical register of ADIMA (Analytical Database on Individual Multinationals and Affiliates)

It contains the main worldwide affiliates (subsidiaries and JVs) of the world's largest public 500 multinational entities by market capitalization.

At the contrary of the administrative file (1) and the commercial file (2) used for this study, ADIMA does not provide for the multinational enterprise groups the ownerships links between the subsidiaries. It only provides the global description of the multinational perimeter of control by country (name and national ID of the main subsidiaries controlled directly or indirectly) as well as the name of the global decision center of the multinational entity (example : for Bayer AG in Israel one have 3 subsidiaries: Bayer Israel ltd – AB seeds ltd- Beeologics IL ltd).

These three data sources **(table 1)** are combined and relied through the Israeli ID number to the business register that provides name, economic activity (ISIC code 4 digits), employee jobs and revenue.

Table 1: Contents and structure of the data sources in use

For domestic enterprise groups identification

Annex of the company revenue tax file

ID number of the Israeli company	owner ID number (meaningful only if the owner is Israeli) Numerical variable	Ownership share%	
512314589	512486324	60	=100
512314589	513569952	30	
512314589	999999999	10	
512314873	512312222	50.1	=100
512314873	999999999	49.9	
521036412	999999999	100	
512345216	999999999	75	=100
512345216	999999999	25	

For foreign enterprise groups identification

D&B commercial database

ID of the Israeli company	Name of the foreign owner Alphanumerical variable	Ownership share%
512314873	FRED&CO US	49.9
521036412	DAVE MARTIN	100
512345216	INCOSYS INC	75
512345216	FRANETOP SAS	25

ADIMA database

Name of the parent of the Multinational entity	Country of the subsidiary	Name of the Israeli subsidiary	Israeli subsidiary ID
Medtronic PLC	IL	Oridion Systems Ltd	520044272
Merck & Co Inc	IL	Ccam medical ltd	514396464
Microsoft Corp	IL	Microsoft Israel ltd	511380693
Microsoft Corp	IL	Microsoft R&D Center Israel ltd	513351486

Legal unit

Business Register data

ID	Name	ISIC code	Employee jobs number	Revenue M NIS
513224168	AVITECH LTD	6201	60	705

4 - Main data processing

The first treatment is simple and consists in ensuring that a unit is under control of another unit. Since control share is not variable directly available in the files used, one refers to ownership share as a good proxy of control (however in some cases it may differ in the cases of minority control) and only select ownership share > 50% in the two data files used.

Both the annex of the company tax form and the D&B database include all types of owners (companies, individuals, state..) that hold shares of the capital of the companies. Therefore, t**he second treatment** consists in selecting only **owners that are companies.**

If the owner is Israeli, identifying owners that are companies is straightforward. In this case, through the annex of the yearly tax form one can identify all Israeli owners that are companies, thanks to the smart Israeli ID number (numerical variable). Indeed all Israeli companies have a single 9 digit Israeli ID that always starts by '51', '52', 53','54' and '56' (private companies, public company or foreign owned company).

If the owner is not Israeli, it is a much more complex operation since the owner is only identified by its name in the D&B file **(alphanumerical variable)**.
At this stage, there is no international single identifier for all foreign owner. The single international ID, the Legal Entity Identifier (LEI) in open source access on the GLEIF website is only available for 800 personal or moral entities in Israel, but it may constitute in the future a good perspective to solve this issue

Working on names has complicated challenges since names can be written in many different ways. In our file, by instance, they can be written with Hebrew or Latin letters, with a Hebrew name, with the English name transliterated in Hebrew letters…

To tackle this issue, one has carried out an analysis of the components of the owner names. A careful observation and analysis of the data has enabled to detect standard anomalies or issues that occur in the owner names such as :

- When there are special characters included in the name such as '_', '-' or '/' , parts of the names are inversed ('Investment Netherland BV / Dolphin III' instead Dolphin III Investment Netherland BV).

- Many foreign businesses names in Hebrew start by 'חברה זרה_' (meaning: foreign business_) that has to be removed from the name to identify the business name itself.

- English names can be written in uppercase or lowercase letters.

Then, a systematic textual analysis has been carried out on the names of the foreign owners to identify only company's names by tracking clues, both in Hebrew and in English. The clues used in the tracking method include:

- Complete name of most common legal forms (Limited, Incorporated, Corporation, Legal Partnership, Societe Anonyme,) or their abbreviations (LTD, INC, CORP, LLC, LP, SA, SARL, A/S, BV, NV, AG, GMBH…)

- Specific company terminology or their abbreviation such as investment (invest), industry, finance, enterprise, corporation (corp.), company (comp.), group, establishment (establ.), manufacturing (manuf.), service, trading, commercial…

- Geographic terminology : worldwide, international (intl), national and name or abbreviations of countries or regions (Israel-IL, United States-US, United Kingdom-UK, Germany-DE, America, Europe, EMEA, Asia, Africa,…).

See **Table 2** for complete list of word searches in English.

The same list of words was established to search the same words translated in Hebrew (Enterprise=חברה) or transliterated in Hebrew letters (Enterprise=אנטרפריז).

This ad-hoc tracking method is not perfect and it may happen that one misses some foreign businesses, but it seems that it covers the large majority of foreign owners that are companies.

Table 2: <u>Main searches in Latin letters based on most frequent words observed</u>

legal forms /abbreviation of legal	Limited liabilities companies / cooperative/associations/partnership /public limited company/
	Corporation/Private limited company/ limited liabilities company
	- Société anonyme - SA (FR, LU) ≈ public limited company - PLC (UK), corporation-CORP (US/CA), Aktiengesellschaft – AG (DE, AT) - Oyj (FI) - A/S (DK),
	Naamloze Vennootschap – NV (NL, BE), Società per azioni- Spa (IT),
	Sociedad Anónima - SA (ES), Publikt aktiebolag- AB (SE)
	-Société à responsabilité limitée-SARL (FR, LU): ≈ private limited company -LTD- (UK), limited liability company-LLC (US) , Gesellschaft mitbeschrankter Haftung-GMBH (DE, AT), Oy (FI), besloten vennootschap –BV(NL, BE), Società a responsabilità limitata-Srl (IT), Sociedad Limitada-SL(ES), Aktiebolag- AB (SE),
	-SAS Société par actions simplifiée –SAS (FR) ≈ limited liability company-LLC (US, especially in Delaware), unlisted public company (AU), close corporation (CC) (S Africa), private corporation (CA)****often used for subsidiaries**.
	Other frequent legal status observed : Société Civile Immobilière-SCI (FR)
	Societas_Europaea -SE, kft (HU), Sro, as (CZ),
	For abbreviation one considered with or without '.' in the between
Company terminology	Establishment/Company/Enterprise/Holding/Group/Business/ Headquarter/Organization/Partner/Associate/Bureau/Agency/Bureau/Agency &/Branch/Affiliate/Subsidiary
	Agriculture/ Industry /Manufacturing/ Production/Services/Commerce/Construction/ Marketing/Human Resources (HR)
	Network/ Logistic/Transport/Information/Export/Import/Stock
	Electronic/Sales/Electric/Mechanic/Pharmaceutical/Medical/Cosmetic/Apparel/Devices/Food
	Finance/Trading/ Bank/Insurance/Real /Foundation Estate/Trust/Capital/Fund/Hedge/Assets/Equity/ Venture/Family office/ Investment/Resource/Management/Accounting
	Semiconductor/Telecommunication/Optical/Technologies
	R&D/Research/Laboratory/Development/Computer/Communication/Machine/
	and co/.com/Hub/Network/Hotels/Store/retail/wholesale/
	Technical/Center/ReparationI.T/Digital/Platform/Delivery/Support/Adviser/Ingeneering/
	Corporation/Analysis/Outsourcing/ leisure/sport/social
Geographic terminology	Global/ Worldwide/ International/ National/ Regional/America/ Europe/ EMEA/ Asia/ Africa/ Middle East/United States (US)/ United Kingdom (UK)/ Germany (DE)/ Israel (IL)/
	Netherlands (NL)/ France (FR)/Switzerland (CH)/Luxembourg (LU)/Cyprus (CY)/
	Holland, China (CN), Japan (JP)/ Singapore (SG)/ India (IN)/Taiwan (TW)/ Turkey (TR)/Egypt (EG)

5 - Delineation of the enterprise group perimeter

After performing the data processing steps, one of the main task is to delineate the perimeter in terms of legal units of both foreign and domestic enterprise groups (EGs)/ Enterprises (ENTs).

- **Foreign enterprise group's identification**

First, one has carried out the delineation of the foreign enterprise groups using the D&B database, since the administrative source is not relevant to carry out this task. The first step consists in identifying the whole tree of control (through ownership share>50%) between the companies in order to identify for all these companies the first controlling company abroad. Once this step achieved, one sorts this file according the name of the **first controlling company abroad** in order to gather all Israeli subsidiaries with **same controlling company abroad**.

This step is more complex than it appears since sometimes a same foreign controlling company name is written with Latin letters and with Hebrew letters (I.B.M/ אי בי אם), with the complete name or abbreviated name (ELECTRICITE DE FRANCE/E.D.F) or with typographic errors (GOOGLE/GOGLE). It turns out to be very time consuming to check manually if similar names have not been ignored.

Afterward, one matches the foreign companies owned with the information coming from ADIMA database through the single Israeli ID. This step allows to partially correcting the bias of the D&B database that only contains the first controlling owner that is not always the global group head/global decision center, especially in the case of the largest and more complex enterprise groups.

About 300 subsidiaries can be correctly allocated to their global decision center abroad through this last source. For the rest of the foreign subsidiaries, without access to a larger foreign groups register such as the EGR, the enterprise groups' delineation obtained through this method is biased with more foreign enterprise groups defined than it exists in reality **(Schema 1)**. Nevertheless, the bias is not supposed to be very large since the large majority of the foreign groups in Israel have a simple local structure with a few subsidiaries. Moreover, one assumes that main large and complex foreign groups with subsidiaries in Israel are included in ADIMA database.

Schema 1: <u>Bias introduced by the use of administrative files to delineate foreign enterprise group's perimeter.</u>
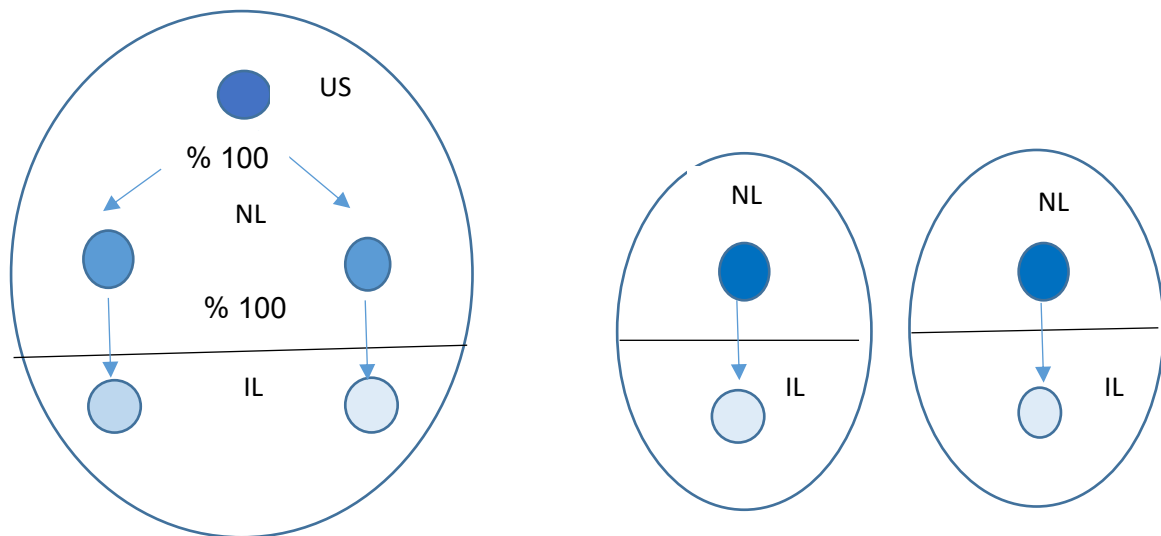
Delineation of one foreign EG if the enterprise group is part of ADIMA

Bias: Delineation of two foreign EGs if the enterprise group is not part of ADIMA database

Once all these steps achieved, and subsidiaries sorted by the same foreign controlling company, one have created variables to identify the enterprise group to which they pertain.

To do so, one refers to the name of the foreign controlling unit identified through the administrative file or through ADIMA GDC name, without the name of the abbreviation for legal form (example : L'Oréal Israel Ltd is part of *foreign enterprise group L'OREAL* and Wayse ltd is part of *foreign enterprise group INTEL*).

Moreover, many Israeli subsidiaries name of large groups content the name of the group itself beside 'Israel' or 'IL'- this provides a better clue to identify enterprise group name than to rely on the name of the first controlling unit abroad that may be only an intermediate holding (example: the first controlling owner Temptech Israel ltd is Turtles BV. One provides as name of *the foreign enterprise group TEMPTECH*).

- **Domestic enterprise group's identification**

This step is carried out through the file coming from the annex of the company tax form, from which one have **only outcome the population of Israeli companies controlled by an Israeli company**.

In order to set-up the perimeter of domestic enterprise groups one built an algorithm based on several iterations aimed to identify for each company ID who is its Israeli parent (the direct or indirect controlling unit that is itself not controlled by another company) **(see schema 2)**.

Then, after having delineating the perimeter of domestic enterprise groups that includes both the Israeli parent and Israeli subsidiaries, one has created variables for enterprise group identification.

For group name, one have provided the name of the controlling parent without the legal status name or its abbreviation (Example: Strauss group limited => Strauss group/ Teva Pharma ltd =>Teva Pharma**).** The ID number of the domestic enterprise group could be based on based on G (that stands for Group) + 9 digits ID of the Israeli parent **(see Schema 3).**

Schema 2 : Several iterations carried out on the file coming from the annex of the tax form in order to set-up the whole controlling perimeter based on the search the direct controlling parent ID in the business ID column

Ownership %	Direct controlling parent	Company ID
99	510036613	512585509
50.1	510036613	511594451
100	**510226644**	**510533476**
95	**510226644**	510040762
52	524220632	**510226644**
75	524229638	510226644
100	524397752	514397766
85	524798632	514321100

One can deduce by successive iterations the different ownership links between the companies. Here in the Schema company A (ID=510040762) and B (ID=510533476) are controlled by company C (ID=510226644) which is itself controlled by company D (ID=524220632). D is not controlled by another company. In other words D is the parent of A, B and C. A, B and C are all subsidiaries of company D. A, B, C and D belong to the same Israeli enterprise group.

Schema 3: A simple example of the result of the algorithm after two iterations.

The maximum iterations needed was six (but for very few cases)

Creation of new variables for the EG		Result of the algorithm					
EGName	EG ID	…	%	Parent 2 ID	%	Parent 1 ID	Company ID
AMBU	**G**524397752				100	524397752	514397766
ISRAT	**G**524798632				85	524798632	514321100
AVIV	**G**510036613				99	510036613	512585509
AVIV	**G**510036613				50.1	510036613	511594451
MALON N	**G**524220632		52	524220632	100	510226644	510533476
MALON N	**G**524220632		75	524220632	95	510226644	510040762

Once that all the iterations have been performed and that the whole tree of ownerships s inside a same enterprise group has been identified, one creates new variables to identify the enterprise group and link all legal units to it. One have decided when one have no other source of information to provide as the name of the enterprise group the name of the Israeli parent (final owner) without the legal status (''limited'' or ''ltd'') and as for the enterprise group ID : G (that stands for Group) following by the ID of the final parent.

6 - Identification of the GDC

The last the not least, after having delineating the enterprise groups perimeter (both foreign and domestic), one tries **to remove the final owners that may be only financial captive units** such as pure financial holdings based in tax Heavens, investment or pension funds and units used for holding and managing wealth for individuals or families. It is not a simple task but it is crucial since GDC determines the nationality of the enterprise group.

This treatment is only at very early stage and should be further developed.

Presently, it relies on the search of specific words in the name of the companies (both Israeli or foreign companies) such as:

1- 'equity fund', 'capital risk', 'venture capital', 'trust', 'foundation', 'family office '

2- name of **tax heaven countries** (Cayman, Jersey, Guernsey, Delaware, Gibraltar, Luxembourg, Liechtenstein, Cyprus, Malta…)

One have also removed the largest **Israeli equity funds** (Fortissimo, First Israel mezzanine investors, Generation capital, A6684 capital, Viola...) and **foreign equity funds** investing in Israel (Sands-capital-ventures, Eclipse-ventures, Lcatterton, Apax, Orbimed, Tiger Global Management, Bessemer Venture Partners, BC partners, Permira…) identified in Crunchbase platform for Israel (https://www.crunchbase.com/organization). Once identified, one knows that these units are not the global decision of the enterprise group (GDC) .

Moreover, one have also removed from our population the foreign companies that are **transfer agents** that are in charge to record changes of ownership, maintain the issuer's security holder records, cancel and issue certificates, and distribute dividends for the count of publicly traded businesses. The most common American transfer agents are Continental Stock Transfer and American Stock Transfer American Stock Transfer & Trust Company that provide their services to most high tech Israeli businesses publicly traded on the NASDAQ. Once identified, one knows that these units are not the controlling units and not the global decision center. They appear in the file only because they record in their balance sheet the shares of these companies.

7 - Summary of the data

Table 3 provides the number of Israeli subsidiaries and parents of Domestic and Foreign groups observed after the data processing and delineation algorithm carried out on the files in use.

In 2018, one records about 36,400 legal units in the BR that belong to an enterprise group among them 9,200 are the parent (GDC) of an Israeli enterprise group and 27,200 are subsidiaries of an enterprise group (19,600 subsidiaries of an Israeli enterprise group and 7,600 subsidiaries of a foreign enterprise group). Among the 7,600 foreign subsidiaries, 320 subsidiaries belong to the 150 MNEs included in the ADIMA database with subsidiaries in Israel.

Table 3 : Size and contents of the populations derived from the files in use

	Initial number of legal units in the file	Number of Israeli Legal units after all the selection and processing operations
		Identification of the Israeli enterprise groups perimeter
Annex of the company tax form	188,219	28,800 legal units Among them 9,200 are the parent of an Israeli enterprise group and 19,600 are their subsidiaries.
		Identification of the Foreign enterprise groups perimeter
D&B database	12,200	7,600 legal units that are subsidiaries part of 6,400 Foreign enterprise groups
		Identification of GDC for 320 foreign subsidiaries
ADIMA	500	150 MNEs with 320 Israeli subsidiaries

8 - Basic statistics on enterprise groups (first results)

After all the different operations carried out on the files, as shown above, one records about 36,400 Israeli legal units that belong to an enterprise group among them 9,200 Israeli parents and 27,200 subsidiaries. Among these subsidiaries, 19,600 are part of 9,200 Israeli enterprise group and 7,600 are part of 6,400 foreign enterprise groups. The employee jobs of these subsidiaries amounts 1,077 million and their revenue 1,104 billion NIS (4,060 B $) in 2018. However, these 27,200 units represent less than 10% of the total legal units of our business register, they account for approximatively 50% of total employee jobs and revenue of the whole economy **(Table 4)**. Moreover, these units are highly involved in globalization with almost 33% their turnover that is exports of goods and services, and 57% for the subsidiaries that belong to a foreign enterprise group.

These basic statistics confirm the importance to pay special attention to these units and to treat them apart. These first results are similar to the ones observed by the first countries that have implemented such approaches. By instance, Beguin, Hecquet (2012) found that 6.5% of total legal units in the French administrative Business Register are part of a group. They account for about the two thirds of the employees and value added of the all legal units in 2008.

Table 4: basic statistics about Legal units parts of enterprise groups in Israel

	Israeli legal units part of an enterprise group	Number of enterprise groups	Number of employee jobs in Israel	Revenue in Israel (B. NIS)
Domestic	28,800 (parents and subsidiaries)	9,200	899,500	897
Foreign	7,600 (Israeli subsidiaries only)	6,400	176,900	207
All	**36,400**	**15,600**	**1,070,046**	**1,114**

- **Structure and size of the enterprise groups**

Most of the enterprise groups defined are quite simple with only a few legal units **(Graph 1).** 77% of all enterprise groups defined holds only one subsidiary in Israel. This share is even higher among foreign enterprise groups (90%) that have a more simple structure in Israel. Only 1% of the foreign enterprise groups have more than 3 subsidiaries in Israel against almost 10% of the domestic enterprise groups. This result seems to indicate that except for a few large and complex MNEs that may be involved in many different activities in Israel through several distinct subsidiaries, most of the foreign enterprise group's delineation will correspond to Enterprise delineation. In other words that the truncated (domestic) part of the foreign enterprise group will be defined as the Enterprise.

Graph 1: Breakdown of enterprise groups by number of legal units in Israel (%)
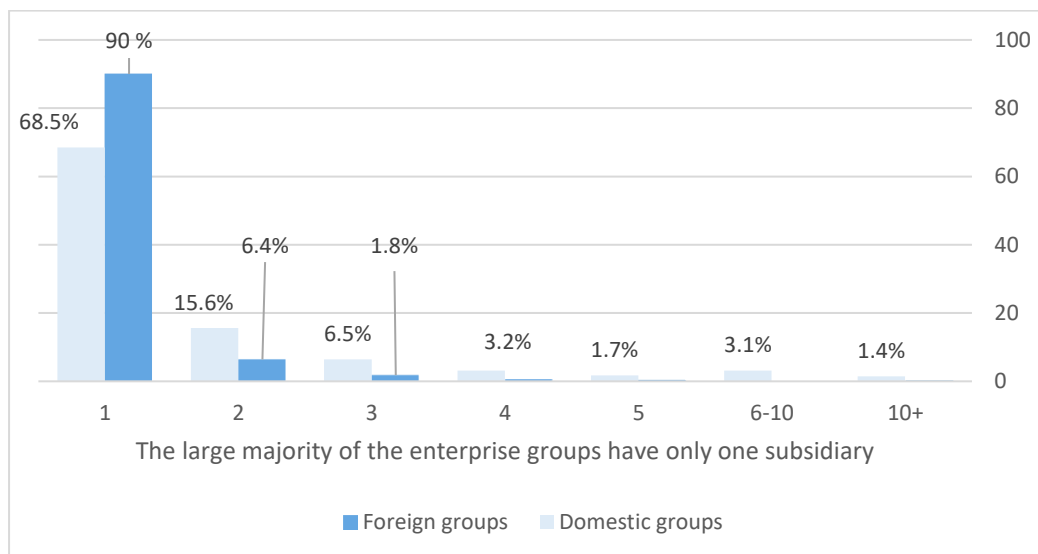
Among all the groups, 5% employ more than 250 persons (large enterprise group), 12% employ between 50 and 249 persons (medium), 7% between 10 and 49 persons and 63% less than 10 employees (micro enterprise group). The population of foreign enterprise groups counts less large groups (2.5%) and much more micro size enterprise groups (79%). However the largest groups, both foreign and domestic accounts for the majority of employees (75%) and revenue (71%).

Graph 2: <u>Breakdown of Enterprise groups by employee size (%)</u>
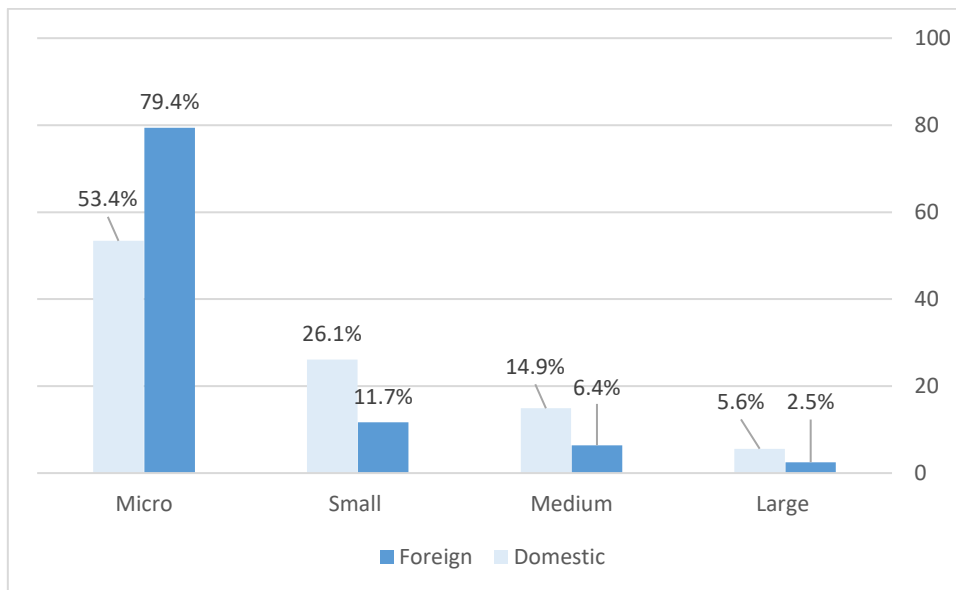
*The definition of class size here referred to the criteria of number of employees used by the EU countries.

- **Concentration by industry**

62% of the enterprise group's legal units are operating in the services that represent 40% of all the revenues generated by this population. This part is higher among foreign enterprise groups: 75% of all the foreign subsidiaries are operating in the services and generate 44% of the revenue but represent a lower share of employee jobs (51% against 66%). In the manufacturing industries there are less foreign factories among the foreign groups (12 % against 23%) but their size is higher regarding revenues (38% against 34%) and employee jobs (36% against 18%) **(Graph 3)**. The distribution of foreign subsidiaries by industries observed here is similar to the one coming from the I-FATS survey for 2018.

In the manufacturing industry, the fabrication of computer, electronic and optical products (ISIC 2 digits 26), foods (ISIC 2 digits 10) and other transport equipment (ISIC 2 digits 30) account for 60% of the units pertaining to a group, to their revenue and employee jobs.

Among foreign subsidiaries, 20% of the subsidiaries in the manufacturing industry are operating in the computer electronic and optical goods industry (26) and these units generate near half of the revenue and employee jobs of the total. Then the other subsidiaries are mainly concentrated in the industries of machinery and equipment (2), foods (10), fabricated metal products (25), plastic products (22), chemistry (20) and pharmacy (21). All together, these industries account for more than 50% of the revenue and employee jobs of foreign subsidiaries in the manufacturing industry.
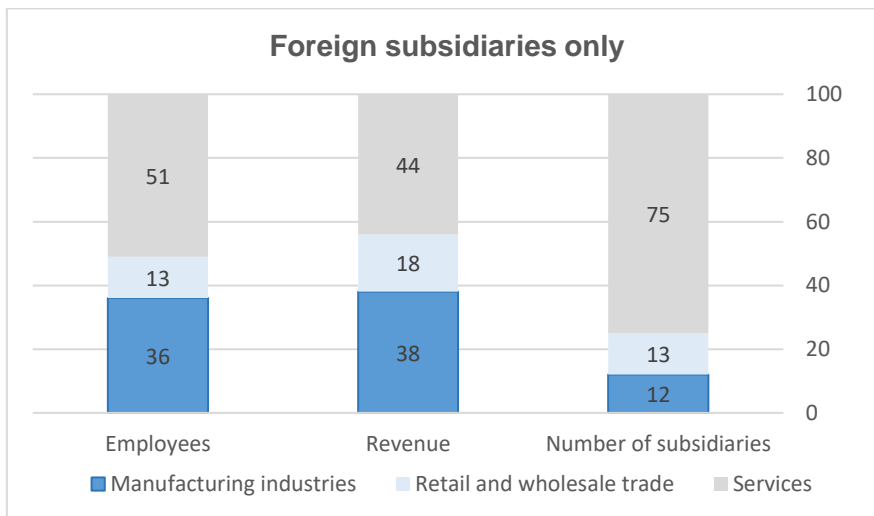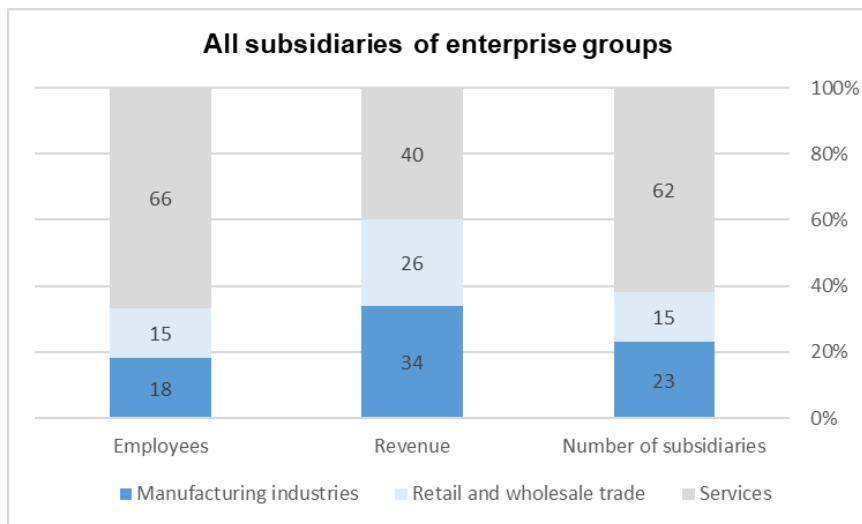
In the services, Computer programming activities (62) account for 14% of all units pertaining to an enterprise group, revenue and employees and financial services (64) activities for about 10%. Social work activities (88) and employment agencies employ

as well as food and beverage activities (56) large part of the workers in the services. Among foreign subsidiaries, the ones operating in the computer programming activities and R&D services (72) account for 56% of the units in the services generate 65% of the revenue and more than 50% of the employee jobs. Then, foreign subsidiaries are more concentrated in the industries of the foods and beverage activities and in terms of employee jobs in the industries of employment agencies and social work activities.

This first overview confirms the importance of the enterprise groups in the industries linked to the high-tech (both in manufacturing and in the services), both for domestic groups and foreign groups but also the presence of large domestic groups in the industries of food, pharmacy and in the financial industries.

An analysis at truncated enterprise group level may provide more weight to the manufacturing industry and reduce sharply the weight of services and wholesale and retail trade activities. Indeed, in many cases, the core activity of the enterprise group is manufacturing and many subsidiaries of the group are only operating trade or services related to the production of goods. Therefore, this change of units will conduct to a major change in the business statistics breakdown by industries.

Graph 3 : Breakdown of the subsidiaries by main economic activities

All subsidiaries of enterprise groups

	Employees	Revenue	Number of subsidiaries
Services	66	40	62
Retail and wholesale trade	15	26	15
Manufacturing industries	18	34	23

Foreign subsidiaries only

	Employees	Revenue	Number of subsidiaries
Services	51	44	75
Retail and wholesale trade	13	18	13
Manufacturing industries	36	38	12

8 - Remaining challenges

This pilot study is a work in progress and it remains many tests and steps to achieve before implementing this new approach.

First of all an algorithm is under construction in order to provide main economic activity of the enterprise groups. It will rely on the most prominent economic activity (ies) of the group according the number of employees and revenue. Concretely, it will be based on an analysis of the economic activity of the legal units of the enterprise group perimeter. The algorithm will allocate more weight to the manufacturing activities, taking into account that in the group organizations the employees of the factories can be employed by the headquarter of the group or another ancillary subsidiary that is not necessarily classified in the manufacturing industry.

The second step that will be achieved soon is **the choice of the enterprise groups that will be manually profiled** in order to define more than one enterprises by enterprise groups. This selection could be done considering the size of the groups and complexity (number of legal units and if the enterprise group is present in different industries in manufacturing). Some large groups well known of ICBS with specific statistical issues or groups interested by such an approach could be also chosen. First analysis seems to indicate that one may chose essentially Israeli enterprise groups since only a small number of foreign groups have a complex structure and organization in Israel.

Introducing indicators about the global enterprise groups is another challenge for the next months. This point is very important for achieving the introduction of new statistical units, such as enterprise groups, both domestic or foreign in the business register and for providing at least basic details about them (variables such Name, ID, location, main activity, number of subsidiaries worldwide, consolidated revenue, total number of employees, consolidated assets). It is also the way to better tackle globalization issues since the business register is the basis for all business statistics, including international trade, FATS and GVCs. Since ICBS does not have access to such data in ADIMA database, data collection of the main publicly traded multinational groups with Israeli subsidiaries or Israeli groups will be progressively carried out manually or through web scrapping methods on specific financial websites (TASE website for Israeli groups and on https://www.macrotrends.net for the foreign listed groups).

The last but not least, this change of approach is supposed to be the basis in the future to produce all business statistics including business demography at enterprise level. It might imply a big change in the survey's methodology and data collection.

Aside technical change in the BR architecture (introducing the algorithm to set-up the enterprise groups/enterprises databases, selecting the enterprise groups to be manually profiled, defining the frequency of the updates..) it will request an adaptation of the working methods and processes at all level of business statistics production.

Resources have to be found in order to set-up a LCU and be able to follow-up the main groups profiled.

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