

UNCEBTS Task Team on Business Dynamics, Demography and Entrepreneurship

OECD contribution¹

Foreword

The United Nations Committee of Experts on Business and Trade Statistics (UNCEBTS), created in 2017, seeks to provide coordination and guidance for the development of business and business-related statistics, with a view to improving the evidence base supporting policy making across a number of themes, including globalization, digitalization, well-being and sustainability.

The starting point for high-quality and comprehensive business statistics are high-quality and comprehensive statistical business registers. As such, as part of its work-programme, UNCEBTS created a dedicated Task Team on *Exhaustive Business Registers* - to develop guidance on their construction and implementation, supported by a second Task Team, focusing on *Capacity Building*, with a particular eye on statistical challenges typically faced in developing economies.

Traditionally, at least until the not too distant past, the primary objective of business statisticians had been to deliver data required for the compilation of the national accounts. Over the last couple of decades (in part reflecting increases in computing power), there has been a growing realisation that business statistics, and indeed business registers, can play a separate role in economic analysis, not least because of their granularity. This realisation has picked up pace significantly in recent years, as the increased demand by analysts for access to micro-data can well testify. In response, business statisticians are looking anew at the type of data they provide and disseminate publicly to better meet user needs. This is why UNCEBTS has also created a Task Team to look at statistics on *Business Dynamics, Demography and Entrepreneurship (BDDE)*.

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1. Introduction

At least since the work of Schumpeter in the early 20th century, a large body of economic research has highlighted the role of business dynamics in the creation and diffusion of innovation and more generally as a driver of economic and productivity growth, through the process of *creative destruction*.

In recent years, slowing economic growth, productivity and wages in most advanced, and indeed in many developing and emerging economies, have raised concerns that business dynamism has slowed, possibly reflecting the fact that large players in certain sectors (particularly dynamic sectors) may crowd out new entrants (a phenomenon known as *winner-takes-most* dynamics).

Despite the long-standing awareness of the importance of business dynamism, however, it was not until relatively recently (the mid-2000s) that concerted efforts were made by the international statistics community (notably through the joint efforts of Eurostat and the OECD) to develop internationally comparable measures of business dynamism.

These efforts resulted in the development and release of a Eurostat-OECD Manual on Business Demography Statistics in 2007 that set out the core indicators that could be produced by countries in an internationally comparable way, and which has formed the basis of data collection by both organisations in the years since. Most (but still not all) OECD and EU countries now provide data in line with the recommendations set out in this Manual.

To encourage wider international take-up of these recommendations, in 2018, UNECE released guidelines which rearticulated the recommendations and indicators included in the 2007 Eurostat-OECD manual, and provided additional guidance on the creation of statistical business registers (SBRs) needed to derive those indicators.

Since the mid-2000s however, very little has changed by way of the types of indicators that are being compiled and collected by countries. This is despite the significant analytical and policy interest in the area of business dynamics. Even within the range of currently defined indicators, there remains little take-up and compilation outside of relatively advanced economies. The creation of the UNCEBTS provides an opportunity to create new momentum in this area of statistics.

This note first identifies a set of *core* business demography and entrepreneurship indicators that are possible to compile in most countries and internationally comparable. The main assumption is that a longitudinal SBR is in place, thus allowing to track businesses over time. Hence, this note builds on the 2007 Eurostat-OECD Manual on business demography statistics, the 2015 UNECE Guidelines on SBRs, and the 2018 UNECE Guidelines on the use of SBRs for business demography and entrepreneurship statistics. Beyond that, this note sets out an agenda for the further development of business statistics and a roadmap for the BDDE Task Team.

2. Background – Building on existing initiatives

2.1 Why do we need statistics on the dynamism and demography of businesses?

The primary use of business statistics and indeed business registers has traditionally been to feed macroeconomic accounts, providing the basis of measures of output, value added, employment, productivity, etc. These remain an important conduit of data and information used by businesses, researchers and policy makers, to analyse and manage the economy.

However, they provide only a limited, and typically aggregated view of the economy. Even if in some economies the level of detail provided may be relatively disaggregated (for example structural business statistics (SBS) often provide data at the 4-digit ISIC level), by design they are aggregated by the main activity of the underlying units being observed or estimated (be that an enterprise, establishment, local kind of activity unit or legal unit).

Although it has long been recognised that care is needed in drawing conclusions from SBS about ‘representative’ firms (even when the data are broken down by size of firm as well as activity), these caveats have been exacerbated in recent years by the (varying) ability of firms to capitalise on digitalisation and globalisation. In some activities, no single unit may be close to mean, especially in activities where there are concerns around competition.

Today, the production processes of firms do not just differ by activity and size (economies of scale have always been known to drive differences) but also, among many others, on the basis of their use of digital tools, integration in global value chains, and degrees of control (*i.e.* ownership structures). These aspects can be much better indicators of firm performance (*e.g.* productivity) than those derived only around the concept of activity (ISIC/NACE). Indeed, even if production processes are identical, there is considerable interest in differentiating between firms that use domestic inputs for production and similar firms that use foreign inputs; not least as their exposure to shocks, such as changes in the terms of trade, are significantly different.² However, these characteristics of firms are not typically included in business registers, nor in the aggregation of firms used in structural business statistics.³ One could go even further and consider aggregations around a whole range of additional variables, such as age of firm, levels of innovation, gender mix, and skill-levels within the workforce, all of which play an important role in driving firm performance.

The limitations of conventional SBS are even more severe than merely those caused by aggregating units around the nature of activity and size of the firm, as they tell us nothing about the underlying level of **business dynamism** driving current and future growth. A key limitation in this respect is their inability to provide any signal around churning (creative destruction), as new (especially more innovative) firms enter the market, displacing older (and less innovative) firms in the process. They are, therefore, unnecessarily limited in their ability to provide signals on potential growth.⁴ On their own, data on the number of new entrants (births) and exits (deaths) provide policy makers with important insights not just on latent and actual business dynamism but also potential barriers, (whether regulatory, such as red tape and bureaucracy that inhibits new firm creations, or more

² One could go further here and consider factoryless goods producers (FGP). For example, an FGP that has outsourced all production but purchases material intermediate inputs is a manufacturer (likely to have a very different production process to other units classified to the same activity), but a firm identical in every way, apart from the fact that it does not purchase the material intermediate inputs used by its contractors and instead pays when production is completed, is classified to the retail sector.

³ This also has implications for survey design, as discussed in more detail below.

⁴ Two economies for example could have exactly the same number of firms and levels of output but if one had significantly higher shares of ‘newer’ and ‘younger’ firms in the mix, which are typically more dynamic than older incumbents, the ‘potential’ would, generally, be significantly higher.

systemic, for example restrictive, and sometimes discriminatory, lending practices by banks to finance start-ups).

In addition, because they only provide a view of an average ‘firm’ neither can SBS say anything about firm-level differences in performance within a particular aggregation, where there may be significant numbers of growing firms and contracting firms.

All of this information on business dynamism can be readily produced from standard SBRs. Indeed, it was this fact that led to the development of the 2007 Eurostat-OECD Handbook on Business Demography Indicators.

Before going further in this note, it is probably useful to comment on the nature of the various terms often used in this statistical space. *Business demography* statistics and *business dynamism* statistics are, in practice, interchangeable terms⁵ and they are used as such in this note. Core *business demography* statistics provide indicators of the number of firms in an economy at a given point in time and its evolution over time through the creation (birth) of new firms, the destruction (death) of existing firms or other demographic events (mergers, take-overs, break-ups, etc.), and, in turn, on the development (survival and growth) of continuing firms. Moreover, core business demography statistics describe the effects of firm creations and destructions on output (turnover) and employment. The building block for all these indicators is a statistical business register (with information on turnover and employment, for all indicators that target these variables) where observations (the firm, however that is defined) can be linked over time.

2.2 Business demography statistics for entrepreneurship policies.

Because of their ability to provide insights on creative destruction, and in particular measures of births, deaths, survival and growth (in particular with respect to high-growth firms), the most widely used application of business demography statistics has been in the area of entrepreneurship (see definition below). However, business demography can be considered to be a broader concept than just entrepreneurship, even if to date, at least within official statistics, the two terms have been used interchangeably. Indeed the current crop of business demography statistics were originally developed precisely with this policy driver in mind.⁶

The first concerted and international effort to systematically measure entrepreneurship began in 2006, under the auspices of the OECD and Eurostat joint [Entrepreneurship Indicators Programme \(EIP\)](#), which resulted in the development of the 2007 Eurostat-OECD Manual on Business Demography Indicators. Useful references in this respect, which provide more detail on the motivation behind the design and selection of indicators used in the EIP, as well as on the target definitions around entrepreneurship, include:

- OECD (2006) - *A Proposed Framework for Business Demography Statistics*; which provides a complete description of definitions used in the original suite of business demography indicators developed by the OECD;
- OECD (2008b) - *Defining Entrepreneurial Activity: Definitions Supporting Frameworks for Data Collection*; which provides a definition of entrepreneurship and related aspects and links to business demography statistics;
- OECD (2008a) - *A Framework for Addressing and Measuring Entrepreneurship*; which provides an overview (see Figure 1) of the range of indicators needed to better understand the

⁵ While international organisations and statisticians generally refer to statistics on creations, destructions and growth of businesses as *business demography* statistics (e.g. in the 2007 Eurostat-OECD Manual on business demography statistics), the academic literature also refers to such statistics as *business dynamics* statistics. For example, Haltiwanger *et al.* (2009) state that *business dynamics* statistics include “measures of establishment openings and closings, firm start-ups, job creation and destruction by firm size, age and industrial sector”.

⁶ This is precisely why the BDDE Task Team includes ‘entrepreneurship’ in its title.

determinants of entrepreneurship, how entrepreneurialism was faring, and its impact on key policy goals; recognising that entrepreneurialism, from a policy perspective is a means to an end.

OECD (2008b) provided the following definitions, which have become accepted in the literature as the international standards:

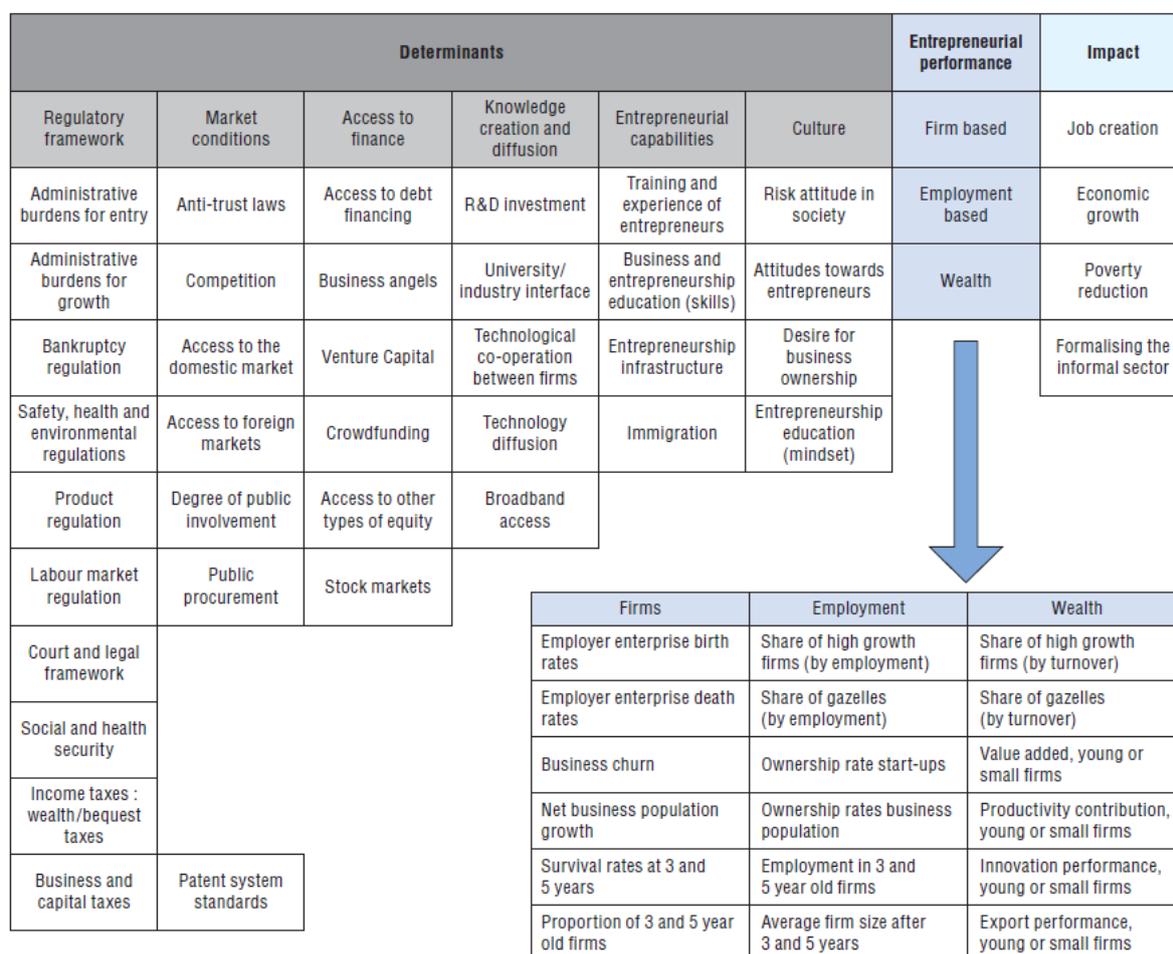
- **Entrepreneurial activity** is the enterprising human action in pursuit of the generation of value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets.
- **Entrepreneurship** is the phenomenon associated with entrepreneurial activity.
- **Entrepreneurs** are those persons (business owners) who seek to generate value, through the creation or expansion of economic activity, by identifying and exploiting new products, processes or markets.

The definitions recognised a number of important aspects that were important in shaping the design (and identifying sources) required to provide insights on entrepreneurship, and these are included below for ease of reference:

- Companies can be entrepreneurial without an entrepreneur at their helm. In other words, companies can be owned by shareholders, managed by salaried directors and be entrepreneurial at the same time.
- Entrepreneurs and entrepreneurship are not concepts that relate exclusively to small businesses or self-employed workers, as many studies often assume. Large companies can also be entrepreneurial.
- Not all businesses, not even all new businesses, are entrepreneurial. This has consequences for the interpretation of indicators that are usually related to entrepreneurship. Even if several entrepreneurship indicators are related to the emergence and the survival of new firms, it should be born in mind that they are statistical proxies and only capture an aspect of the entrepreneurship phenomenon.
- One of the key aspects of entrepreneurship is *seeking* to generate value by identifying and exploiting new products, processes or markets. This does not necessarily mean *succeeding*. Entrepreneurship is often associated with risk taking, which implies the possibility to fail. Moreover, entrepreneurs can learn from their mistakes and be more successful in their next attempts.
- The value that entrepreneurs generate is not necessarily a monetary value. Entrepreneurship also plays a role for social inclusion. In some countries for example, it can provide an easier way for women and immigrants to participate in the work force than becoming salaried workers in established firms.

Building on these definitions OECD (2008b) set out a framework (see Figure 1) to measure entrepreneurship.

Figure 1: OECD Framework for addressing and measuring entrepreneurship



The framework was designed to be as comprehensive as possible in its scope but also realistic in its ability to be implemented. **Of relevance to the BDDE Task Team are the range of indicators included under performance⁷**, most of which are now included in standard collections by the OECD and Eurostat and can be drawn directly from statistical business registers, including in particular those pertaining to births, deaths, survival, high-growth and gazelles.

Some, however, require additional information, provided via links to structural business statistics or other data sources, including those pertaining to value added; productivity; innovation and exports. Because of the additional complications involved in deriving these indicators (i.e. the links to business surveys or other administrative data), there has been little take-up in the development of these indicators. The creation of the UNCEBTS provides an opportunity to help propel, motivate and mainstream, measurement efforts on this front.

⁷ Many of the indicators included under ‘determinants’ are not typically collected by statistical agencies, and equally, as can be determined from their descriptions, many do not have a business as an observation unit, and so are considered, in the main, out of scope of the work of UNCEBTS, and hence this report.

3. An Action plan for the Task Team and Business Dynamics, Demography and Entrepreneurship

3.1. Motivate a wider international take-up of core business demography statistics

The three main criteria used in the development of Eurostat and OECD's current collection of core business demography statistics, which also serve as the criteria that should be used to consider the scope of extensions needed in to better serve policy needs across a range of domains (not uniquely entrepreneurship) are:

- (1) *Relevance* for economic analysis and policymaking;
- (2) *Measurability*: the ability for most countries to compile them, provided that they have a statistical business register with adequate longitudinal linkages in place; and
- (3) *International comparability*.

We first consider *relevance*. Some business demography statistics play a prominent role for the analysis of economic growth, employment and productivity. For example, researchers have shown that young firms, or start-ups, account for 20% of gross job creations in the US (Decker *et al.*, 2014).

Although most young firms are small, the age of firms seems to be a better predictor of the contribution to job creation than size, reinforcing the need to complement traditional structural business statistics (broken down by activity and size) with business demography statistics focusing on firm creations and young firms.

Nevertheless, young firms are a very heterogeneous population in terms of productivity and survival rates. Most young firms either disappear after a few years or remain small, which is why indicators of young high-growth firms (gazelles), and indeed high-growth firms in general, should also be compiled.⁸

Regarding *measurability* the Eurostat-OECD Manual on business demography statistics (2007) provides detailed guidance for the compilation of statistics on all core business demography statistics, included in Table 1 below.

There is usually a trade-off between the relevance and the *international comparability* of business demography statistics. This is due to the non-exhaustive coverage of statistical business registers in most countries. In practice, only firms above certain turnover, employment or tax thresholds tend to be included in SBRs, and these thresholds vary across countries⁹. One way to increase the international comparability of business demography statistics is to focus on firms with at least one employee (employer-firms) OECD (2006).¹⁰ In order to satisfy both users interested in the largest possible coverage of an economy and those focused on comparability across countries, the core set of business demography statistics advocated in this paper (and in the 2007 Eurostat-OECD manual) includes indicators whose scope is all firms and indicators whose scope is restricted to employer-firms. Table 1 below describes the set of indicators that should be viewed as 'core' by the BDDE Task Team.

⁸ Decker *et al.* (2014) mention that high-growth firms (which are disproportionately young) account for almost 50% of all gross job creations in the US.

⁹ For example, the [Inter-Departmental Business Register \(IDBR\)](#) in the UK only covers enterprises that are above the thresholds of the value-added tax regime and/or the Pay-As-You-Earn (PAYE) regime. For a more systematic comparison across countries of the sources of business demography statistics and their coverage, but dating back to the mid-2000s, see Table 2.1 in OECD (2006).

¹⁰ See also Schoar (2010), two types of entrepreneurs are usually distinguished in the literature: "subsistence" entrepreneurs who create businesses to provide employment for themselves and potentially a few other family members, and "transformational" entrepreneurs who create businesses with the intention to innovate and grow, thus creating employment for other workers and value added for the economy.

Table 1: Core set of statistics on business demography targeting business dynamics and entrepreneurship

Indicators		Concept	OECD	Selected by Task Team members	Match between OECD and Task Team members	Suggested Coverage/ Breakdowns by OECD
1	Number of active businesses (population of active enterprises in reference period (t))	Business Population	✓	✓	--	<p>- Statistical unit: enterprise if possible, otherwise establishment</p> <p>- Distinction between all enterprises and employer-enterprises</p> <p>- Coverage: At a minimum: Business economy (industries 05 to 82 in the ISIC rev. 4 classification)</p> <p>- Breakdown by industry (ISIC rev. 4 / NACE rev. 2): 2 digits</p> <p>- Annual frequency</p>
2	Number of births	Business Birth	✓	✓	✓	
3	Employment created by births		✓	--	--	
4	Number of deaths	Business Death	✓	✓	✓	
5	Employment destroyed by business deaths		✓	--	--	
6	Number of X-year old businesses, for X=1..5	Business Survival	✓	--	--	
7	Number of persons currently employed in X-year old businesses, for X=1..5		✓	--	--	
8	Employment in the population of active enterprises in reference period (t)		--	✓	--	
9	Employment share of enterprise births/deaths: number of persons employed in reference period (t) among enterprise births/deaths divided by the number of persons		☐	✓	✓	
10	Enterprise survival rate		--	✓	--	
11	Number of high-growth enterprises	Business Growth	✓	✓	✓	- Statistical unit: enterprise if possible, otherwise establishment
12	Employment in high-growth enterprises		✓	--	--	- Coverage: At a minimum: Business economy (industries 05 to 82 in the ISIC rev. 4 classification)
13	Number of young (up to 5-year old) high-growth enterprises (gazelles)		✓	--	--	Employer-enterprises only (by definition of high-growth enterprises)
14	Employment in young (up to 5-year old) high-growth enterprises (gazelles)		✓	--	--	- Breakdown by industry (ISIC rev. 4 / NACE rev. 2): 2 digits - Annual frequency
15	*Labour compensation paid by active enterprises in reference period (t)		--	✓	--	
16	*Value Added produced by active enterprises in reference period (t)		--	✓	--	

*At least one Task Team member suggested to not include it as a key indicator

Note: All indicators in the list (with the exception of the indicators 15 and 16) should be compiled as defined and set out on in the 2007 Eurostat-OECD Manual on Business Demography Statistics. For High Growth Enterprises, two measures should be developed. The first, as set out in the original Manual, targets firms with 20% growth p/a over a three year period. The second reflects the later position adopted by Eurostat to reduce the threshold, in the wake of the financial crisis, to 10% p/a over a three year period. Both measures have the same minimum size threshold of 10 or more employees. Derived indicators such as birth rates (ratio of enterprise births to the number of active enterprises in a given industry) are not included in the list above for convenience as they can be compiled directly from the indicators highlighted.

3.1.1. Defining the statistical unit for entrepreneurship statistics

As noted above, the 2007 Eurostat-OECD Manual on Business Demography Statistics provides a detailed description of the definitions of each of the core indicators, and, so, for expedience, these are not repeated in this document. One issue that governs the thinking around the construction of the indicators, also covered in the Eurostat-OECD Manual but covered here too given its centrality in the design of the indicators, concerns the unit of observation used. In all of the indicators, the enterprise is recommended as the statistical unit of observation. An enterprise is defined as follows in the [International Standard industrial Classification of All Economic Activities \(ISIC\) rev. 4](#).¹¹

An institutional unit in its capacity as a producer of goods and services is known as an enterprise. An enterprise is an economic transactor with autonomy in respect of financial and investment decision-making, as well as authority and responsibility for allocating resources for the production of goods and services. It may be engaged in one or more productive activities. An enterprise may be a corporation (or quasi-corporation), a non-profit institution or an unincorporated enterprise. [...] The enterprise is the level of statistical unit at which all information relating to its transactions, including financial and balance-sheet accounts, are maintained, and from which international transactions, an international investment position (when applicable), consolidated financial position and net worth can be derived.

It is important to recognise that the decision to use the enterprise as the statistical unit for business demography statistics was, at least from a conceptual perspective, almost entirely determined by their intended application: that is to serve entrepreneurship policy making. The notion that the enterprise was the level at which control in decision making occurred (and so the likely source of innovation) was considered to be key.

Annex A, includes an extract from OECD (2006) which sets out the case for the enterprise in more detail and includes comparisons with other possible approaches. One important take-away from these discussions, is that alternative definitions of statistical units may be better suited for different policy purposes, and certainly this may be the true when practicalities are considered. While Annex A is clear that the enterprise is the appropriate unit for measuring entrepreneurship, irrespective of the size of the economy, it also recognises that the application of the concept to sub-national levels may be difficult to achieve.

3.1.2. Minimum statistical infrastructure required to compile business demography statistics

Almost a pre-requisite for the development of business demography statistics, and certainly a pre-requisite for good quality and internationally comparable business demography statistics, is a comprehensive and exhaustive statistical business register (SBR). Recommendations on SBRs are being developed by a dedicated UNCEBTS Task Team, and, and also, especially for economies with large informal sectors, the Task Team looking at capacity building so, only a cursory description of requirements are provided in this note.

Perhaps the most important additional requirement required for the development of business demography statistics from SBRs is that they should be longitudinal and, at least, updated annually. This requirement is essential for all of the indicators described above, bar one – the number of firms.

¹¹ See §§ 77-79. Note that this definition is consistent with the 2008 System of National Accounts (SNA, §§5.1-5.2), which differentiates enterprises and establishments:

- “An enterprise is the view of an institutional unit as a producer of goods and services.”

- “An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added.”

The 2018 UNECE Guidelines identify three requirements that SBRs should meet in order to be used for the compilation of business demography statistics:

- *SBRs should allow tracking businesses over time and identifying relevant demographic events. This can be done by assigning longitudinal business identifiers to the units.*
- *SBR data need to be cleaned in order to compile indicators of enterprise births and deaths in line with international statistical standards. For example, in the case of a merger, the enterprise that arises is a birth for the SBR but not for business demography purposes.*
- *Countries with a large informal sector need to ensure that their SBR accurately covers the business population in this sector.*

For some of the indicators produced above, it is possible to derive ‘proxies’ using registers that are not linked over time or indeed using other sources, such as census information. INEGI for example produces business demography statistics for Mexico based on five yearly economic censuses that cover all (informal and formal) establishments outside the agricultural sector.¹² However, the accuracy of business demography statistics derived from such an approach is obviously affected by the lack of inter-census unique identifiers that can track establishments over time, which can result in spurious increases in the number of recorded births and deaths of establishments. This is why INEGI started to develop a SBR in 2009.

The Mexican example also shows that the compilation of good-quality business demography statistics imposes some requirements on the SBR. Usually, the initial purpose of a SBR is to give an exhaustive and up-to-date estimate of the population of businesses at one point in time, which can then be used as a survey frame, rather than a longitudinal view of the population. However, longitudinal SBRs can deliver significantly more benefits to the economic statistics system.

In line with the 2007 Eurostat-OECD Manual on business demography statistics and the 2015 UNECE Guidelines on statistical business registers¹³, **the BDDE Task Team therefore recommends that the compilation of business demography statistics should be based on longitudinal SBRs.**

3.2. Motivate a new suite of register based business demography statistics

Over the last 25 years, considerable academic research has highlighted the importance of business creations and young firms for output, employment and productivity growth. The related literature clearly demonstrates the relevance of current ‘core’ business demography statistics to understand macroeconomic developments but also highlights the need to go beyond the core.

The main facts established using US micro-data can be summarised as follows:¹⁴

- Conditional on survival, young firms have much higher average output and employment growth rates than older firms.
- Young firms also have much higher exit rates than older firms. In the US, over 50% of an entering cohort of firms exits after five years, described by Haltiwanger *et al.* (2017) as “up-or-out dynamics”.
- Surviving young firms are very heterogeneous in terms of output and employment growth rates. As an example, Figure 2 shows the distribution of employment growth rates in US firms by age group. The median employment growth rate of all firms is close to zero,

¹² See Chapter 5 of the 2018 UNECE Guidelines on the use of SBRs for business demography and entrepreneurship statistics for a more extensive discussion of the Mexican example.

¹³ The 2015 UNECE Guidelines on statistical business registers consider SBRs as the “ideal source in terms of coverage and costs for the production and dissemination of enterprise business demography statistics”.

¹⁴ This summary is largely based on Decker *et al.* (2016), and Haltiwanger *et al.* (2014, 2017).

whatever age group they belong to but the employment growth rate distribution of young firms is much more skewed to the right than that for mature firms: High-growth firms in the US are, disproportionately, young.

Figure 2: Employment growth of US firms, by age group (source: Haltiwanger *et al.*, 2017)

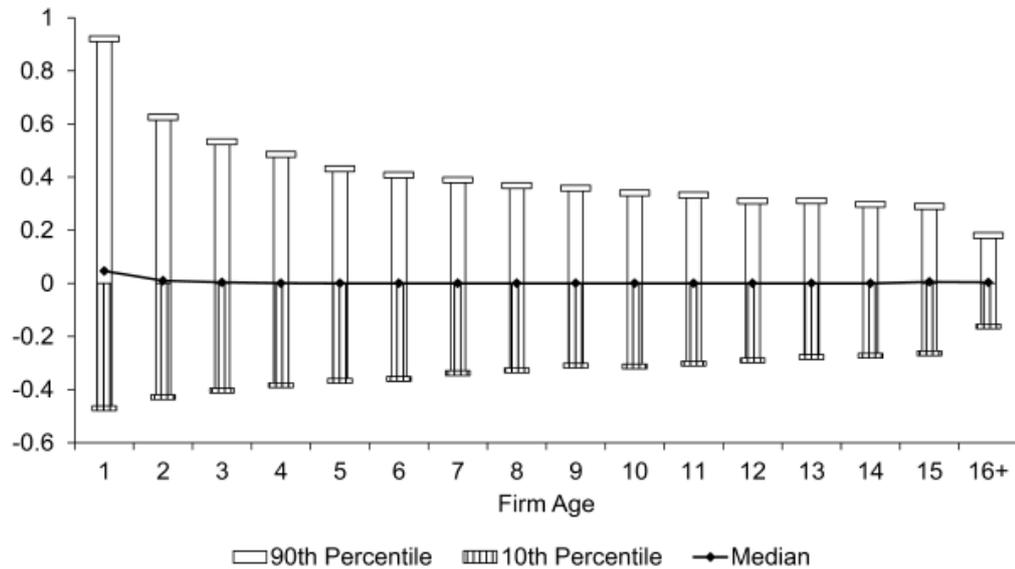


Fig. 1.3A Net employment growth, 1996–2013, LBD

Source: Statistics computed from the Longitudinal Business Database and revenue-enhanced LBD subsets 1996–2000 and 2003–2013.

Notes: The 90th, 10th, and median are all based on the employment-weighted firm-level employment growth rate distribution for each firm.

- High-productivity firms have a lower probability of exit and, conditional on survival, they grow faster than lower-productivity firms.
- Industry-level productivity growth (in manufacturing) is driven more by within firm growth rather than by the reallocation of resources resulting from entries, exits, expansions and contractions.
- There has been a decline in the dispersion of US firm growth rates since the 1990s, initially driven by the retail trade sector. Since around 2000, this decline has been accompanied by a decline in skewness. The high-tech sector, in particular, has exhibited sharp declines in dispersion and skewness since 2000. In addition, US data show a decline in start-up rates (birth rates). What this implies for innovation, and aggregate output and productivity growth is currently being debated by policy makers but it is clear that the BDDE Task Team can significantly inform the debate through the advocacy of new indicators.

In addition there is a significant debate concerning the role of multinationals that cuts across a wide range of policy areas, ranging from taxation, to inequalities to globalisation, and indeed, in the area of entrepreneurship measurement (see also Annex A).

3.2.1. New breakdowns of core business demography indicators

From the very beginning of the OECD-Eurostat EIP there was a recognition that it would be useful to differentiate indicators on business demography by ownership structure, and indeed more generally on the basis of 'dependencies'. This recognised that being part of a larger enterprise group (and the evidence suggests that this is even more the case today than it was in 2006) can confer significant

advantages to an enterprise governed by that group (through financing, access to innovation, economies of scale, etc.) In addition, there has been a long-standing interest in identifying the importance of trade (whether through imports or exports) to firms, especially SMEs, as witnessed in the significant take-up and analysis of [Trade by Enterprise Characteristics data](#).

The on-going policy discussion and analyses, around characteristics of firms that go beyond those currently included in core business demography statistics (described above) provides a very clear roadmap for the direction that business statisticians need to take, and the formation of the UNCEBTS provides an opportunity to push forward on a new measurement agenda to meet policy needs. In this respect, **the BDDE Task Team recommends that the core indicators described above be developed with new breakdowns to differentiate firms.** These should include:

- **Ownership:** to differentiate between births and high-growth firms that are foreign owned (for which the underlying financing model, level of dependence, and level of entrepreneurship may be radically different from pure *in vitro* start-ups) from other domestically-owned firms.
- **Dependencies:** to differentiate between dependent (foreign- or domestically-owned) and independent firms.
- **Trading status** (importer, exporter, two-way trader): to better understand ‘born-global’ firms but also the importance of trade channels for high-growth firms and survival rates.

3.2.2. New variables in Business Demography Statistics

As noted above, considerable attention has been focused in recent years to extract more granular insights on employment and turnover dynamics of firms, especially broken down by age. Much of this analysis has focused on the US, and on the productivity slowdown over the last 20 years.¹⁵ However, the evidence on changes in business dynamism outside the US is scarcer.

Because the level of detail provided in national dissemination of business demography statistics has not kept pace with demand, analysts and indeed policy makers are increasingly deriving the required indicators themselves through access to official micro-data, where there have been significant advances across countries in recent years. However, as emphasised in OECD (2017, Chapter 1), significant obstacles remain in terms of transnational access: such as challenges related to the identification of available sources, language barriers, accreditation procedures, data access limited to designated data centres, etc.

In order to alleviate these constraints and to run cross-country studies, the OECD launched two ambitious projects based on distributed micro-data analysis. These projects involve providing codes to representatives in national statistical agencies or experts in public institutions who apply the codes to national micro-data sources to generate indicators.¹⁶

The fact that these methods are proliferating, and indeed, can produce indicators that are disclosive, suggests that there is significant scope for business statisticians to use the same underlying micro-data to produce new official statistics. Such an approach would obviate the need for many analysts to go through (often complicated) application procedures, and to produce the data themselves, whilst also reducing burdens that business statisticians currently incur through providing micro-data (e.g. in checking for non-disclosure).

¹⁵ See Fernald (2014) for the US, and Antolin-Diaz *et al.* (2017) for other G7 countries.

¹⁶ *DynEmp* and *Multiprod*. *DynEmp* focuses on job creations by start-ups and young firms, and *Multiprod* focuses on (multifactor) productivity and wages. For additional information on *DynEmp*, see Calvino *et al.* (2015) and the dedicated webpage: <https://www.oecd.org/fr/sti/dynemp.htm#reports>. On *Multiprod*, see Berlingeri *et al.* (2017) and the dedicated webpage: <https://www.oecd.org/sti/ind/multiprod.htm>.

Expanding the set of business demography statistics that are regularly produced by official statistical agencies would complement the initiatives taken by several of them to provide researchers with secure access to micro-data sources, simplify international comparisons, let a wider audience benefit from recent advances by the research community, and mainstream these statistics in policy discussions.

The BDDE Task Team recommends the compilation of the following new business demography indicators:

- **Average turnover growth** between two periods of time (*e.g.* t-1 to t, t-5 to t) for distinct cohorts (new entries, expanding firms, contracting firms, stable firms) of firms, broken down by industry and size class but also including a new characteristic **of age**, helping to provide important insights on, among others, the prevalence of *zombie firms*¹⁷.
- **Quantiles of turnover growth** between two periods of time (*e.g.* t-1 to t, t-5 to t).
- **Average employment growth** between two periods of time (*e.g.* t-1 to t, t-5 to t) for distinct cohorts (new entries, existing firms, expanding firms, contracting firms) of firms, broken down by industry and size class but also including a new characteristic **of age**.
- **Quantiles of employment growth** between two periods of time (*e.g.* t-1 to t, t-5 to t).
- **Number of jobs created/destroyed** between two periods of time (*e.g.* t-1 to t, t-5 to t) for distinct cohorts (new entries, existing firms, expanding firms, and contracting firms) of firms, broken down by industry and size class but also including a new characteristic **of age**.
- **High-growth enterprises and Gazelles by age**
- **Scale ups:** There are a number of efforts underway, notably in Nordic Economies¹⁸, and now also given high priority within the European Commission, for new indicators on scale-ups that share characteristics with (20% p/a) high-growth enterprises.

3.3. New indicators from conventional Structural Business Statistics

Currently, the core dissemination of structural business statistics (SBS) is provided through the prism of size and industrial sector (typically at a highly disaggregated level – 4 digit ISIC level or equivalent), with core information, including: numbers of firms (enterprises/establishments), total turnover, value-added, gross operating surplus, output, compensation of employees, wages, employment. These data provide measures of the overall importance of any particular aggregation and when divided by the number of firms in a cohort, on the average firm (statistical unit) within that cohort.

Given the often significant heterogeneity within these cohorts and the need to better understand it, additional statistics that could be easily be provided within current disseminations of SBS, without any significant risk of disclosure, include **medians** and **variance/standard deviation** of each cohort. Going further, but subject to confidentiality being preserved, information on the distribution of each of the cohorts – for example, by giving some **quantiles** within the cohort – could also be provided, thus significantly improving the analytical applications of SBS.

For countries that use censuses, this could, in theory, be achieved with few empirical challenges (beyond confidentiality). However, for countries that use survey type approaches, there would need to be some reflection on how the information could be compiled. In the simplest case, this could be by presenting medians, variances/standard deviations only for those firms included in business surveys (i.e. not grossing up to the entire population for a given cohort). However some grossing mechanism would be needed for higher-level aggregations (*e.g.* at the 2-digit level rather than the 4-digit level), especially for statistics on distributions (deciles/quartiles etc.). **Importantly all of these**

¹⁷ See Adalet Mc Gowan *et al.* (2017)

¹⁸ See [Scale-ups in the Nordics – Statistical Portrait 2008-2016](#) (May 2019).

statistics could be produced without any need for linking observations over time, and so, in theory, are all feasible from within current conventional SBS.

Going further, the same extensions could be applied to composite statistics that are frequently derived from SBS data.¹⁹ Very simple measures that could significantly meet user demands include:

- **Labour productivity**
- **Value-added to output ratios**
- **Value-added to turnover ratios**
- **Gross operating surplus to turnover ratios**

Certainly, especially given the focus on the productivity slowdown, and the view that gaps may have emerged between frontier firms and laggards, information on productivity distributions (even if only presented as annual snapshots, i.e. not fully longitudinal) could provide important insights on these trends.

In addition, to respond to growing concerns around winner-takes-most dynamics, completely new statistics could be derived on measures of **concentration** (e.g. Herfindahl-Hirschman index; share of total turnover, value-added, employment, profits generated by the top X% of firms).

All of these indicators and statistics should be considered as part of a short- to medium-term work-programme of UNCEBTS that could seek to identify practical challenges and solutions (e.g. in dealing with samples), such that recommendations could be developed by the group and presented in a new international manual. The OECD is already working on these lines and a collaboration should be encouraged.

3.4 New firm-level characteristics in Structural Business Statistics

Similar to the recommendations above that looked at introducing new firm-level characteristics into business demography statistics, the same approach could be applied to SBS. Efforts are now underway in different fora (such as the OECD Expert Group on Extended Supply-Use tables) to develop these aggregations and mainstream their development and compilation within the framework of SBS could help to solidify these efforts, whilst also providing scope for new statistical releases.

There are a number of options that should be explored in this area, noting that it will remain important to keep some aspect of the current core characteristics – size and industry – within these new aggregations.

Some of these reflect core firm-based characteristics, that could be captured in statistical business registers (and in turn help to improve the quality of business survey design) such as by:

- **Ownership:** foreign-owned firms, domestically-owned firms with no affiliates abroad, domestic firms with affiliates abroad;
- **Dependencies:** enterprises/establishments that are part of larger groups (e.g. independent vs. dependent SMEs);
- **Business model:** processing firms; factoryless producers; digital intermediation platforms; e-retailers; firms broken down by number of customers (e.g. one vs many) to provide new insights on control relationships and the degree of resilience to shocks firms may have;
- **Age of firms.**

¹⁹ Note that composite indicators such as labour productivity are less prone to the disclosure of confidential statistical information than output and employment.

Other options that could be explored, albeit with higher levels of complexity as the characteristics are more dynamic and may require some form of data-linking, include aggregations around:

- **Trading Status:** exporting, non-exporting, two-way trader;
- **Capital Intensity:** e.g. with breakdowns by level of capital intensities - capital stock to output ratios/capital stock to value-added ratios – e.g. high/medium/low;
- **Skills intensity:** Breaking firms down into levels or distributions of skills intensity (e.g. shares of high-skilled/medium-skilled/low-skilled employees);
- **Productivity levels** when combined with other firm characteristics such as, trading status, ownership, etc.

3.5. New variables –through data linking– in Structural Business Statistics

Within the framework of conventional SBS data dissemination but also in the context of the new aggregations described above, new variables could also be included, through data linking with:

- **Tax data:** to provide insights on effective tax rates of different categories of firms (e.g. by ownership structure);
- **Trade intensities:** e.g. share of output/turnover destined for export.

Falling under this umbrella is the suite of variables currently being developed under the auspices of the OECD Informal Advisory Group on Measuring GDP in the Digital Economy which advocates breakdowns of transactions depending on whether they were digitally ordered and/or digitally delivered. Through linking SBS to e-commerce surveys (in the case of digital ordering), SBS data could be enhanced to reveal the share of turnover reflecting transactions that were:

- **Digitally ordered, digitally delivered, digitally delivered and ordered;**
- **Digitally ordered** through the firm's own website, digitally ordered *via* an intermediation platform.

4. Moving forward – A roadmap

As highlighted above, there is significant scope to improve the ability of business statistics to inform policy makers. Most of the indicators described require only require making better use of the data that already exists. That is not to say that all of them will be feasible in all countries. It stands to reason that many will not, particularly in countries where some of the sources of data are not available.

The objective of the BDDE Task Team in this respect is to set out a roadmap that describes how the international business statistics community can move from its current space to delivering on the more ambitious (and highly demanded) set of indicators described above.

As a first immediate step, the BDDE Task Team should work towards advocating wider international take-up of the core set of business demography indicators described above, using existing tools and manuals, such as the 2007 Eurostat-OECD Manual on Business Demography Statistics.

As a second step, the Task Team should begin to demonstrate ‘proofs-of-concept’, by developing the extended set of indicators set out above, with a set of recommendations and guidelines that could form the basis of new international standards. The work programme of the Task Team should be driven by the development of these guidelines and the likely timetable around which they could be implemented on a global scale.

It makes sense to prioritise activities on the basis of their ease of up-take. A ranking of the various ideas set out above, from easiest to hardest would look as follows:

- Motivate wider international take-up of core business demography statistics (Section 3.1)
- Develop of new SBS data that provide better insights on heterogeneity (Section 3.3).
- Introduce new business demography indicators (Section 3.2.2)
- Introduce new firm-level characteristics in business demography statistics (Section 3.2.1). In turn, develop SBRs that are able to reflect these additional characteristics.
- Develop a new range of SBS built around additional characteristics of firms (Section 3.4)
- Develop new core variables within SBS through data-linking (Section 3.5).

The OECD will be organising a workshop and questionnaire in 2020 to assess the feasibility and challenges involved in developing the new range of indicators described above and it makes sense for UNCEBTS and OECD to collaborate in driving forward this agenda.

It is clear from the above that significant advancements can be made in the ability of business statistics to meet a wide range of policy needs. Much of this can done without any increase in resource burdens to firms. They do of course imply an increase in burdens of business statistics compilers, but this should be set against reductions that would almost certainly arise in managing fewer requests for micro-data access, which would certainly be appreciated by the user community who would definitely gain.

A longer-term goal in this respect is to motivate the development of more comprehensive longitudinal SBRs, with new firm-level characteristics in a way that can be linked to other data sources, such as the Longitudinal Business Database (LBD) developed by the US Census Bureau.²⁰

²⁰ The LBD is based on the Census Bureau’s business register covers the universe of establishments and firms in the US nonfarm business sector with at least one paid employee. It includes annual observations from 1976 onwards and provides information on detailed industry, location and employment for every establishment. An advantage of the LBD over other data sources in the US is its comprehensive coverage of both firms and establishments, which allows firm characteristics such as age and size to be tracked for each establishment. For additional information, see Jarmin and Miranda (2002) and the webpage dedicated to the LBD:

<https://www.census.gov/programs-surveys/ces/data/restricted-use-data/longitudinal-business-database.html>

Changing the statistical infrastructure is key to delivering on this transformation, and these changes can be neatly distilled into three categories, that can help guide the work of the BDDE Task Team going forward:

- Doing more with conventional SBRs.
- Linking SBRs to exhaustive administrative registers.
- Linking SBRs to surveys.

Selecting the Statistical Unit for Businesses²¹

Consider an enterprise that initially comprises a single local kind of activity unit or establishment that then expands by creating another local kind of activity unit of the same size as the original unit but with effective operational control remaining at the enterprise level.

If businesses are defined as local kind of activity units this expansion results in an entry but no growth in the original business (establishment). If, on the other hand, businesses are defined as enterprises, no entries would have occurred but the original business unit would have doubled in size. Which of the approaches is better for policy purposes is not immediately obvious, since that depends on the policy focus. But a further expansion of the example can help to illustrate some consequences of each approach.

Consider now the outcome if the original enterprise grew by expanding its operations at the same (original) site. In this case, whether businesses are defined at the enterprise or local activity level, the result is the same; no births and 100% growth. Defining businesses as local kind of activity units or establishments therefore can result in an asymmetric treatment of growth dependent on location; which renders this approach inappropriate for policy makers interested in business demography statistics that paint a picture of the whole economy, as the results should be invariant, at least within economic borders, to where businesses choose to grow. That is not to say however that establishment based data cannot play a role in practice, since policy makers interested in investigating regional (state, county, local area) differences will not of course be able to use business demography data based solely at the national level. However even in these circumstances it is preferable to use the enterprise definition, albeit, where enterprises are defined on the basis of the economic borders of the regions; and, in practice, the smaller the region the more likely that enterprises and establishments align.

One could say that many enterprises are also part of larger enterprise groups in much the same way that establishments form part of enterprises and, so, enterprise based measures have the same shortcomings. But the argument can be stretched too far, resulting in a definition that links back to ultimate owners. For example one entrepreneur, say, might own many heterogeneous enterprise groups that own in turn a number of heterogeneous enterprises. But the rationale cannot be based on ultimate ownership as the ultimate owners for most companies and certainly listed corporations are shareholders. What matters most is the level at which decisions are made, such as those that affect expansion and innovation, and where operational control resides. Policy makers are interested in understanding what makes a successful business. The factors and business characteristics that determine this are inextricably linked to operational control.

Measures based on enterprises come closest to these criteria, as the degree of innovation, decision making etc. within a business is likely to be closely related to the organisational and management structures that exist at the enterprise level. Research and development, product design and product advertising for example will usually be developed centrally within an enterprise with establishments benefiting from spillovers; indeed, even innovative ideas generated at the establishment level are likely to permeate throughout the enterprise as upward spill-overs.

Of course, not all innovation is generated, decisions made, control resides etc. at the enterprise level, particularly where enterprises are foreign-owned, or, where the enterprise controls foreign subsidiaries that generate innovative ideas say. But formulating definitions on this basis would not be useful for domestic policy makers nor for international comparisons, in much the same way that local or regional policy makers would not find enterprise (only) information based at the national level

²¹ The following extract corresponds to paragraphs 26-33 in OECD (2006).

particularly useful. That is not to say however that this information (foreign-ownership and multi-national) is not important, far from it. Policy makers and analysts are interested in understanding how any of the characteristics of businesses help provide competitive advantages, whether that be related to the numbers of PhDs employed or foreign ownership.

Ownership is a particularly important characteristic. In many countries a large source of innovation, for example, emanates from abroad. Many studies have demonstrated that foreign owned enterprises are often more profitable than similar domestically owned enterprises⁹. This often reflects higher investment made by the foreign parent company but it is also, at least partly, to do with the management and organisational structures and practices in place. Identifying who the owners are is, therefore, of interest in fully understanding the factors of innovation. However, this information can be difficult to acquire for all businesses. Many business registers, for example, the most widely used source for the derivation of business demography statistics, do not contain this information. Moreover, the country in which a company finds its headquarters is not necessarily the source of innovation. Companies place their headquarters in countries for a number of reasons; some may be related to entrepreneurship and innovation, for example, access to capital or favourable tax regimes but others may not be. The difficulty in tracing the source of innovation therefore is non-trivial. Consider for example Mittal steel, the world's largest steel maker. It has steel making facilities in 14 countries, is listed on the New York and Amsterdam exchanges, has its headquarters in Amsterdam, and is owned by an Indian living in London. In other words, although it is of interest to identify foreign ownership, some care is needed in interpretation.

That said it's important to put the differences between establishment and enterprise based indicators into context. The vast majority of enterprises have only one establishment; and this is especially the case for small and medium enterprises (SMEs), where there is considerable policy interest. Large new business are typically opened by a larger enterprise group, whether that be foreign or domestically owned and, so, statistics that compare levels of small business entries are likely to be comparable across countries even if the business definitions differ.

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