

For Official Use

STD/CSTAT(2010)7

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

18-May-2010

English - Or. English

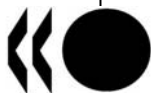
**STATISTICS DIRECTORATE
COMMITTEE ON STATISTICS**

BUSINESS STATISTICS AND ENTREPRENEURSHIP

Dominique Guellec; email: dominique.guellec@oecd.org
Mariarosa Lunati; email: mariarosa.lunati@oecd.org

JT03283747

Document complet disponible sur OLIS dans son format d'origine
Complete document available on OLIS in its original format



**STD/CSTAT(2010)7
For Official Use**

English - Or. English

TABLE OF CONTENTS

- I. Introduction
- II. Entrepreneurship Indicators Programme
- III. Business microdata

BUSINESS STATISTICS AND ENTREPRENEURSHIP

1. Introduction

1. The microstructure of the economy and its changes can affect the macroeconomic performance of countries and the effectiveness of policies. Not all firms are contributing in the same way to economic activities like export or job creation. Industries are made of heterogeneous firms, which can react differently to the same shocks, for instance to new regulation or changes in the tax system. Industries evolve through the creation, destruction or mergers of firms: changes in industrial performance cannot be adequately described without the measurement of this business dynamic. The creation and destruction of jobs, hence the level of unemployment and the churning of jobs are also directly linked to this constant change in market structures (OECD 2009*b*). A pilot area to study these evaluations is entrepreneurship, which has been the subject of microdata-based investigation for several years at the OECD.

2. The description of business structure and dynamics relies on business microdata, *i.e.* databases which gather information at the firm level such as balance sheet, employment etc. This information can then be processed for compiling indicators or conducting econometric analysis. The databases are of two kinds: official databases, centred on business registers, and private databases. Each of them have their pros and cons, and they can be fruitfully used jointly.

3. Most national statistical offices are investing in microdata: both at the database level, assembling data warehouses in which various databases are matched together and with business registers (so that a complete picture of the activity of individual firms is available); and at the level of access, aiming at facilitating the use of these data by external researchers while respecting legal constraints of confidentiality.

4. This document aims at informing CSTAT delegates of current OECD activities and future projects involving business microdata, and at contributing to the continuous dialogue between NSOs and the OECD on microdata use and access. Section 2 focuses on the Entrepreneurship Indicators Programme, the main area where microdata are currently used on a continuous basis at the OECD. Section 3 reports some other uses of microdata and reviews the broader issues involved in accessing microdata, including some household data (labour force surveys).

2. Entrepreneurship Indicators Programme (EIP)

5. Because of its role in creative destruction and innovation, entrepreneurship is held to be a key factor of economic renewal, improving competitiveness and generating economic growth and job opportunities. Over the past decade, entrepreneurship and entrepreneurial activities have attracted much interest by policy makers in relation to important strategic goals such as the Lisbon Strategy of the European Union and the OECD Innovation Strategy. The importance of entrepreneurship has been further emphasised in the aftermath of the global financial and economic crisis, where G20 leaders repeatedly stressed the important role of SMEs and entrepreneurship in job creation (see also the outcome of the meeting of G20 labour ministers in Washington, 22 April 2010).

6. The interest in entrepreneurship has resulted in a growing policy demand for a better understanding of business behaviour. The OECD has addressed this demand by contributing to enhancing the availability and comparability of data on business demography and entrepreneurship, notably through the *Eurostat-OECD Manual on Business Demography Statistics* (2007) and the Entrepreneurship Indicators Programme (EIP).

7. The OECD launched the Entrepreneurship Indicators Programme (EIP) in 2006 with the support of the Ewing Marion Kauffman Foundation of the United States. In 2007, the Programme became a joint OECD-Eurostat initiative. The EIP aims at the development of an internationally comparable set of indicators to measure entrepreneurial activity and the factors that affect it. While other attempts to produce comparable measures of entrepreneurship, such the Global Entrepreneurship Monitoring (GEM), focus on one aspect of entrepreneurship (namely, start-ups), the EIP took a broader perspective recognising that entrepreneurs and entrepreneurial forces can be found in many existing businesses. Understanding the dynamism these various actors exert on an economy is as important as understanding the dynamics of start-ups.

8. To that purpose, the EIP has developed definitions of “entrepreneurs”, “entrepreneurial activity” and “entrepreneurship”; and a conceptual framework that distinguishes between the “*determinants*” of entrepreneurship, the “*entrepreneurial performance*”, and the “*impacts*” of entrepreneurship (Box 1). For each of these three dimensions the EIP proposes specific indicators to capture different aspects of entrepreneurship. The first two collections of EIP indicators were published in November 2008 and November 2009 respectively, presenting a selection of performance indicators and in 2009, indicators of entrepreneurial determinants.¹ To avoid any duplication with work done within the OECD or by other international organisations, the EIP draws the indicators of determinants from various existing data sources, including OECD databases (such as the database on Indicators of Product Market Regulation and the Tax Database), the World Bank, GEM, the European Commission and the World Economic Forum. Instead, the programme concentrates efforts in those determinant areas where data gaps exist or clarification of concepts and definitions is needed; one example of such a gap is “access to finance”, as explained below.

9. A core part of the performance indicators consists of business demography statistics. These are provided by National Statistical Offices of OECD members and non-member countries participating in the EIP. A key feature of the measures of entrepreneurial performance developed by the EIP (in particular firm birth, death and survival) is the concept of “employer enterprise”, *i.e.* an enterprise with at least one employee, as distinct from non-employer enterprises, to reflect better the differences between these two types of enterprises.

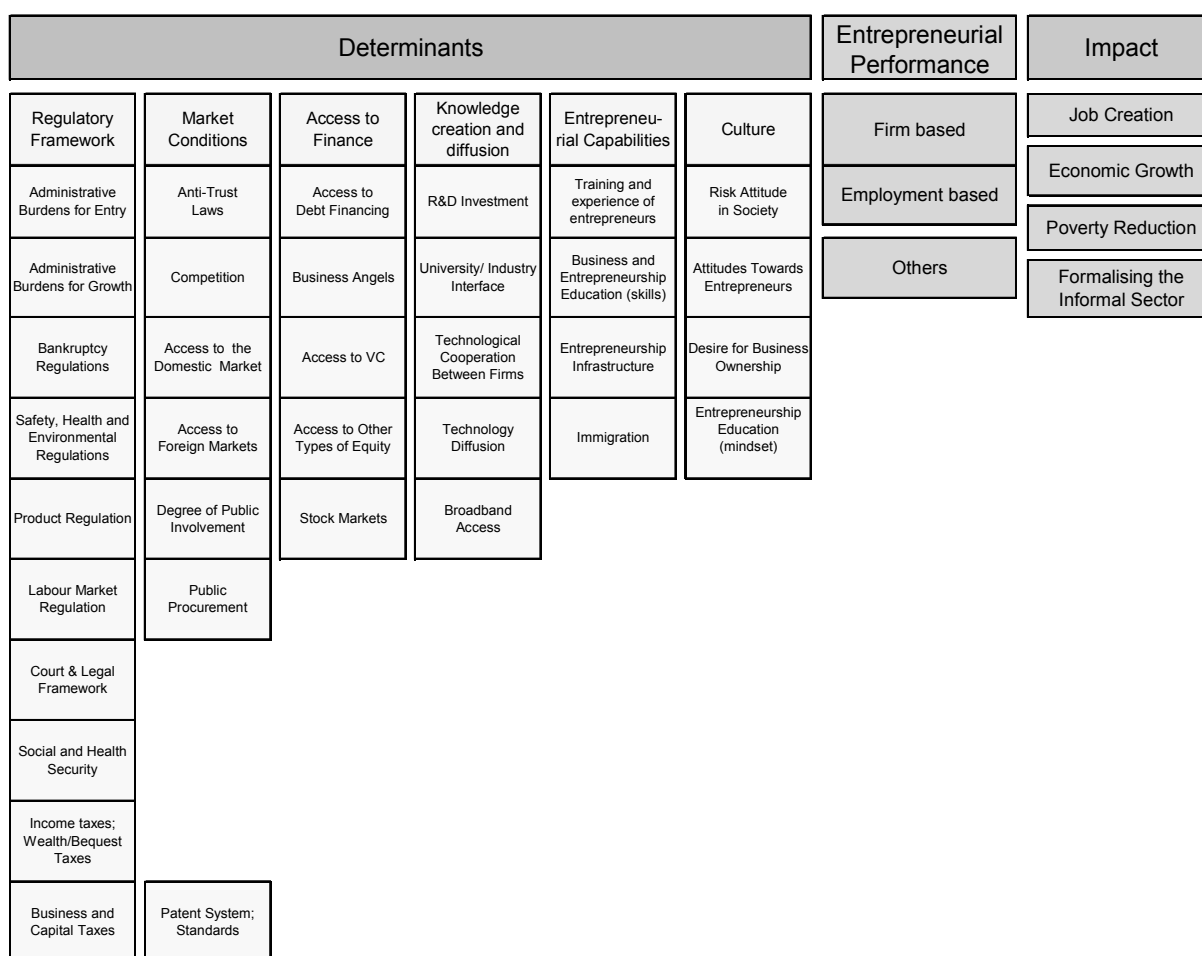
10. Information conveyed by business demography statistics – *e.g.* the contribution of new firms to job creation or the survival rates of start-ups firms in the years following birth - can be meaningfully investigated across country through harmonised business demography statistics, as shown in Figure 1. The indicators produced by the Entrepreneurship Indicators Programme represent an original input to policy, although the comparability of data can still be improved, especially through further improvements in the quality of the statistical or administrative business registers which serve as primary source of information.

¹ The 2008 and 2009 editions of the EIP Digest, including the data files, are available at: http://www.oecd.org/document/31/0,3343,en_2649_44392116_41663647_1_1_1_1,00.html.

Box 1. Defining and measuring entrepreneurship

The OECD-Eurostat Entrepreneurship Indicators Programme has developed the following definitions and framework for measuring entrepreneurship.

- *Entrepreneurs* are 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.
- *Entrepreneurial activity* is 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.



Entrepreneurial performance

| Firms | Employment | Wealth creation |
|--------------------------------------|--|---|
| Employer enterprise birth rates | Share of high-growth firms (by employment) | Share of high-growth firms (by turnover) |
| Employer enterprise death rates | Share of gazelles (employment) | Share of gazelles (by turnover) |
| Business churn | Ownership rate start-ups | Value added, young or small firms |
| Net business population growth | Ownership rates business population | Productivity contribution, young or small firms |
| Survival rates at 3 and 5 years | Employment in 3 and 5 year old firms | Innovation performance, Young or small firms |
| Proportion of 3 and 5 year old firms | Average firm size after 3 and 5 years | Export performance, young or small firms |

Figure 1a. Employer enterprise birth and death rates in manufacturing¹
 As a percentage of the population of active enterprises with at least one employee
 (figures above the bar indicate change from previous year)

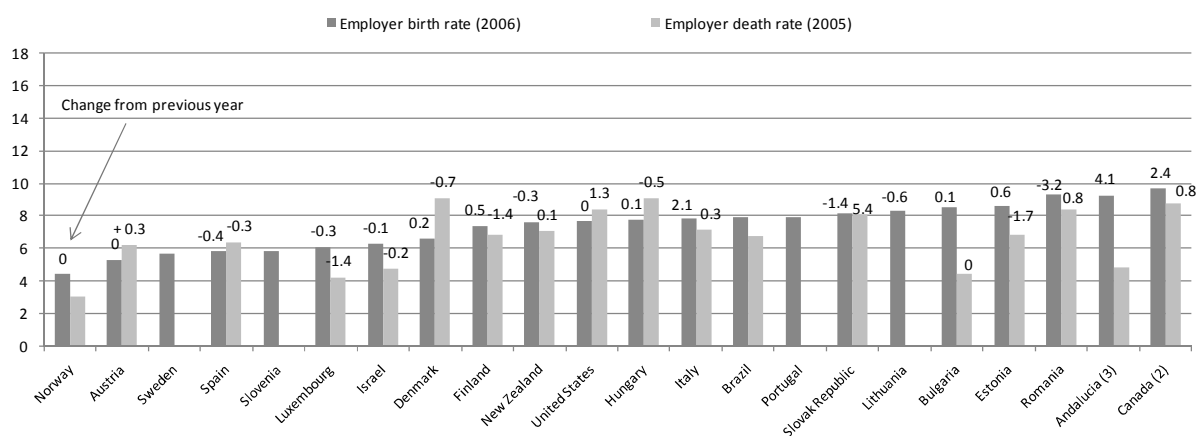
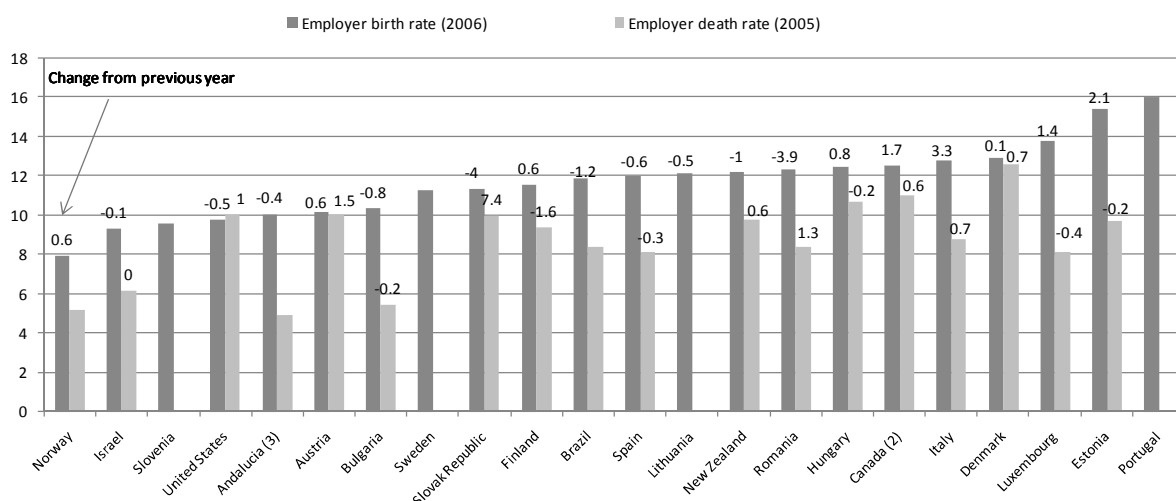


Figure 1.b. Employer enterprise birth and death rates in services¹
 As a percentage of the population of active enterprises with at least one employee
 (figures above the bar indicate change from previous year)



Note: 1. Wholesale and retail trade; Hotels and restaurants; Transport, storage and communications; Financial intermediation; Real estate, renting and business activities. 2. Employer enterprises with fewer than 250 employees. 3. Data are based on the Establishments & Business Frame of the Regional Statistical Institute of Andalucia (IEA). The data refer to establishments and enterprises with 4 or more persons engaged in an economic activity in Andalucia; they cover active enterprises with headquarters in Andalucia as well as active establishments with headquarters outside Andalucia. Birth (death) rates also include enterprises and establishment relocations within Spain to (from) Andalucia. Source: EIP Digest 2009, OECD.

The EIP programme of work

11. The current work on the Entrepreneurship Indicators Programme is aimed at achieving greater country coverage and extending the range of performance and determinant indicators. The main objectives include:

- *Country coverage*: Extend the coverage of performance indicators to more OECD members (in particular to large countries not yet participating in the programme such as Australia, France, Germany, Japan and United Kingdom), accession countries and enhanced engagement and other G20 countries. The countries/regions currently covered include: Austria, Brazil, Bulgaria, Canada, Denmark, Estonia, Finland, Hungary, Israel, Italy, Lithuania, Luxembourg, New Zealand, Norway, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, United States, and Andalucia (Spain). The EIP comprehensive framework of indicators is being studied as a reference model by UNCTAD for the development of entrepreneurship measures in emerging and developing countries. UNCTAD might start the collection of a reduced set of the EIP performance indicators in emerging and developing countries, adapted to the challenges of data collection in these countries.

- *New indicators of performance*: Develop specific indicators to respond to the demand of statistical and analytical support expressed by policy makers in the following areas:

| Indicators | Contributing to: |
|--|--|
| Women entrepreneurship | OECD Horizontal Project "Gender Equality in the Economy: Education, Employment and Entrepreneurship" |
| Green entrepreneurship | OECD Green Growth Strategy |
| Migrant entrepreneurs | OECD International Migration Division work on "Entrepreneurship and Employment creation of immigrants in OECD countries" |
| Ownership rate of start-ups and business population | OECD studies on globalisation |
| Value added, productivity contribution, innovation and job creation by young firms | Follow-up to the OECD Innovation Strategy OECD Employment Analysis |
| (improving measures of) High-growth firm rates | At the request of several members, sensitivity analysis to test different ways of calculating the share of gazelles |

- *Timely indicators of entrepreneurship*: Develop more "timely indicators" of entry and exit rates by using alternative national data series (e.g. chambers of commerce, business associations, bankruptcies). While the performance indicators produced by the EIP have a high degree of comparability as they are based on internationally harmonised definitions, their downside is that they typically are two- or three-years old. The collection of more timely indicators will complement the EIP indicators by using data based on national definitions only. When possible, adjustments will be made to get as close as possible to the EIP standard definitions (for example by removing agriculture and public companies, excluding inactive companies, etc.). The project involves an in-depth analysis of available data sources to understand the concepts underpinning the data and the differences with the EIP harmonised definitions.

- *Entrepreneurial determinants*: Improve the selection of indicators for each of the six determinant areas by identifying additional or alternative indicators from existing sources and developing new indicators when needed. In particular, work has been undertaken to enhance comparability of measures of access to finance, specifically equity capital. The work will review the OECD definition of venture capital currently used for harmonising venture capital data across countries; investigate the possibility of constructing indicators from information collected from invested firms as opposed to data collected from venture capital or business angels associations; and develop concepts and methodologies for the collection of data on business angels. The latter task will possibly be performed in association with the European Business Angels Network (EBAN) and other business

angels associations. A main output of these activities will be the construction of an OECD Entrepreneurship Financing Database.

- *Dissemination of results*: Improve the dissemination of the EIP findings among the research and policy community. This will notably involve the preparation of short analytical notes on specific findings, and a new flagship publication “*Entrepreneurship at A Glance*” to be published at the end of 2010 or in early 2011. Also, an *EIP Workshop on Entrepreneurial Determinants* will be organised by Eurostat in co-operation with the OECD in Luxembourg, on 2-3 December 2010. The Workshop will discuss two determinants, culture and entrepreneurial capabilities.

3. Business microdata

12. Business microdata-based indicators reflect the structure of the population of firms and its changes over time. Business microdata are needed to analyse particular categories of firms (for instance SMEs or multinationals), to investigate the trajectory of firms (high growth firms) or to connect different variables at the firm level (*e.g.* exports and productivity). The latter allows to describe the behaviour of firms (*e.g.* are exporting firms more productive than non-exporting ones?). Microdata-based analysis provides more insights than aggregate-level analysis when firms are heterogeneous with regard to the issue of interest. For instance, it has been shown that credit constraints affect firms to a different extent depending on their size during the economic crisis, or that the dynamics of lay-offs and hirings in the United States was different between small and large firms over the recent business cycle.

13. In the current phase of the business cycle and over the coming years, a number of questions of high policy interest will require microdata-based analysis and indicators, to the extent that they help understanding central aspects of macroeconomic performance (productivity, exports, job creation etc.). Examples include:

- Trade: was the intensive margin or the extensive margin the most hit by the trade collapse of 2008-09? (*i.e.* was there a reduction of the number of exporting firms or a reduction of the exports of all firms?)
- Factors of productivity growth, including innovation: how do they react to more adverse macroeconomic conditions?
- Factors of job creation, labour mobility (*e.g.* employer-employees matched data files): what are the obstacles for firms to create more jobs?
- Entrepreneurship and the renewal of industry: how do firm creation and expansion evolve over the cycle?
- The financing of firms: to what extent have various categories of firms been affected by the credit crunch? What has been the aggregate impact of differentiated treatment of firms by lending institutions?
- The dynamics of global value chains (GVCs): have there been disruption of GVCs, or instead is off-shoring, motivated by cost cuttings, enhanced by the economic crisis?

14. In view of the rich potential of microdata, a number of countries have set up data-warehouses, in which they match together cleaned versions of their most important business data files, at the level of firms, articulated around business registers. Two examples are the *General Business Panel Survey (GBPS)* of Statistics Canada and the *Integrated Longitudinal Business Database (ILBD)* of the United States Census Bureau. Although such integrated databases allow to do analysis at the national level, with extremely valuable results, they do not permit cross-country comparisons or to address issues which involve data from several countries (*e.g.* on global value chains).

15. In order to address these kinds of issues, namely comparative analysis and internationally integrated studies, what is needed is either to work directly on integrated, international data files or to use separate national microdata files in a similar way.

16. At the OECD, the first approach relies on the use of Orbis, a private database which currently includes data on 63 million firms world-wide. The OECD has acquired and installed this database, and has been using it for about one year. The major advantage is the direct access to the data, which allows processing in a harmonised way across countries and reduces the time and transaction costs for access. Another advantage is the availability of integrated data on multinational firms (*i.e.* their activities in various countries). The drawback of this database is the uneven coverage across countries and the large amount of missing data, as less than half of the firms overall have actual balance sheet and financial account data. The OECD is currently benchmarking the coverage of the Orbis database against national business registers. Eurostat is also using two private databases, Orbis and Dun & Bradstreet, in its EGR (European Groups Register) project. The coverage and quality of these databases seem to be improving over time. The Statistics Directorate has built an infrastructure which makes Orbis data available across the OECD in a relatively easy way and should trigger further uses in the future.

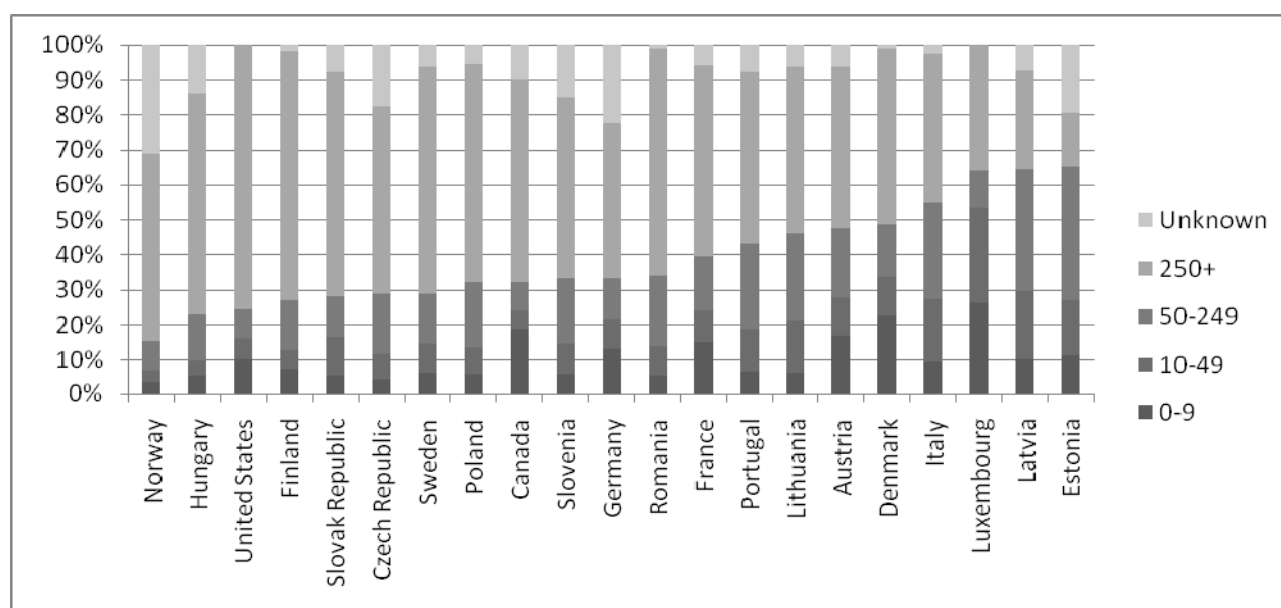
17. The other approach is coordinated international projects. It consists of applying a similar statistical framework to various national databases which remain separate. The framework is discussed and agreed among the research teams involved; each of them has exclusive access to its national database. The framework usually consists of a common definition of the target population, the variables to be used, the indicators to be compiled, and the regressions to be run. The advantages of this approach are that it makes use of high-quality data (official surveys and administrative data) and of variegated types of data (reflecting the richness of NSOs data sources). Its drawbacks are: a risk of limited comparability (the common framework cannot address the many sources of cross-country heterogeneity); the high coordination cost; and the often limited number of countries which participate (for reasons of resources, lack of skills, of policy interest, etc.).

18. Exercises of this type conducted by the OECD include projects on:

- Innovation surveys (by DSTI, in 2006-2009): similar indicators and regressions run on innovation surveys data files in about 20 countries (OECD 2009b);
- Innovation and competition (DSTI, in 2008-2009): estimate of the impact of competition on innovation with a similar indicator of competition (the “Boone index”) and the same regression model across 6 countries;
- Trade: the TEC (Trade by Enterprise Characteristics) project conducted by STD since 2005, in conjunction with Eurostat, consists of matching customs data files with business registers, so as to identify the structure of exporting and importing firms (see Figure 2). This approach was pioneered by Canada, see Armstrong (2009);
- Entrepreneurship: the EIP (Entrepreneurship Indicators Project), see section 2 above.

19. A major advantage of such projects is that they allow country comparisons. Once statistical sources of heterogeneity are controlled for, economic factors (institutions, policies) remain for explaining cross-country differences, which can be helpful for policy makers.

Figure 2. The structure of exports according to the size of exporting firms (from TEC) 2006, as a percentage of total value



20. Several NSOs are now engaged in programmes and activities aimed at:

i) Building business data warehouses (see above);

ii) Facilitating access to microdata (remote access, anonymised data etc.) while respecting confidentiality regulations. A meeting of the “International Working Group on Microdata Access”, which is led by Australia and gathers a group of interested NSOs, will take place at end of June 2010 at the OECD, with a view to exchanging experience and cooperating to develop common tools that could be used by NSOs to provide processing of microdata. This international working group was established in 2009 and undertook the following actions as preliminary steps toward the development of a microdata access service: work to standardise microdata terminology for publication in the international Statistics Disclosure Control Glossary; bringing forward of a commitment to use the international DDI (Data Documentation Initiative) metadata standard when describing microdata; designation of a standard citation style for microdata access interface considering both remote access and remote execution, benefits, risks and costs and a review of possible options for decision and action.

21. Positive developments for the implementation of high-quality, internationally-coordinated projects using microdata are expected from these activities; first, more and better data will now be available nationally; and second coordinated access will also be easier. The EIP and the TEC projects should benefit from developments in the future, as should other possible projects.

22. In this context, the OECD is willing to continue with the two approaches, the official/coordinated one and the private/integrated one, as each of them has its comparative advantages, which differ across research topics. Hence, depending on the issue, one approach or the other can be preferred. In addition, the OECD is conducting a comparison of private and official sources (number of firms, employment, production, by countries, size categories and industries), which will allow to bridge the two approaches. A better knowledge of the business data files (notably data warehouses) available in countries and of access conditions would be useful for that purpose.

23. Finally, the OECD is investigating the possibility of developing a coordinated exploitation of Labour Force Surveys (see Box 2). Such a project, making use of individual household data, is also

confronted with data access difficulties, of both legal (notably protection of privacy) and technical nature. The way currently explored by the OECD with participating countries is the creation of a remote access.

Box 2. Labour Force Statistics based on harmonised micro-data

Demands for harmonized micro-data are not limited to businesses but extends to households. The report of the Stiglitz-Sen-Fitoussi *Commission on the Measurement of Economic Performance* recommended looking at households (rather than at the economic system as a whole) to derive measures of well-being and progress; in that context, the report stressed the importance of giving prominence to how various economic variables are distributed across individuals with different characteristics, rather than looking only at the mean values typically considered by national accounts and other economic statistics.

One area where the need for household micro-data is especially salient is that of Labour Force Surveys. Despite the good degree of comparability in this field, comparative labour market analyses typically require tabulations based on specific criteria. Responding to demands for harmonised micro-data generates a significant workload for all national statistical offices. The OECD Statistics Directorate is currently exploring the feasibility of creating a remote access facility that could provide a technical solution to the handling of LFS micro-data without requiring the physical storage of the country micro-records in a single place.

The first phase of the project, (currently ongoing, and financed through voluntary contributions) seeks to appraise the feasibility of establishing a remote access facility to access and analyse Labour Force Survey micro-data in OECD countries. Building on the conclusions drawn from this feasibility study, the second stage could then focus on the concrete establishment of such a remote access facility (provided that adequate funding is secured, and that member countries are willing to co-operate with this endeavour).

Remote access to harmonised households micro-data is not new concept. Solutions such as the Luxembourg Income Study (for household income data) and IPUMS (for demographic statistics) provide examples. It is however new for LFS micro-data in general. The feasibility assessment relies on three pillars: statistical, legal, and technical.

Statistical: The goal is to create a common reading key for selected variables included in national datasets. Over the past few decades, much progress has been made in making the content of Labour Force Surveys more uniform across countries (due, in particular, to the existence of ILO guidelines and, for European countries, of the Eurostat framework). Despite this progress, however, several country-specific features remain. Developing a common reading key would be an *ex-post process*; in other words, countries will not be asked to provide tailored datasets or to alter their national questionnaires. The establishment of a harmonised environment for LFS micro-data would be performed by the OECD Secretariat. As part of the feasibility project, a questionnaire was sent to countries asking them to provide LFS codebooks and questionnaires. A preliminary analysis of country replies shows that LFS micro-data for a number of countries have a significant degree of homogeneity.

Legal: The OECD questionnaire also gathered information on the legal requirements (e.g. confidentiality) applied by each NSOs, as well as on their current policies in terms of dissemination of their LFS micro-data (e.g. public use files, licensed-use files, remote facilities, security level, etc). The results highlight the large heterogeneity of the requirements of various countries. This heterogeneity will shape the technical solution.

Technical: The technical solution is not exogenous to the legal requirements of each country, and should achieve a sufficient degree of flexibility to match them. It will involve several steps. Ideally, such technical solution would allow sending a single 'request' to each national NSOs in a common computer language (e.g. SAS, SPSS, etc) using the common reading key; this request would then be 'mapped' automatically into the variable codes used by each country, with various tools ensuring that the programme does not include commands that would invalidate confidentiality. National NSOs will then 'execute' the request on their LFS micro-data, ensure that results preserve confidentiality (using tools provided by the OECD), and return the results to the OECD. The proposal is that the OECD would host and manage this LFS hub, developing the required tools, without requiring the physical presence of the LFS micro-records at the OECD.

Completion of this project would provide labour market analysts (at the OECD and beyond) with the tool needed to interrogate OECD country's LFS micro-datasets; this would, in a sense, project LFS statistics into a new phase, making use of technical solutions that already exist. Such tool would provide users with the ability to undertake better comparative analysis, using a common nomenclature, in a secure environment and respecting the confidentiality rules of each national NSOs.

Questions to delegates:

- *Is your country engaged in building a business data warehouse? What is the current status of the project? If you are not conducting such a project, what are the reasons?*
- *Is your country investing in facilitating access to this data warehouse (or other business databases) to researchers? If not, for what reasons?*
- *What is your experience with private databases? Have you benchmarked such databases against official sources?*
- *Would your country be interested in participating in international microdata projects (such as the TEC, EIP etc.)? Would you support a better connection between these projects, so that more complete pictures of business dynamics and firms' behaviour could be drawn?*

REFERENCES

- Ahmad, N and A. Hoffman, 2008. A Framework for Addressing and Measuring Entrepreneurship: OECD Statistics Directorate Working Paper, STD/DOC(2008)2.
- Ahmad, N and R. Seymour, 2008. Defining Entrepreneurial Activity: Definitions Supporting Frameworks for Data Collection, OECD Statistics Directorate Working Paper, STD/DOC(2008)1.
- Armstrong Phillip "Policy applications of linked trade data- the Canadian experience using the exporter/importer register database", STD/SES/WPTGS(2009)17.
- Eurostat/OECD (2007), *Eurostat-OECD Manual on Business Demography Statistics*, OECD, Paris.
- OECD (2010), *Structural and Demographic Business Statistics 2009*, OECD, Paris.
- OECD (2009), *Measuring Entrepreneurship. A Collection of Indicators*, 2009 Edition, OECD, Paris.
- OECD (2009b), *Innovation in Firms*, OECD, Paris.
- OECD (2009b), "How to industry, firm, and job characteristics shape job and worker flows?", Chapter 2 in OECD Employment Outlook, 2009.