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SEMINAR ON STRATEGIC ISSUES IN BUSINESS STATISTICS

SESSION II: EMERGING AREAS, NEW DEVELOPMENTS AND USER NEEDS IN BUSINESS STATISTICS

MEASURING ENTREPRENEURSHIP THE OECD-EUROSTAT ENTREPRENEURSHIP INDICATOR PROGRAMME

Note by Eurostat and the Organisation for Economic Co-operation and Development

I. ABSTRACT

A. The challenge

- 1. In OECD and EU countries, officials working in the Business Statistics field are facing some particularly difficult challenges. Governments have embraced fact-based policymaking and have appealed to National Statistical Offices for the information they need. Yet governments are also attentive to the demands from business to reduce administrative burden, including those occasioned by statistical queries.
- 2. Entrepreneurship has been identified as a high priority and emerging policy area for governments throughout the world, especially during the current crisis. The rapid pace of economic restructuring and change means that business statistics must do a better job of describing the dynamics of business creation, development and growth. What are the factors that GE.09-

encourage or impede the desired outcomes? And how do the situations in different countries compare? It is not sufficient to examine any economy in isolation; data must be consistent and comparable across countries.

B. The response

- 3. The OECD-Eurostat Entrepreneurship Indicators Programme (EIP) is an attempt by national and international statisticians to respond to the challenge. In cooperation with statistical experts in NSOs and the policy analysts who will use the data, the EIP identified data requirements and set out to satisfy them, primarily using data from existing sources.
- 4. A number of countries were part of the pioneering effort to develop core concepts and prove that the data could be produced. The first publication of Entrepreneurship Indicators covered eighteen countries. There is now a clear need to go further with more extensive country coverage and additional indicators on the determinants of entrepreneurship. Eurostat and the OECD are moving ahead with the programme and invite all others to join.

II. INTRODUCTION

- 5. "Entrepreneurship" is receiving a lot of attention these days; perhaps more than ever before. Entrepreneurship has long been discussed within the research community but serious attention from policy analysts and policymakers has been more recent. The current economic crisis has heightened interest in the topic as entrepreneurial activity is seen as an essential element of revitalisation plans throughout the world.
- 6. But sound economic policies must be based on relevant and consistent data. Most entrepreneurship research relied on ad hoc data compilations developed to support a single project and virtually no "official" statistics on the subject existed. Furthermore, the growing demand for information about the activities and experiences of young, and often small, firms came at a time when governments were making serious efforts to reduce the burden on businesses, especially small ones.
- 7. The OECD-Eurostat Entrepreneurship Indicators Programme is the first attempt to collect, compare and analyse official, international data on entrepreneurship and its determinants. To meet the challenge of providing new Entrepreneurship Indicators, while minimising burden on business, the OECD and Eurostat focussed attention on exploiting existing sources of data.
- 8. This paper discusses the first round results of the OECD-Eurostat Entrepreneurship Programme, presenting internationally comparable evidence for 18 countries. Objectives and methodologies of the programme are discussed, in response to governments' needs for empirical evidence to guide the formulation and evaluation of entrepreneurship policies. The paper is based on the publication 'Measuring entrepreneurship, a digest of indicators' that was published in November 2008 by the OECD. There was a similar publication by Eurostat (2008a): 'Business demography in Europe: employers and job creation.'

III. THE IMPORTANCE OF ENTREPRENEURSHIP IN GOVERNMENT POLICY

- 9. Entrepreneurship is increasingly recognised as an important driver of economic growth, productivity, innovation and employment, and it is widely accepted as a key aspect of economic dynamism; the birth and death of firms and their growth and downsizing. As firms enter and exit the market, theory suggests that the new arrivals will be more efficient than those they displace. Existing firms that are not driven out are forced to innovate and become more productive in order to compete. Numerous studies have offered empirical support for this process of "creative destruction" first described by Joseph Schumpeter.
- 10. However, while academic studies have long recognised the importance of entrepreneurship, policy makers have only recently explicitly discovered it. Indeed, entrepreneurship was long considered an exogenous factor in government policies, and policy efforts were often directed simply towards the large population of very small firms rather than aimed at stimulating entrepreneurs to introduce new products, processes or organisational forms in order to exploit new markets and grow.
- 11. However, many OECD countries have now made entrepreneurship an explicit priority and policies seek to affect the rate and type of entrepreneurship, rather than simply create or sustain SMEs. As globalisation reshapes the international economic landscape and technological change creates both uncertainty and opportunity in the world economy, governments are turning to entrepreneurial dynamism to help to meet the new economic, social and environmental challenges and kick-start a prolonged recovery.
- 12. Governments increasingly consider entrepreneurship and innovation to be the cornerstones of a competitive national economy, and in most countries entrepreneurship policies are in fact closely connected to innovation policies, with which they share many characteristics and challenges. Both are associated with "doing something new" and, designed correctly, they can be mutually reinforcing. The dynamic process of new firm creation introduces and disperses innovative products, processes and organisational structures throughout the economy.
- 13. Entrepreneurship objectives and policies nevertheless differ considerably among countries, owing to different policy needs and diverse perspectives on what is meant by entrepreneurship. In some countries, entrepreneurship is linked to regional development, and firm creation and growth are stimulated in order to boost employment and output in depressed regions. In others, entrepreneurship is an element of strategies designed to facilitate the economic participation of certain target groups, such as women or minorities.

IV. THE NEED FOR ENTREPRENEURSHIP DATA

14. Despite the increasing importance of entrepreneurship and associated policies, measurement of the phenomenon, particularly at the international level, has long been deficient. There had been numerous ad hoc initiatives at local, regional or national levels, and even a few at the international level, but consistent, comparable data were scarce. Moreover few, if any, National Statistics Offices recognised the concept of entrepreneurship and no international forums existed to permit agreement on definitions or measures.

- 15. The OECD itself had addressed entrepreneurship through various analytical studies and reports, but no systematic effort had been made to establish an ongoing database devoted to comparing entrepreneurship across OECD countries. In 2004, the 2nd OECD Ministerial Conference on SMEs and Entrepreneurship in Istanbul concluded that the statistical base for entrepreneurship research was weak and urged the OECD to develop "a robust and comparable statistical base on which policy can be developed".
- 16. The rationale for developing entrepreneurship indicators is to help policy makers to understand how the policies they create or adjust will affect entrepreneurship and, eventually, higher-level objectives for the economy and society. In order for countries to benefit from the experience of others, it is also essential that the indicators allow for comparisons across countries and over time.
- 17. But it is not sufficient to measure how much entrepreneurship takes place. Countries need to understand the determinants of and obstacles to entrepreneurship, and they need to analyse the effectiveness of different policy approaches. The lack of internationally-comparable empirical evidence has constrained serious research and many questions remain unanswered. Ultimately, policy making must be guided, as far as possible, by evidence and facts.

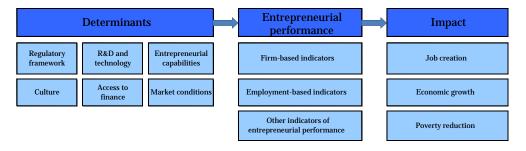
V. THE ENTREPRENEURSHIP INDICATORS PROGRAMME

- 18. The OECD began the Entrepreneurship Indicators Programme (EIP) in 2006 in order to build internationally comparable data on entrepreneurship and its determinants, in cooperation with National Statistical Offices (NSOs). In 2007, Eurostat's official involvement launched the joint OECD-Eurostat EIP, and work began on defining core indicators as the basis for the collection of empirical data.
- 19. Since entrepreneurship is a multifaceted concept that manifests itself in many different ways, no single definition has been generally agreed upon. Furthermore, many definitions have an essentially theoretical basis and are not concerned with measurement. Another strand of research has largely bypassed the question of definition by "defining" entrepreneurship in terms of a specific empirical measure, such as self-employment or the number of small firms. Not surprisingly, these are measures that are readily available.
- 20. The OECD-Eurostat approach has built upon the conceptual definitions of entrepreneurship but with a view to the empirical measures relevant for policy interests. Drawing on the theoretical contributions of Richard Cantillon, Adam Smith, Jean Baptiste Say, Alfred Marshall, Joseph Schumpeter, Israel Kirzner and Frank Knight, among others, the following definitions were established:
- (a) 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;

¹ The initiative and support of the Kauffman Foundation and a consortium of OECD countries were instrumental in convincing the OECD of the requirement and feasibility of such an international programme of indicators.

- (b) 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;
 - (c) Entrepreneurship is the phenomenon associated with entrepreneurial activity.
- 21. Inspired by a number of previous scholarly and policy-oriented studies, a simple, three-stage entrepreneurship model was proposed as the first component of a framework for empirical indicators that are both relevant and feasible. The first stage of this model (Figure 1) comprises various determinants which policy can affect and which in turn influence entrepreneurial performance, or the amount and type of entrepreneurship that takes place. The final stage is the impact of entrepreneurship on higher-level goals such as economic growth, job creation or poverty reduction. While the entrepreneurship framework is presented here in a linear fashion, it was explicitly recognised that there are complex relationships among the different main components and subcomponents.

Figure 1 **Topic categories for entrepreneurship indicators**



- 22. Within each of the three main stages of this model, several sub-categories are identified to flesh out the overall framework and guide the selection of indicators. Given the multi-faceted nature of entrepreneurship, the EIP does not propose any single measure as the key to understanding and comparing the amount and type of entrepreneurship that takes place across countries. It is very important for policy analysts to be able to understand and distinguish different types of entrepreneurial performance.
- 23. The goal of the EIP is to establish a framework of relevant indicators as well as a core list of indicators with standard definitions, methodologies and classifications. The Steering Group that developed the metadata comprised policy analysts and, importantly, the responsible data experts from NSOs. This approach assured relevance and also feasibility. The core entrepreneurship indicators selected were either available or potentially available, from existing data sources.

VI. THE FIRST ROUND RESULTS OF THE ENTREPRENEURSHIP INDICATORS PROGRAMME

24. In the first stage, data collection has focused mainly on indicators of entrepreneurial performance in terms of firms, employment, turnover, growth, value added and exports. The focus of the EIP is very much on the employer enterprises, i.e. enterprises with at least one

employee. This measure has two major advantages. First, it improves comparability across countries since the thresholds for entry of firms into business registers, which are typically the source of many of the Entrepreneurship Indicators, differ. Second, firms with employees and growth objectives are often the target of entrepreneurship policies.

- 25. Core indicators measure firm creation; survival; exit; and, ratios of high-growth and gazelle (young, high-growth) firms. The measures are viewed in terms of both employment and turnover impacts. One might view these indicators as reflecting the evolution of entrepreneurship on a scale of economic importance: high-growth firms require the creation of a firm, typically with employees.
- 26. The initial findings cover 15 European countries, the US, Canada and New Zealand. The empirical evidence shows the difference in countries' entrepreneurial regimes and hence calls for a differentiated analysis controlling for differences between countries, industries and enterprises.

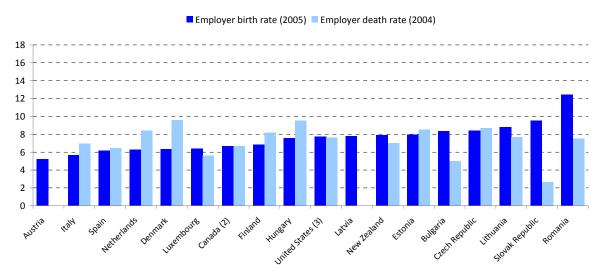
A. Firm birth, death and survival

- 27. Employer enterprise birth and death rates express the number of births and deaths of employer enterprises, respectively, as a percentage of the population of active enterprises with at least one employee. Figures 2 and 3 show that overall birth rates are fairly similar across countries. A surprising observation may be the lower birth rate in the United States than in Europe, as it has generally been assumed that firm creation is especially high in the United States. High birth rates are observed in Eastern European countries (Romania, Estonia, Lithuania and the Slovak Republic). This may be related to the strong growth of these economies and the corresponding economic restructuring in recent years after accession to the EU.
- 28. Distinguishing between industries, it is observed that birth rates in the services sector are higher than in the manufacturing industry. This observation is valid for all countries; on average, birth rates in the services sector are 4 to 5% higher than in manufacturing. The more dynamic character of services is also demonstrated in its higher death rates relative to manufacturing. But in contrast with birth rates, larger differences in death rates seem to exist across countries.

Figure 2

Employer enterprise birth and death rates in manufacturing¹

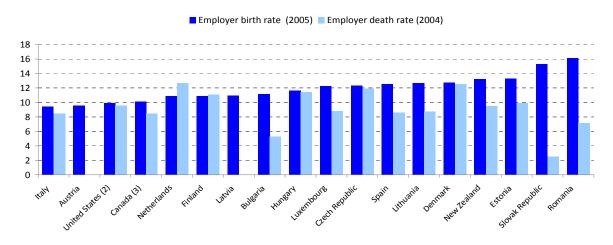
As a percentage of the population of active enterprises with at least one employee



- 1. Mining and quarrying; Manufacturing; Electricity, gas and water.
- 2. Employer enterprises with fewer than 250 employees.
- 3. 2004 for birth rate.

Figure 3

Employer enterprise birth and death rates in services¹
As a percentage of the population of active enterprises with at least one employee



- 1. Wholesale and retail trade; Hotels and restaurants; Transport, storage and communications; Financial intermediation; Real estate, renting and business activities.
- 2. 2004 for birth rate.
- 3. Employer enterprises with fewer than 250 employees
- 29. On average, birth rates in the services sector are higher than death rates, resulting in a net creation of employer firms. The picture seems to be more mixed for the manufacturing industry; in some countries death rates are higher than birth rates. In East European countries birth rates

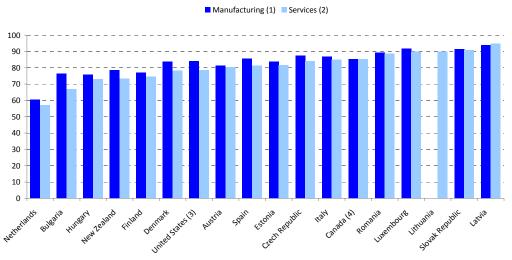
are much higher than death rates, suggesting an important Schumpeterian process of structural change.

30. The one-year survival rate shows that a significant number of the newly born employer firms had already exited in the following year (figure 4). In the Netherlands, for example, 40% of new firms disappeared during the first year after birth. In other countries, the death rate seems lower; with one-year survival rate varying between 75 and 90%. Survival rates seem to be slightly higher in manufacturing, which may be due to the typically higher entry (and exit) costs. The lower entry and exit costs in the services sector allow more readily for trial and error (e.g. active and passive learning, experimentation).

Figure 4

One-year survival rate, 2005

As a percentage of the 2004 population of employer enterprise births



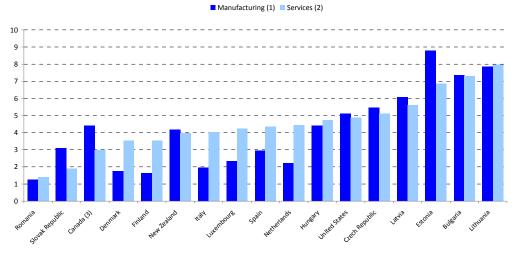
- 1. Mining and quarrying; Manufacturing; Electricity, gas and water (ISIC Rev.3 10-41).
- 2. Wholesale and retail trade; Hotels and restaurants; Transport, storage and communications; Financial intermediation; Real estate, renting and business activities (ISIC Rev.3 50-74).
- 3. Two-year survival rate.
- 4. Employer enterprises with fewer than 250 employees.

B. High growth firms and gazelles

31. The growth trajectories of new enterprises are now receiving more attention in EU and OECD countries since high birth rates do not always result in higher growth at the aggregate level (e.g. Denmark). Previous research has shown that a large share of newly born enterprises experience major difficulties for attaining higher levels of growth after their first years of establishment. High-growth enterprises as measured by employment (or by turnover) are all enterprises with average annualised growth in employees (or in turnover) greater than 20% a year, over a three-year period, and with ten or more employees at the beginning of the observation period.

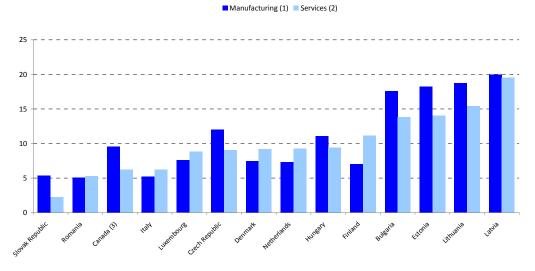
32. Enterprises appear to grow faster in terms of turnover than of employment, as witnessed by the significantly higher shares of high-growth enterprises for which high growth is defined in terms of turnover. The share of high-growth enterprises whose high growth is defined in terms of turnover averages around 10% across countries, while the share of high-growth enterprises defined in terms of employment is below 5% except in Latvia, Bulgaria and the Czech Republic (Figures 5 and 6).

Figure 5
Share of high-growth enterprises (employment definition), 2005
As a percentage of all enterprises with ten employees or more



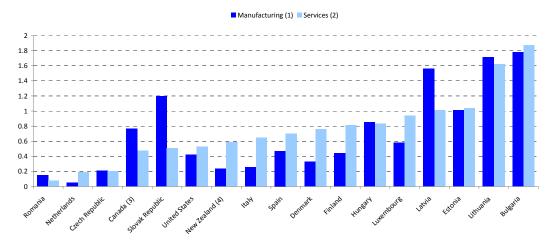
- 1. Mining and quarrying; Manufacturing; Electricity, gas and water (ISIC Rev.3 10-41).
- 2. Wholesale and retail trade; Hotels and restaurants; Transport, storage and communications; Financial intermediation; Real estate, renting and business activities (ISIC Rev.3 50-74).
- 3. Employer enterprises with fewer than 250 employees.

Figure 6
Share of high-growth enterprises (turnover definition), 2005
As a percentage of all enterprises with ten employees or more



- 1. Mining and quarrying; Manufacturing; Electricity, gas and water (ISIC Rev.3 10-41).
- 2. Wholesale and retail trade; Hotels and restaurants; Transport, storage and communications; Financial intermediation; Real estate, renting and business activities (ISIC Rev.3 50-74).
- 3. Employer enterprises with fewer than 250 employees.
- 33. Another observation is that high growth in manufacturing industries manifests itself more in higher turnover than in more jobs. In the services sector as well, high growth is revealed more in turnover than in employment but the differences are much smaller.
- 34. In line with results for birth and death rates, high growth rates are strong in most of Eastern Europe. Strong growth and economic restructuring have provided fertile ground for dynamic entrepreneurial activity in these countries. In Romania, however, the very low shares of high-growth enterprises contrast with the country's very high birth rates. This suggests that many new enterprises are created but do not necessarily grow strongly afterwards (or stay below the ten employees threshold).
- 35. The number of young high-growth firms (gazelles) is quite small, an observation that is valid for all countries (Figures 7 and 8). Gazelle enterprises are a subset of high-growth enterprises; they are the high-growth enterprises born five years or less before the end of the three-year observation period. Except for Latvia, Lithuania and Bulgaria, the share of gazelles is less than 1% in manufacturing and services when high growth is measured in terms of employment and less than 2% when measured in terms of turnover.

Figure 7 **Share of gazelles (employment definition), 2005**As a percentage of all enterprises with ten employees or more

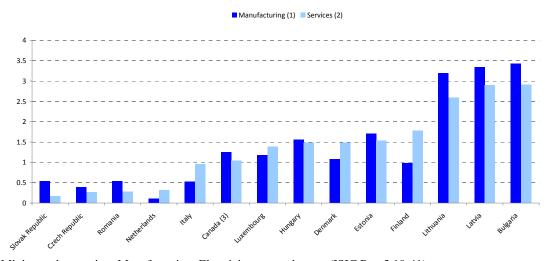


- 1. Mining and quarrying; Manufacturing; Electricity, gas and water (ISIC Rev.3 10-41).
- 2. Wholesale and retail trade; Hotels and restaurants; Transport, storage and communications; Financial intermediation; Real estate, renting and business activities (ISIC Rev.3 50-74).
- 3. 2006. Employer enterprises with fewer than 250 employees.
- 4. 2007.

Figure 8

Share of gazelles (turnover definition), 2005

As a percentage of all enterprises with ten employees or more



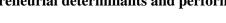
- 1. Mining and quarrying; Manufacturing; Electricity, gas and water (ISIC Rev.3 10-41).
- 2. Wholesale and retail trade; Hotels and restaurants; Transport, storage and communications; Financial intermediation; Real estate, renting and business activities (ISIC Rev.3 50-74).
- 3. 2006. Employer enterprises with fewer than 250 employees.
- 36. On average, the group of gazelles represents some 15 to 20% of the larger group of high-growth enterprises. The lower importance of gazelles (especially in terms of employment) may cast some doubt on assertions that gazelles are responsible for the majority of job creation in

various countries. More detailed analysis is however needed to identify the contributions of high-growth enterprises in general and gazelles in particular to aggregate employment growth in national economies. It should be noted that the indicators presented show only the importance of gazelles in the number of enterprises.

C. Determinants and impacts of entrepreneurship

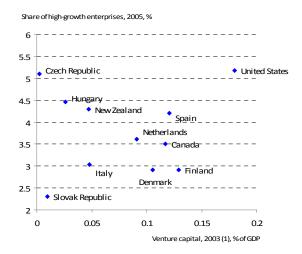
- 37. Correlating indicators of entrepreneurial determinants and performance across countries can offer initial confirmation of the theoretical insights developed in the conceptual framework. However, identifying the empirical relationships between determinants and performance is complex and calls for a more detailed analysis. Entrepreneurial determinants do not operate in isolation with respect to entrepreneurial performance. Among others, the following considerations should be taken into account:
 - (a) Determinants may only have an indirect effect on entrepreneurial performance;
 - (b) Empirical indicators only measure part of the theoretical determinants;
 - (c) It takes time for the effects to materialise;
- (d) Some determinants may only be relevant once an enterprise reaches a certain size threshold;
 - (d) The impact of determinants may differ between industries; and
- (f) Other forces may play a more important role then the identified determinants (e.g. the strong economic expansion in East European countries).
- 38. The scatter plots of Figure 9 offer an initial exploration of determinant and performance relationships. The left plot suggest that administrative burden discourages enterprise birth, although the relationship is not consistent across countries. This confirms previous findings that administrative burden is only one determining factor. The right plot suggests that a positive relation seems to exist between venture capital investments and high-growth enterprises. However, the results for the Czech Republic and Hungary differ, thus suggesting the existence of different entrepreneurial regimes between countries.

Figure 9 **Entrepreneurial determinants and performance**



Regulatory framework

Access to finance



1. 2004 for the United States

0.5

0

2. Source: OECD Indicators of Product Market Regulation (PMR)

2

2.5

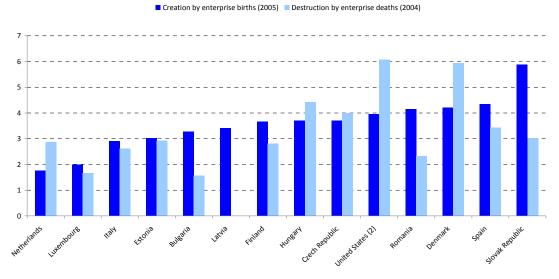
Administrative burden for start-ups 2003 (2)

3

- 1. 2006 for New Zealand
- 39. The birth of new enterprises and the death of existing enterprises contribute directly to the aggregate growth of employment and productivity. Previous research has shown that productivity growth in the United States has been significantly influenced by firm entry and exit. The contribution of the birth and death of enterprises to employment appears to be equally important on average, i.e. the employment created by new firms is more or less neutralised by the employment destroyed by exiting firms. Nevertheless, important differences exist among countries: in the Slovak Republic, Spain and Romania there is a clear net creation of employment as the result of the birth and death of enterprises, while in the Netherlands. Denmark and the United States there is a net destruction of employment (Figure 10).
- 40. The birth and death of enterprises may also affect aggregate productivity growth: correlating the churn rate (i.e. the sum of birth and death rates) with labour productivity growth across countries seems to point to a positive relationship (Figure 11). Theory explains this by the higher productivity of entering firms (relative to that of exiting firms). Moreover, greater competition owing to more efficient and more productive new firms may stimulate existing firms to increase their productivity through R&D investments and innovation. However, this simple correlation does not show any causality, and more detailed research is needed to disentangle the individual effects of enterprise births and deaths on productivity growth.

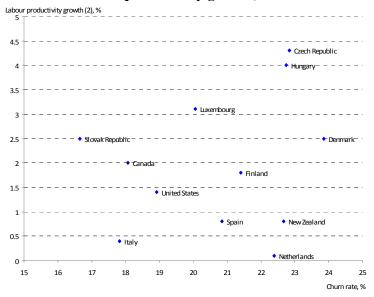
Figure 10 **Employment creation and destruction**¹

As a percentage of the total number of persons employed in the enterprise population



- 1. Market economy (ISIC Rev.3 10-74).
- 2. 2004 birth rate for the United States

Figure 11 Churn rate and labour productivity growth, 2005



- 1. Total economy.
- 2. Source: OECD Productivity database

VII. FUTURE DIRECTIONS OF WORK WITHIN THE EUROSTAT ENTREPRENEURSHIP INDICATORS

- 41. The scope of the first phase of the OECD-Eurostat Entrepreneurship Indicators Programme, which began in 2006, was limited in two respects, namely, the number of countries and the range of indicators covered. Those countries that were interested and able to participate in the development of common definitions and empirical indicators formed the nucleus of the first round country group. In terms of indicators, the focus of the first round was exclusively on indicators of entrepreneurial performance.
- 42. Publication of the first set of indicators in November 2008 served as a proof of concept and efforts are now focussed on extending both country and indicator coverage. Eurostat and EU Member States have recognised the value of Entrepreneurship Indicators and have embarked on extensions to the legal framework for Business Demography data (see Box) that would ensure core Entrepreneurship Indicators for all EU countries. Outside Europe, the OECD is actively working with member and nonmember countries to facilitate development of the necessary data.
- 43. In terms of indicators, the international Steering Group that guides the EIP is developing the standard concepts and methodologies for collection of indicators on entrepreneurial determinants and impacts (Figure 1).
- 44. To further our understanding of entrepreneurship, and ensure relevance of Entrepreneurship Indicators, analysis of interrelationships between different indicators will be carried out, using

A Legal Framework for Entrepreneurship Indicators

As Eurostat and the EU Member States have recognised the relevance of Entrepreneurship Indicators, efforts have been made not only to collect experimental data, but also to provide a legal framework for the ongoing data collection.

Annex IX of the new Parliament and Council Regulation no. 295/2008 on SBS ("SBS recast") already provides a legal basis for annual business demography data. However, the law proscribes coverage of the entire enterprise population without any size threshold. But, data on employer enterprises and high-growth enterprises have emerged as important elements for measuring entrepreneurship and most Member States have already conducted two successful voluntary data collections.

To ensure stability and consistency, Eurostat has started the discussion with EU Member States about a legal basis to cover employer business demography from reference year 2008 onwards. Conceptual and methodological work on highgrowth enterprises is ongoing and a further extension to cover these concepts may be considered at a later date.

different information sources. Linked, firm-level data will help to explain relationships between entrepreneurial determinants and performance. For example, do more innovative entrepreneurs grow faster or more strongly than non-innovative entrepreneurs in terms of employment or turnover? Do firms that receive venture capital show different growth patterns? Likewise, relations between entrepreneurial performance and entrepreneurial impacts could be tested. What is the contribution of firm births, firm deaths and gazelles to employment and productivity growth?

- 45. Additionally, repeated publication of the indicators over time will allow for longitudinal analyses of entrepreneurship by studying, for example, the performance and survival of specific cohorts of newly created firms over time.
- 46. Results of this additional collection and analysis of data will be presented in different publications. The Entrepreneurship Compendium will contain the most recent information on entrepreneurship indicators across the participating countries. It will also present the first results of more detailed analyses to show interdependencies between the different indicators. Another important future output will be the Entrepreneurship Measurement Manual, describing all the target indicators of the Entrepreneurship Indicators Programme along with the specific definitions, methodologies and data requirements that have been identified.

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