



# A Framework for Addressing and Measuring Entrepreneurship

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## **1. Background**

The recognition that entrepreneurship and entrepreneurs are important drivers of economic growth, employment, innovation and productivity has been long understood by analysts and economic theoreticians. Indeed, it dates back centuries if one considers the work of Cantillon, the first academic to explicitly attempt to define, and describe the role of, entrepreneurs. It was however not until the 1990s that the term “entrepreneurship” became a buzzword both in the media and in political debate. Newspapers were full of success stories about self-made billionaires and politicians wanted to support and encourage their endeavours more widely.

This recognition has accelerated since the mid-1990s, with policy makers in many countries and international organisations beginning to explicitly recognise the importance of entrepreneurship and making general statements about their commitment to increasing entrepreneurship or, at least, to improving the entrepreneurial environment (Lundström and Stevenson, 2005, Hart, 2003; OECD, 2007a), by developing policies to improve the entrepreneurial environment, whether by removing obstacles or via more direct targeted actions such as subsidies for example.

However, the pursuit and development of these policies, namely the factors that affect and benefits of, entrepreneurship, are still hampered by the limited, albeit growing, empirical information relating to these factors and benefits. Where there are policy references to entrepreneurship, most simply equate it with small and medium sized enterprises (SMEs) in general, or even numbers of self-employed (Hoffmann, 2007). Neither of which fully captures the totality of entrepreneurship, as we show later.

This, in part, reflects the greater availability of statistics on SMEs and the self-employed but it also reflects the general ambiguity relating to entrepreneurship. What compounds this ambiguity is the need for policy makers, particularly those in Europe, to be able to make international comparisons of entrepreneurship. In the absence of definitions that capture the essence of entrepreneurship therefore, and entrepreneurship indicators that are internationally comparable, policy makers are left somewhat rudderless when it comes to developing policies, particularly when they relate to learning from international best-practice.

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However, that said, even in the absence of an internationally accepted and comparable definition of entrepreneurship, the situation regarding the availability of indicators has begun to improve in recent years.

Many countries now recognise entrepreneurship policy as a separate discipline and, as a consequence, have taken steps to improve the measurement of entrepreneurship at the national level. At an international level, programs by the World Bank, Eurostat and private organisations such as the Global Entrepreneurship Monitor, have also started to develop internationally comparable data. But it is fair to say that very few, probably none, of these efforts capture or embody entrepreneurship, neither conceptually, nor empirically, in a comprehensive manner, and, in fairness, none explicitly claim to, since all recognise that entrepreneurship is a multi-faceted phenomenon of which they measure one or some aspects. Moreover, it is important to note that developments at the national level rarely provide for international comparability.

## ***2. The Entrepreneurship Measurement Framework***

These shortcomings and the growing importance of entrepreneurship in the policy domain have magnified the need for a sounder basis for internationally comparable indicators of entrepreneurship and, indeed, for an internationally accepted measure of entrepreneurship that facilitates and forms the basis of these measures. But the measures, and so the framework, need to be able to provide information not only on how many entrepreneurs there are or the level of entrepreneurship, say, but they also need to be able to provide information on indicators that determine these levels, and, ideally, an indication of the impact that these levels have in meeting specific policy targets; since creating a more entrepreneurial economy or more entrepreneurs say, is merely a means to some bigger end, and not the end in and of itself.

Given its experience in international data development, many countries and groups turned to the OECD for assistance and guidance in developing such a framework by capitalising on its international networks of statisticians, analysts and policy makers. The OECD 2004 Istanbul Ministerial Conference on SMEs and Entrepreneurship made strong and explicit recommendations on the needs for, and development of, more comprehensive and comparable data. In 2005/06, the Kauffman Foundation of the United States approached the OECD to undertake a Scoping Study to determine the feasibility of developing high quality, comparable international data on entrepreneurship and its determinants. In addition, ICE, a Danish-led international consortium, has also provided funding for various specific data development projects.

These initiatives and requests led the OECD to create an Entrepreneurship Indicators Programme (EIP)<sup>3</sup> that has been at the vanguard of investigations and developments that seek to improve our current understanding and measurement of entrepreneurship. The work of the EIP continues but the cornerstone of its activities is the development of the framework presented in this paper and indeed the ability to marshal and motivate resources from across

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<sup>3</sup> For more information on the EIP including feasibility studies and meetings that have been instrumental in the development of the framework, see [www.oecd.org/statistics/entrepreneurshipindicators](http://www.oecd.org/statistics/entrepreneurshipindicators) .

statistical institutions, ministries and research institutes, as well as within the OECD, to engage in the framework's crystallisation.

Clearly, the development of such a framework is a formidable challenge. Entrepreneurship is after all a phenomenon that manifests itself throughout the economy in many different forms with many different outcomes, and these outcomes are not always related to the creation of financial wealth, for example they may be related to increasing employment, tackling inequalities, or indeed, increasingly, environmental issues.

The challenge therefore is to develop a framework that provides the means to tackle these diverse outcomes and manifestations whilst at the same time remaining focused on the measurement of entrepreneurship. Key to this is, is a definition that captures the essence of entrepreneurship, one that is able to encompass these diverse issues, whilst at the same time remaining focused and most importantly measurable.

The OECD definition (OECD, 2007b) is described below. Its focus is deliberately to target business related entrepreneurship, and, so, explicitly ignores social entrepreneurship. That is not to undermine the importance of social entrepreneurship<sup>4</sup>, merely to say that the definition sets out to capture a particular aspect of entrepreneurship related specifically to businesses, since the interests of the OECD and the bodies that have been participating and supporting the OECD in this work are in this domain.

The definition considers three components: Entrepreneurs, Entrepreneurial Activity and Entrepreneurship.

- *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.*
- *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.*

More information on the rationale for the definitions can be found in the paper cited above but for the current paper, it is sufficient and instructive to mention a few points.

- The first relates to an important distinction between Entrepreneurs and Entrepreneurial Activity. Where there are entrepreneurs, there will always be entrepreneurial activity but it is important to note that the latter is not dependent on the existence of the former. This is important because the OECD definition recognises that individuals within businesses may demonstrate entrepreneurship without necessarily having a stake in the company. This means that all companies, even those without an entrepreneur at their helm, can be entrepreneurial. Companies owned by shareholders or trust funds for example and managed/run by salaried directors can still be entrepreneurial and the way they operate their businesses in identifying and

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<sup>4</sup> Indeed the measurement of social entrepreneurship brings many new conceptual and practical difficulties to the table, chief amongst these being data availability, which is much scarcer than data relating to businesses.

exploiting new products, processes or markets can be of benefit to other businesses owned and managed by entrepreneurs.

- The second point, which follows from the first, is that entrepreneurs and entrepreneurship are not concepts that relate exclusively to small businesses or the self-employed, as many studies, through expedience, have often assumed. The OECD view is that entrepreneurship as a definable phenomenon reflects certain characteristics that relate to the processes through which it is manifested, namely, the creation of value through the identification and exploitation of new products, processes, and markets and this is not uniquely the preserve of small companies or entrepreneurs, important though these are to the entrepreneurial process. Moreover, it is important to avoid a definition that is possibly counter-productive from a policy perspective. Clearly, large companies can be entrepreneurial and it is important that these companies are not ignored when formulating entrepreneurship policies.
- The third ties entrepreneurship very closely to the idea that there is something different about entrepreneurial businesses that sets them apart from other businesses; namely they're in the business of doing something new, whether that be by creating/identifying new processes, products or markets. Not all businesses are entrepreneurial, indeed not even all new businesses are necessarily entrepreneurial (which has important consequences for the framework and supporting indicators we develop below and how they should be interpreted).
- The fourth hinges very much on the 'seeking'. Many studies of entrepreneurship investigate and focus only on those entrepreneurs or entrepreneurial businesses that succeed. Failure is a very important part of the entrepreneurial process and much can be learned from understanding it. Entrepreneurs who failed were still entrepreneurial and, indeed, entrepreneurs.
- The final point concerns 'value'. Policy makers are interested in facilitating or encouraging the growth of entrepreneurship because it is recognised as a force for good. How this 'good' is achieved, indeed, determining what is 'good' is the role of the policy maker. These 'goods' or objectives are about creating value in one domain or another, and, as noted above, these can be very diverse. Therefore, 'value' covers both monetary and non-monetary returns. These values are, naturally, identified as objectives or targets by policy makers, who will then develop policies designed to achieve these targets although clearly they are carried out by entrepreneurs and entrepreneurial firms. Some countries for example will focus on entrepreneurship's contribution to economic growth. Other countries however might focus on entrepreneurship's contribution to solving environmental problems or its contribution to social inclusion.

Given the diversity of outcomes and manifestations, it stands to reason that no single indicator can ever adequately cover entrepreneurship, especially given the different objectives. Indeed the same holds true for the number of entrepreneurs. True, one could arrive at a single indicator reflecting the numbers of persons that satisfy the necessary criteria, in the same way, for example, that one can provide an indicator describing the number of innovative firms, but this single indicator will not be able to reveal the full picture. Some of these entrepreneurs, for

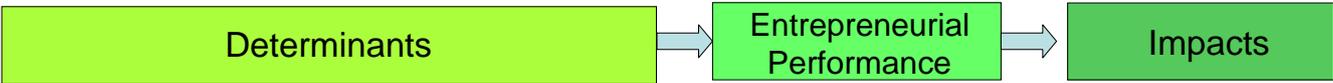
example, will have limited growth potential, (reflecting the value embodied in their idea, or their own attributes/experiences and motivation, for example push versus pull entrepreneurs). Others, for example, will have enormous growth potential that can be measured both ex ante and ex poste.

One could argue that one could measure entrepreneurship ex poste, in much the same way that one can measure GDP ex poste but this is too simplistic and overlooks the fact that the outcomes, or impacts, of entrepreneurship can manifest themselves in different ways that are not additive, for example, job creation and (GDP) related value-added. As such, it is obvious that the framework needs to be the vehicle that provides policy makers with the tools (in this case, indicators) needed to tackle whichever entrepreneurship related objective they determine. This reflects not only the measurement of any particular target indicator, for example, the number of firms producing new products, but also the factors that determine or influence these target measures.

The framework (Figure 1) therefore identifies three separate but inter-connected flows, all of which are important in the formulation, assessment and appraisal of policy measures: ‘*determinants*’, ‘*entrepreneurial performance*’, and ‘*impact*’, where: ‘*determinants*’ reflects the key factors that affect ‘*entrepreneurial performance*’; ‘*entrepreneurial performance*’ reflects the target indicators that policy makers believe have an impact on some or many ultimate objectives (*impacts*). Each of these is described in more detail below.

For simplicity however, and to assist interpretation, the basic idea behind the Conceptual Framework can be illustrated by means of an analogy. Passengers want to get from A to B by time t (reflecting the policy objective, *Impact*). There are various means of transport available, some more costly than others, with each means having many variants, (engine size, fuel consumption etc, which collectively form the *Determinants*). During the journey, passengers are informed whether they are heading in the right direction and on time via speedometers and GPS readings, (the *Performance* indicators). Different passengers (*policy makers*) will, of course, want to go to different places and get there at different times (different *Impacts*), using, whether by design or necessity, a mode of transport (*Determinant*) that reflects the price they’re willing to pay for a certain level of comfort.

**Figure 1: The OECD/EUROSTAT framework for Entrepreneurship Indicators**



In terms of understanding the evolution of the database it’s perhaps easier to consider the development from a top-down approach, that is, by considering the ultimate goals of policy makers vis-à-vis entrepreneurship policy, drawing, of course, on the collective knowledge gained from the many empirical studies that have investigated the ‘impacts’ of entrepreneurship in recent decades.

*Impacts* therefore reflect the ‘*value*’ created by entrepreneurs and entrepreneurship. As noted above this value can be manifested in a number of ways, for example a macroeconomic

variable like GDP growth or employment, or indeed some other measure such as Gini coefficients reflecting income distributions.

*Entrepreneurial performance* measures the entrepreneurial actions that are instrumental in delivering the impacts. Given the multitude of possible impacts, it follows that there is also a multitude of entrepreneurial indicators. Different countries will therefore choose to focus on different indicators of performance depending on their policy objective (the value they wish to create).

What we can say about the links between the performance measures and impacts however is, of course, based on prior analyses that have demonstrated these links. Naturally, it is expected that the creation and application of this framework across national statistical offices will improve our understanding of the role that various aspects of entrepreneurship play in delivering these impacts, and indeed provide a comparable basis that facilitates the production of international analyses and comparisons.

The indicators included within “entrepreneurial performance”, and developed by the OECD EIP and its partners comprise, therefore, a basket of indicators that are generally thought to reflect entrepreneurship, and, indeed, that fit within the definitions outlined by the OECD. The indicators themselves are not revolutionary, but what is arguably revolutionary is the framework, which brings them together for the first time and provides an important and unique rationale for their collection across countries. Indeed, many of the indicators will be produced for the first time in many countries.

A myriad of underlying environmental and sociological factors coupled with the personal attributes of entrepreneurs affect the outcomes of the entrepreneurial process. All of these factors and attributes are expressed in the *determinants* for entrepreneurship.

The model recognises other relationships between the main components, in addition to those that flow from left to right (indeed, between the subcomponents too). For example, the model postulates that Determinants can alter the amount and type of Entrepreneurial Performance, which in turn leads to changes in an Impact category, such as economic growth. But economic growth itself will have an impact on Determinants, by affecting ease of access to finance, for example. Or a buoyant economy might encourage more entrepreneurs to take the steps to implement a business idea even if the Determinants are unchanged.

This model establishes a simple framework so that consistent, comparable and relevant data collection can proceed. Such data will help analysts to understand the interactions that may exist and target policies more appropriately.

The sections that follow provide a detailed description of each of the subcomponents that have been identified by the OECD and its partners for each of the three main groups described above.

### **3. Impact of Entrepreneurship**

The major social and economic objectives related to entrepreneurship in the context of this framework have been identified as job creation, economic growth and poverty alleviation (Figure 2). Each of these objectives can be more precisely defined in terms of further specific objectives such as export growth or higher numbers of self-employed, which provide indicators for part or all of the more macro ‘impact’ indicators. Fortunately, most of these indicators have meanings and uses beyond entrepreneurship studies or policy making and so their availability and international comparability are for many countries unlikely to be limited.

Perhaps the most important point to make here however is that of the three major flows in the framework this is arguably the least important in the context of this framework’s objectives - to improve and motivate the quality and availability of information pertaining to entrepreneurship, since most of these indicators are already readily available.

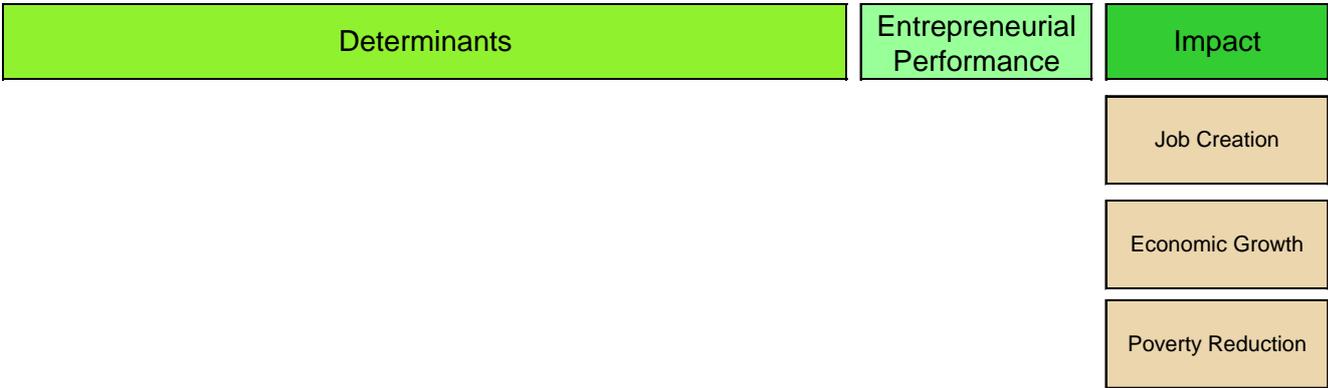
Policy makers and analysts who draw on this framework are almost certainly more likely to draw and on use the indicators within the ‘determinant’ and ‘entrepreneurial performance’ sections to determine whether they correlate with any potential ‘impact’ indicator they wish to affect/analyse, irrespective of whether they are included as one of the ‘impact’ indicators identified in this framework.

Moreover one needs to recognize that the ‘impact’ of entrepreneurship performance indicators on these macro-based objectives is not always so transparent and, indeed, rarely singular, in the sense that they are only affected by the identified performance indicators. Jobs created in a new firm, for example, will potentially affect employment in other firms, so the general equilibrium effects of these new jobs will depend on the functioning of the total economy. Indeed the same is true, and arguably more so if one considers new firms created through Schumpeterian creative destruction processes.

In that sense one could argue that the necessity to identify ‘impact’ indicators is limited. But their role in the framework is essentially to illustrate the theory that policy measures, introduced at the determinant level, stimulate increases in the performance indicators that have an impact on the final policy objective. Returning to the analogy made earlier regarding transport, one could say that we are interested in providing the wheels, wings, hulls, engines, seats, speedometers and GPS systems that allow passengers to get to where they want to. We also provide some examples of the most popular destinations but ultimately it is the passengers who decide where they want to go.

Figure 2 below shows the framework with the key ‘impact’ sub categories included. Partly reflecting the reasons outlined above, no indicators are currently identified within these sub-categories although many are clearly obvious candidates, such as GDP growth, Gini coefficients, employment indicators, average/median wages and salaries, relative poverty etc. As the framework is utilized by analysts and the links between the performance indicators and specific impacts become clearer, on the basis of empirical evidence, it will be easier to populate these sub-categories with indicators. All the same, the EIP and its partners will work in the short to medium term to further develop this section to include specific indicators.

**Figure 2: The OECD/EUROSTAT framework for Entrepreneurship indicators – adding categories for entrepreneurial impact**



**3. Entrepreneurial performance**

Given the multi-faceted nature of entrepreneurship, the identification of a single indicator that measures it is non-trivial, and, moreover, given the different ways its impact can be measured, arguably, not the best course of action.

As such, we are not proposing a single measure to understand and compare the amount and type of entrepreneurship that takes place across countries. In this sense, our approach is to define a range of indicators each of which paint part of the overall picture. A picture that necessarily varies according to the viewer’s perspective (impact target) and our approach recognises the need for policy analysts to be able to understand and distinguish between the different types of entrepreneurship and their different impacts.

The segmentation of the total entrepreneurship population is critical for two reasons. First, it is difficult to identify measures that will capture all entrepreneurs, for example, especially on a comparable basis across all countries in the short-term, although this is a longer term objective. Second, the total population of entrepreneurs are engaged in many different types of entrepreneurial activities and only some of those will be of interest to a given country's policy-makers.

Furthermore, while some policies may enhance or restrain overall entrepreneurship, most policy instruments will target particular types of entrepreneurship. Thus, it is critical that analysts and policy-makers are able to measure clearly the specific categories of entrepreneurship they are trying to affect (using the speedometer and GPS systems in the transport analogy). In order for countries to benefit from the experience of others, it is also essential that the Entrepreneurship Indicators we are developing support comparisons across countries by type of entrepreneurship.

Thus, our list of core Entrepreneurship Indicators identifies a number of indicators that each target, to varying degrees, different aspects of entrepreneurship and different types of entrepreneurs. So, for example, whilst we include the total number of business owners in an economy, including the self-employed, as being an important indicator, we also place high priority on measuring the creation of firms with employees, the number of high-growth firms

and the number of young, high-growth firms (gazelles). Indeed one might view these indicators as reflecting some evolution of entrepreneurship on a scale of ‘impact’ importance. High-growth firms require the creation of a firm, typically with employees, and many firms with employees, started out as one-man shows.

The indicators that we have identified below recognise that no measure or combination of measures will capture precisely the firms that meet the definition of entrepreneurship embodied above, which is multi-faceted both in its various manifestations and in its impacts. It is important to recognise too that the indicators are in some respect merely proxies for entrepreneurship or entrepreneurs. Not all new firms are truly entrepreneurial, as we define it above (*create value through the identification and exploitation of new products, processes or markets*), nor, will all high-growth firms embody entrepreneurship. Moreover, in some cases the growth will not reflect entrepreneurship at all, and indeed, it may reflect the very antithesis of entrepreneurship, for example, firms in monopoly positions can experience rapid growth that is unrelated to entrepreneurship.

But the inclusion of these indicators reflects the pragmatic approach necessary in the formulation of such a framework. In other words, it needs to be recognised that the framework increases our understanding of entrepreneurship by providing indicators that describe various aspects of the entrepreneurship process and at the same time that need to be measurable in a harmonised, achievable and comparable way across countries. So, whilst it is recognised that entrepreneurship is about creating value through the identification and exploitation of new products, processes and markets it is also recognised that achieving indicators that measure exactly this phenomenon in a comparable way present formidable challenges for many countries (OECD 2007b). Thus, we must develop indicators that can be added to this framework in the future as the statistical capacity within statistics institutes improves.

What is also important is that each indicator provides a spotlight on a specific aspect of the multi-faceted phenomenon that is entrepreneurship. Depending on where countries are on this scale and on which policy objectives they wish to tackle (how far away they are from their preferred destination), this suite of indicators will provide international comparability and assist in policy formulation.

In theory, a single indicator describing the number of entrepreneurs in an economy is realisable for all OECD economies, and the feasibility of creating such an indicator in practice has played a large part in determining the definition of entrepreneurs.

However, it must also be recognised that providing such statistics at the present time is beyond the reach of many OECD statistical offices using readily available data. To do so would require, in many cases, new data collection mechanisms and surveys that measure the number of entrepreneurs that have identified and exploited new products, processes and markets.

This is clearly achievable but is more a longer term objective, which in turn will require experts in the field to provide working and practical definitions for ‘new’. Given this situation, one could argue that the development of this framework is premature. But that view is incorrect since it is the framework itself that is likely to provide the catalyst and motivation

for statistical offices to work towards this longer term objective. The same criticism would be even less relevant for entrepreneurship, where a single indicator, that does not at the same time reduce the potential areas of impact, is not considered possible, even in theory.

The indicators described in this framework for entrepreneurial performance, therefore, should be seen as tools that improve our understanding of ‘pure’ entrepreneurship and indeed can be viewed as measures that have loose or strict interpretations of ‘new’ as in ‘new products, processes or markets. All new businesses or increases in self-employment for example could be considered as creating new markets if one takes a liberal interpretation of ‘new’ for example. Moving further down the spectrum one could equally argue that indicators of high-growth enterprises, which are more likely to have demonstrated ‘pure’ entrepreneurship, take us closer to the OECD definition. The most important point to recall, however, is that all of the indicators are meaningful in the context of entrepreneurship analyses and policy making and, most importantly, measurable across most, if not all, OECD countries.

**Entrepreneurial Performance Indicators**

The approach used to determine the indicators described below, which are the result of many meetings of the EIP and EUROSTAT workshops, has been to focus on the creation of new value; recalling that ‘value’ is multi-dimensional and that ‘new’ relates to products, processes or markets. It is important to state up-front that the list is preliminary; one that will be expanded over-time as the statistical capacity within statistics institutes expands in response to the needs and anticipated momentum provided by the establishment of this framework. The current list therefore reflects indicators that are currently realisable, although of course, they also reflect relevance. Importantly they are also realisable without imposing any increased burden on statistical offices, since they tap into commonly and readily available and high-quality sources such as business registers and labour force surveys.

In addition to the overarching principles concerning ‘new’ and ‘value’ above, the framework has a further typology that categorises the indicators by indicator type. The first group are those relating to firms. The second and third correspond closely to ‘impacts’ in terms of employment and what has been provisionally described as ‘wealth’. This ‘wealth’ subcategory could just as easily be described as ‘other’, given the relatively heterogeneous nature of the indicators it embodies, see Figure 3 below.

**Figure 3: The OECD/EUROSTAT framework for Entrepreneurship indicators – adding categories for entrepreneurial performance**

Determinants	Entrepreneurial Performance	Impact
	Firms	Job Creation
	Employment	Economic Growth
	Wealth	Poverty Reduction

Defining ‘new’ is non-trivial, especially as it is relatively subjective, and as noted above, will require further discussions within the statistical community. A new market for example could be at the global, national, local or even at street level. Each definition saying something different about the overall impact on the national economy and indeed, sometimes, beyond.

Selecting the basis for ‘new’ in this context will ultimately require the construction of some convention and indeed the very idea of a ‘market’. Moreover it implicitly requires strict lines to be drawn that exclude most replicative, as opposed to innovative (new processes and products), business owners from being entrepreneurs, for example. If ‘new’ is defined at the global level for example no firms that merely replicate ideas (processes/products) in other countries will be seen as entrepreneurial.

If new is defined at the national level on the other hand, only those replicative firms that copy an idea from another country, and not those that copy ideas already adopted in the same country, will be entrepreneurial. Without prejudicing the deliberations needed in the future, removing these types of businesses and business owners from the entrepreneurial mix is arguably a step too far. To take an ad absurdum example, if there were only 100 new ideas (products and processes) a year and every country absorbed these ideas, and ‘new’ was defined as new to the ‘national’ market, every country would have 100 exactly new entrepreneurs a year.

The approach of the framework, therefore, is to recognise that this is an issue for the future but to provide indicators that proxy the essence of entrepreneurship and entrepreneurs that the OECD definitions capture whilst, all the while, remaining relevant and measurable.

We begin by considering the number of entrepreneurs. The actual amount, of course, is explicitly tied to the definition of ‘new’. But if we consider a very liberal interpretation of ‘new’ such that any new business is the manifestation of something new then the number of new business owners (*ownership rate start-ups*) provides a measure of the number of new entrepreneurs and the number of new businesses a measure of new entrepreneurial businesses. Equally, and by extension, the number of business owners (*ownership rate business population*) provides a measure of the number of entrepreneurs.

Taking a less liberal, stricter, interpretation of ‘new’ one can consider the number of new business creations with employees (*employer enterprise births*). This assumes that the novelty or newness of the businesses idea or market can be better demonstrated by its size, as compared to business start-ups without employees (self-proprietor self employed businesses), which in many cases will reflect low scale operations with little growth potential or economic significance, such as hobby activities. Moreover OECD studies (OECD 2006) have shown that this concept provides for a higher level of international comparability than those that reflect all business creations.

Going one step further up the scale of defining ‘new’, one can consider that those firms that have demonstrated rapid growth have passed a higher threshold of ‘new’. It is assumed there was something significantly different about their product or process or market that led to significant growth. This line of thinking gives rise to two important indicators in the framework: *rate of high-growth firms based on employment growth*, and *rate of high-growth firms based on turnover growth*. These measures explicitly recognise that firms do

not need to be new to be entrepreneurial. Older firms can demonstrate entrepreneurship too, and indeed many do.

That said, one could tighten further the definition of ‘new’ and include the qualification that high-growth firms also need to be young. This gives rise to two further measures: rate of young high-growth firms based on employment and rate of young high-growth firms based on turnover, referred to in the framework as ***Gazelle Rates based on employment*** and ***Gazelle Rates based on turnover***. In addition, and in recognition of the Schumpeterian process of creative destruction the corollary of employer-enterprise births is ***employer enterprise deaths***, which is also included in the list of indicators below.

Given that it is difficult to define new, it is important to reiterate that the indicators described above and below are, in the main, proxies for the OECD’s pure definition of entrepreneurship and entrepreneurs. As noted earlier, for example, some high-growth enterprises will grow for reasons that have little to do with entrepreneurship.

Some studies on entrepreneurship have used measures that take estimates of the potential numbers of business owners, including those individuals who aspire to it or who have considered it as being a measure of entrepreneurship (latent or otherwise) in an economy.

This is not an approach that we reflect in our framework, partly because it stretches the interpretation of ‘new’ far from its genesis, partly because until they engage in activity they don’t create any realisable economic value, partly because it is subjective and does not lend itself well to international comparisons, and partly because the information is not generally available from official sources. Moreover, the important information that could be gained from such data, the number of individuals that actually start businesses, is readily available and indicators for these are included in the framework.

Additional indicators have been formulated by the EIP to supplement the indicators described above and they require little in the way of extra description. These include: business churn (the addition of birth and death rates); net business population growth (a measure of births minus deaths); survival rates after 3 and 5 years, the number of firms aged 3 and 5 years old as a proportion of all firms with employees; the percentage of employees in 3 and 5 year old firms; the average size of 3 and 5 year old firms; business ownership rates (including the self-employed), business ownership, the value-added share of young firms, the average productivity of births, deaths, small and young firms and their contribution to productivity growth, the innovation performance of young and small firms and the export performance of small firms.

Of these indicators, which are by no means exhaustive, 6 are considered core, those highlighted in bold italics above, and repeated below.

- ***employer enterprise birth;***
- ***rate of high-growth firms based on employment growth;***
- ***rate of high-growth firms based on turnover growth;***
- ***Gazelle rates based on employment;***
- ***Gazelle rates based on turnover;*** and
- ***employer enterprise deaths.***

This framework does not provide specific details on how all of the indicators described above should be measured and specified for expedience but the core indicators described above are consistent with the definitions described in the forthcoming Eurostat-OECD Manual on Business Demography Statistics, which reflects the collaboration of both institutions and many national statistics institutes and that was recently endorsed by the OECD Statistics Committee.

Figure 4 below describes the indicators described above allocated to each of the three themes: firms, employment and wealth. It should be noted that the typology is merely to simplify the illustration since many of the indicators could also have been allocated to one of the three other themes.

**Figure 4: The OECD/EUROSTAT framework for Entrepreneurship indicators – adding indicators to the categories for entrepreneurial performance**

Entrepreneurial Performance		
Firms	Employment	Wealth
Employer firm birth rate	High Growth Firm Rate by Employment	High Growth Firm Rate by Turnover
Employer firm death rate	Gazelle Rate by Employment	Gazelle Rate by Turnover
Business churn	Ownership rate start-ups	Value-added by young firms
Net business population growth	Ownership rate business population	Productivity contribution, young firms
Survival rate, 3 and 5 years	Employment: 3 and 5 year old firms	Innovation Performance, young or small firms
Proportion 3 and 5 year survival	Average firm size after 3 and 5 years	Export Performance, Small firms

Each of the indicators can be further broken down to varying degrees into sub-sectors such as industrial sector, gender, business size etc. Many of these can be produced using currently existing data sources, particularly sectoral and size breakdowns. Many others, however, will only be possible in the future as statistical capacities increase, for example, breakdowns that describe the characteristics of entrepreneurs, which are not currently readily achievable in all OECD countries for example.

Ideally, a perfect correlation between the indicators for entrepreneurial performance and impact would exist. Countries aiming at increasing GDP growth, for example, should be able to pick a few performance indicators and expect that an increase in those performance indicators will lead to higher GDP growth. Some studies do, for example, focus on the link between entry and economic growth (Audretsch and Thurik, 2000; Scarpetta et. al 2002; OECD 2003a; Brandt 2004a). Much of the impact of entrepreneurship is still to be better understood so a perfect correlation between the performance indicators and impact is not to be expected, but one of the motivations of the framework is to provide the basis for establishing the significance of these correlations, known and unknown,

All the proposed performance indicators above are used in various OECD member countries. Most of the indicators are used in a comparative perspective. The optimal level of new firm entry is for example unknown. Scotland was one of the first countries to target number of business start-ups in their 1993 “Business Birth Rate Strategy”. The target was to close the gap with the rest of the UK.<sup>5</sup>

Other countries like Denmark target the number of growth entrepreneurs. By 2015, Denmark aims “to be one of the societies in the world where most growth enterprises are launched”. The share of growth entrepreneurs is just one target in a larger strategy for ensuring growth and employment in a time of increasing global competition. The overall goal is to become one of the most competitive economies by 2015. The Danes are therefore focusing on entrepreneurship’s impact on growth and employment. They want to fly towards a goal of being one the world’s most competitive economies with high growth and full employment and aim to use the share of high-growth enterprises as one of many indicators on the dashboard telling them whether they are flying in the right direction at the right speed.

#### **4. Determinants of Entrepreneurship**

A country’s entrepreneurial performance depends on a myriad of underlying factors coupled with the personal attributes of entrepreneurs. In the travel analogy described above, these underlying factors and attributes are the size of the engine, mode of transport, size of wings, wheels, chassis, price of fuel etc.

The framework brings these many factors together and for clarity pulls them together within separate themes, described below. It builds on many of the important contributions made to the literature in this area, such as Audretsch, Thurik and Verheul (Audretsch et. al, 2002); the policy framework developed in the works of Lundström and Stevenson (Lundström and Stevenson, 2005) and the Danish Entrepreneurship Index (Hoffmann, 2007), combined with a pragmatic policy approach..

#### **Entrepreneurship Determinants Themes**

Many words and phrases are used in the literature to describe the factors affecting entrepreneurship (Schramm, 2006). But the differences between these various studies are often largely semantic; most agree for example that entrepreneurs and entrepreneurship are created by a combination of three factors: *opportunities*, *skilled people* and *resources*.

These three factors are all affected by two important factors (themes): the surrounding *regulatory framework* and *culture*.

Resources reflect *access to capital*, *R&D and technology*. These are the factors that are important to entrepreneurs and entrepreneurship in general. Indeed many studies on entrepreneurship highlight capital as one of the most critical factors for success (EU, 2003).

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<sup>5</sup> [http://www.scottish-enterprise.com/sedotcom\\_home/about\\_se/research-and-publications/business\\_birthrate\\_strategy.htm](http://www.scottish-enterprise.com/sedotcom_home/about_se/research-and-publications/business_birthrate_strategy.htm)

Capital covers all phases of business life, from access to early seed funds to access to the stock markets. R&D creates new inventions that the entrepreneur and entrepreneurial businesses can turn into new products or processes. The R&D in this context should be understood as a resource that can be created or purchased, whether directly or in an embodied or diffused form.

Skilled people in this context relates to the capabilities of the entrepreneur and access to other capabilities within the entrepreneurial infrastructure (Lee et. al, 2000). In other words, the *entrepreneurial capabilities* include the human and social capital of the entrepreneurs. Entrepreneurial firm can exist without an entrepreneur at the helm, reflecting the entrepreneurialism of employees but this is not currently an explicit determinant that is being developed as part of this framework but may be included in later versions.

Opportunities are created by the *market conditions* in the country. These market conditions include public involvement in markets, competition in the markets, access to foreign markets, procurement regulation and so on.

Entrepreneurship happens within a *regulatory framework*, which affects performance. A combination of opportunity, capabilities and resources does not necessarily lead to entrepreneurship if opportunity costs (e.g. forgone salary and loss of health insurance) and start-up costs outweigh the potential benefits. Since in this event, a rationale, potential entrepreneur will not pursue the opportunity and will not create value through a new product, process or market.

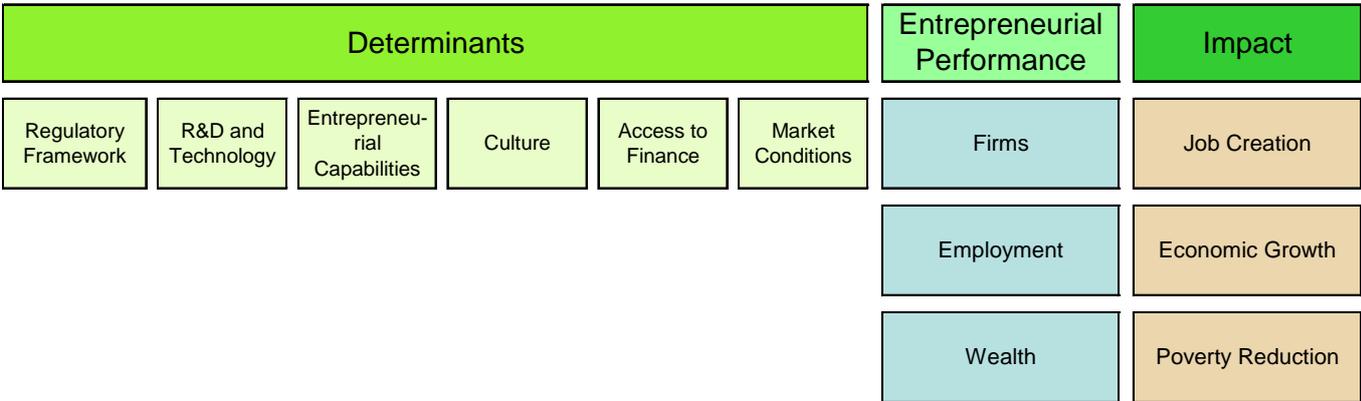
In this framework, the regulatory framework is defined very broadly and includes all taxes, regulations and other public rules and institutions affecting entrepreneurship. All indicators that measure taxes, regulations or other regulations that either increase or decrease the incentive to entrepreneurial activities are captured in this theme.

Finally, *culture* affects all parts of the model and is included as the final factor in the framework. Culture influences an entrepreneur's behaviour, attitudes, and overall effectiveness and, moreover, is often unnoticed by the entrepreneur (Ivancevich & Matteson, 1996). In this framework, culture comprises each individual's assumptions, adaptations, perceptions and learning.

Entrepreneurship is also affected by basic macroeconomic conditions. High unemployment, for instance, might be expected to increase the share of individuals motivated to become entrepreneurs. Despite their obvious importance for entrepreneurship however, these conditions are currently excluded from this framework.

Summarizing, six themes (*access to capital, access to R&D & technology, capabilities, market conditions, regulatory framework* and *culture*) describe the determinants affecting entrepreneurial performance (Figure 5). These themes are used as labels to guide and categorise the collection and comparison of indicators of determinants of entrepreneurship.

**Figure 5: The OECD/EUROSTAT framework for Entrepreneurship indicators – adding categories for entrepreneurial determinants**



**Entrepreneurship Determinant Indicators**

The six main thematic determinants of entrepreneurship described above are affected by many different policy areas. Policy areas are, typically, not well-defined concepts since they usually reflect a simple collection of policy instruments with similar objectives. For example, promoting venture capital investments, can be broken down into more detailed modes of accessing capital such as loans, venture capital or business angels. .

Additionally, policy areas might affect more than one determinant. However, each policy area described below is placed in relation to the determinant it is thought to affect the most.

The number of policy areas described below reflects the deliberations of the EIP and its partners and in particular the workshops organised by Eurostat during spring 2007. These deliberations resulted in a list of 38 policy areas (Figure 6). The list attempts to be as exhaustive as possible, in so far that it attempts to cover the most important policy areas. But it is also seen as a starting point, allowing additions and changes to occur over time as our collective knowledge on entrepreneurship expands.

More details on each of the policy areas are described in annex 1. Further analyses will occur over time in order to determine the critical policy areas for entrepreneurship, and indeed the significance of each determinant in creating or hindering entrepreneurship and entrepreneurs and their relationship to the specific entrepreneurship performance indicators. But the important starting point is the elaboration and development of this framework and collection of indicators it supports.

**Figure 6: The OECD/EUROSTAT framework for Entrepreneurship indicators – adding policy areas for entrepreneurial determinants**

Determinants						Entrepreneurial Performance	Impact
Regulatory Framework	R&D and Technology	Entrepreneurial Capabilities	Culture	Access to Finance	Market Conditions	Firms	Job Creation
Administrative Burdens for Entry	R&D Investment	Training and experience of entrepreneurs	Risk Attitude in Society	Access to Debt Financing	Anti-Trust Laws	Employment	Economic Growth
Administrative Burdens for Growth	University/ Industry Interface	Business and Entrepreneurship Education (skills)	Attitudes Towards Entrepreneurs	Business Angels	Competition		
Bankruptcy Regulations	Technological Cooperation Between Firms	Entrepreneurship Infrastructure	Desire for Business Ownership	Access to VC	Access to the Domestic Market	Wealth	Poverty Reduction
Safety, Health and Environmental Regulations	Technology Diffusion	Immigration	Entrepreneurship Education (mindset)	Access to Other Types of Equity	Access to Foreign Markets		
Product Regulation	Broadband Access			Stock Markets	Degree of Public Involvement		
Labour Market Regulation	Patent System; Standards				Public Procurement		
Court & Legal Framework							
Social and Health Security							
Income taxes; Wealth/Bequest Taxes							
Business and Capital Taxes							

Many of the determinant-indicators are already available, indeed this formed part of the rationale for their inclusion. For example the International Consortium for Entrepreneurship (ICE) collects and evaluates the quality of the available entrepreneurship each year (Hoffmann, 2006). The 2006 evaluation included 57 indicators relating to determinants (Annex 2).

Many more however will still need to be developed and elaborated in a way that makes them as comparable as possible at an international level, particularly those that are more subjective in nature such as those within the culture theme. But as already mentioned the development of the framework is an important and necessary step to allow this to happen,

Clearly therefore further work is needed in collecting determinant indicators. The steps forward need to be based on policy priorities, and these priorities will vary from country to country. However, some areas do seem to be part of the debate in all countries. The OECD's project Micro-policies for Growth and Productivity for example identified three critical policy areas for fostering entrepreneurship – entrepreneurial education, access to venture capital and bankruptcy regimes (OECD, 2007). These three policy areas are also mentioned in most national entrepreneurship reports.

Indicators on entrepreneurship education are clearly lacking. Some indicators exist on venture capital but improvements are needed to ensure international comparability. The World Bank has done substantial work in the area of bankruptcy, so the indicators in this area are relatively well developed (Doing Business, 2007). Indicators of entrepreneurship education and venture capital will therefore be towards the top of the list of new indicators to be developed.

The OECD Micro-policy study also points to private business advice services as an important area. No indicators exist in this area, so again more work is needed. Finally, the OECD study recognises the importance of taxes. A lot of indicators are available on taxes but more detailed indicators need to be developed.

All in all, the indicators of determinants require further development especially in the areas of entrepreneurial education, access to venture capital, business service and taxes, where the demand is manifestly high. The objective of this framework is to further motivate and indeed accelerate these developments.

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## **Annex 1 – Description of the Policy areas in the Determinants of Entrepreneurship**

### **Policy areas affecting access to capital**

#### *Access to debt financing*

The supply of debt capital via more traditional credit markets is vital to entrepreneurial activity. Without a large and efficient credit market to supply firms with efficient debt capital, some entrepreneurs will face a financial barrier making it impossible to seize opportunities. Governments can improve domestic credit markets through initiatives to improve access to debt capital in general or to entrepreneurs specifically. The former includes regulation improving the efficiency and competitiveness in credit markets by making debt capital cheaper and more accessible. The latter includes fiscal guaranties for entrepreneurial loans, making banks more motivated to help entrepreneurs.

#### *Business Angels*

Business angels are typically wealthy individuals who make direct equity investments in the seed stage of companies, and they tend to provide more managerial and business advice through their greater personal involvement than institutional investors do. Although data is scarce, it is believed that total funding by business angels is several times greater than all other forms of private equity finance. Governments in many countries try to cultivate business angels by organising networks and giving special investment tax incentives. Several countries have also tried to improve information flows between angels and potential entrepreneurs that otherwise tend to be informal.

#### *Access to Venture Capital*

Venture capital is an important source of funding for potential high-growth ventures in need of significant capital for development, growth and expansion. In order to enlarge the domestic supply of venture capital, governments can either take initiatives to develop national venture funds or improve venture market regulation to grow existing venture markets. The former includes direct investments and the latter includes relaxing legislation, making it more attractive (or simply possible) for entities, such as pension and insurance funds, to make venture investments.

#### *Access to other types of equity*

Not all firms needs can be met with venture capital but they may still need equity financing to grow.. Private equity and the activities of related funds are of growing importance in the context of globalization.

#### *Stock Markets*

An efficient stock market, a secondary stock market or efficient markets for buyouts are important in order to gather the capital needed for the expansion of firms. Furthermore, effective exit mechanisms increase the supply of venture capital and also serve as an indirect source to more capital in earlier investment phases. Most countries face the problem of obtaining a critical mass of new firms for a secondary stock market.

### **Policies affecting access to R&D and technology**

#### *R&D investment*

Entrepreneurs play an important role in commercialising R&D. Countries with high levels of R&D will produce more possibilities for entrepreneurship than countries with low levels of R&D. The R&D can both be private and public.

#### *University/industry interface*

Effective technology or knowledge transfer regulation opens and speeds up the process of transferring public research into business, thereby effectively creating new opportunities for potential entrepreneurs. This regulation can be enhanced by policies encouraging universities (and other institutions engaged in research and development activities) to facilitate the development of ventures based on publicly funded research. Most importantly, legislation should develop the legal infrastructure that gives universities ownership of intellectual property developed from publicly funded research as well as the establishment of technology transfer offices that facilitate joint ventures between companies and universities.

### *Technological cooperation between firms*

Existing firms can play an important role in developing entrepreneurship in new and younger firms either through corporate venturing or by actively working with these firms. The willingness of established firms to use new firms as suppliers or partners plays a crucial role in the development of their entrepreneurship. For example, the success of Silicon Valley compared to the Boston area in the early 1990s has been explained by the more open attitude to co-operation in Silicon Valley.

### *Technology diffusion*

It is not only directly acquired or created R&D that benefits entrepreneurs. Many entrepreneurs simply using existing technology in new ways and benefit from the uptake and diffusion of these technologies.

### *Broadband access*

Broadband access is included as a separate policy areas even though it is part of technology diffusion, as broadband gets a lot of policy attention in many countries.

### *Patent system, standards*

The final resource is patents. Entrepreneurs can buy patents or protect their own product through the patent system. Several studies indicate a positive relationship between patent protection and entrepreneurial activities.

## **Policies affecting entrepreneurial capabilities**

### *Training and experience of entrepreneurs*

Serial entrepreneurs are important as they have already proven their ability to establish a business. Yet, failed entrepreneurs are not always able to restart due to legislative barriers. The learning experience from failure is hotly debated but many studies have shown that this is often an important part of the entrepreneurial success story. The possible lessons from failure versus the lessons from success are more philosophical questions, but it is unquestionable that barriers to re-starting reduce the number of potential entrepreneurs. The policy focus should consequently be on reducing the legislative barriers for serial entrepreneurship. Bankruptcy legislation is particularly important, but also the time and price for restarting a company may be barriers in some countries. Another way of increasing the quality of entrepreneurs is through training.

### *Traditional Business Education*

Traditional business education, including basic accounting, marketing and finance, are without doubt important attributes not only when running a company, but also when starting a company. Differences in the magnitude of business education among developed countries are significant. Some countries include basic business education in the core curriculum in both primary and secondary schools, whereas in other countries it is available only through electives or at dedicated business schools. The former approach obviously ensures that a greater share of the population possesses the basic business skills needed to run a company. Policy initiatives could ensure that basic business skills are acquired over a broad range of educations.

### *Entrepreneurship Education (skills)*

In order to strengthen entrepreneurial abilities through education, teaching methods must be refined from primary schools to universities. Activities that go beyond traditional teaching, such as dedicated entrepreneurship centres, internships, teacher and advisor education, and research are necessary for success. Policy initiatives should ensure the supply and quality of entrepreneurship education. This education can be aimed at increasing the skills needed to succeed or aimed at creating an entrepreneurial mindset. The mindset is included under culture.

### *Entrepreneurship Infrastructure (Public and Private)*

A strong entrepreneurship infrastructure consists of tightly linked regional networks of skilled and specialised advisors with relevant skills and knowledge that assist entrepreneurs, thereby effectively increasing the abilities

available to potential entrepreneurs. Advisors can range from lawyers and accountants to experienced entrepreneurs to domain experts at universities. As such non-governmental involvement is vital to sustaining entrepreneurial networks. Governments can take an important role by initiating and developing the infrastructure.

#### *Immigration*

Immigrations can be another way of increasing the pool of capable entrepreneurs. Studies for example indicate that a large part of the U.S. tech boom over the past 20 years has come from their ability to pull in the best and the brightest from India, Taiwan and other Asian countries.

### **Policy areas affecting market conditions**

#### *Anti-trust laws*

Antitrust laws protect the markets from the misuse of market power by dominant firms, or from anticompetitive collusion by groups of firms, or from anticompetitive mergers, all of which can deter entrepreneurship.

#### *Competition*

Competition and entrepreneurship have links both ways. Entrepreneurship is an important contribution to competition and competition is an important driver of entrepreneurship.

#### *Access to the Domestic Market*

Policies have only a limited impact on private demand.

#### *Access to Foreign Markets*

Globalisation has opened up for increased international opportunities for entrepreneurs. The decrease in trade barriers and the integration of world markets have made it possible for all types of companies—including new ones—to exploit global opportunities. Even though trade barriers are decreasing due to efforts from international organisations and, as such, are out of the hands of national governments to some extent, national governments can still initiate globalisation programmes, which help or motivate entrepreneurs to look abroad from the very birth of their firms.

#### *Degree of public involvement*

Minimising government activities and regulation in existing markets creates new business opportunities within established markets, thereby creating a larger demand for potential entrepreneurs while at the same time improving market dynamics. Rolling back government activities (such as the liberalisation of the telecommunication sector in several European countries in the 1990s) or by deregulating the legal barriers (such as relaxing the educational requirements for starting a business in certain sectors) are two ways to improve access to existing markets.

#### *Procurement Regulation*

Entrepreneurship friendly procurement regulation increases the amount of government contracts for goods and services awarded to new companies, thereby effectively creating better opportunities for potential entrepreneurs. Procurement regulation in the widest sense—including competitive tendering schemes focused on the purchase of goods, services or science with a potential commercial value—can be made entrepreneurship friendly by encouraging governmental bodies to allocate a specific share of their purchasing to new companies.

### **Policies affecting regulatory framework**

#### *Administrative Burdens (entry and growth)*

Administrative burdens are comprised of the amount of time spent collectively to understand and fulfil requirements imposed by governments or other authorities, such as new business registration, filing taxes and financial statements, and understanding which rules and regulations the business is subject to. They can discourage potential entrepreneurs by being overwhelming and difficult to understand as well as being beyond the entrepreneur's own abilities to fulfil. In countries with substantial administrative burdens, studies show that both job creation and employment settle at lower levels as a result. Policy initiatives to relieve administrative burdens include relaxing the legal demands required to start and run a company.

#### *Bankruptcy Legislation*

Bankruptcy legislation needs to balance the conflicting risk propensities of creditors and entrepreneurs. Creditors will not provide as much money to entrepreneurial activities if they do not have significant claims to a bankruptee's assets. On the other hand, potential entrepreneurs are less apt to engage in entrepreneurial activity if significant claims are inevitable. The equilibrium, at which the maximum number of potential entrepreneurs can obtain debt capital to engage in entrepreneurial activities, is difficult to both identify and measure, but it is clear that bankruptcy legislation has a strong influence. Governments have a variety of means to relieve the costs of bankruptcy, including debt relief schemes, restructuring and postponement of debt possibilities. Debt relief schemes can regulate the length, uncertainty, and cost of going bankrupt, thereby altering both direct and indirect costs arising as a result of bankruptcy. Reorganisation and postponement of debt typically take place prior to bankruptcy, making it possible to alter the business model and, as such, the risk of going bankrupt.

#### *Safety, health, environment and product regulation*

These types of regulations are important as they ensure that firms produce safe products without harming the environment or their employees. The regulation can however be a burden for firms as they might induce costs on the firm's production.

#### *Court-legal framework*

Some authors have linked countries legal traditions and entrepreneurship. Generally, the distinction is made among- British, French, German, or Scandinavian legal heritages.

#### *Labour Market Regulation*

The negative impact of strict labour market regulation, such as high minimum wages and rigid firing regulations are manifold. First, wage employment becomes attractive, thereby increasing the opportunity cost to become an entrepreneur. Secondly, limitations such as hiring and firing inflexibility can have severe impacts on a corporation trying to grow or to develop a business culture, often through trial and error, that fits with the overall vision and strategy of the company. Finally, high minimum wages means expensive labour and possibly a limiting barrier for a start-up. Thus, the end result of strict labour legislation is constrained levels of entrepreneurial activity.

#### *Social and Health Security*

Social security benefits, including health care, pensions, and unemployment benefits, can serve as entry barriers if they are reduced or eliminated as a result of becoming an entrepreneur. Social security policies that put entrepreneurs and wage-labourers on equal footing in terms of qualifying for benefits can neutralise any discrimination that could otherwise have a negative effect on the amount of potential entrepreneurs pursuing opportunities.

#### *Income Taxes*

High levels of personal income tax reduce the potential financial benefits from starting a business, making it more difficult to reach the cost-benefit equilibrium at which the opportunity becomes worthwhile to pursue. Policy initiatives lowering income taxes are therefore likely to induce a greater number of potential entrepreneurs to engage in entrepreneurial activities.

#### *Business Taxes and Fiscal Incentives*

While corporate taxes do not play a central role for new firms with little or no profit subject to taxation, they will eventually have a significant impact on the profits for high-growth firms. Furthermore, as globalisation continues to develop, corporate taxation will become a central factor for companies choosing the extent to which they will locate operations abroad. Fiscal incentives can lower entry barriers through financial incentives or support, tax exemptions or rebates, which make more potential entrepreneurs willing to engage in entrepreneurial activity. However, fiscal incentives are a delicate political issue in some countries, and their long term benefits continue to be questioned.

#### *Capital Taxes*

Capital taxes also have a direct impact on the supply of capital. High taxation levels reduce potential investment rewards, thereby discouraging investments in companies whether new or existing. Policy initiatives reducing capital taxation thus increase financial sources. Some countries also offer special tax incentives for investments in new firms intended to improve the number of business angels.

#### *Wealth and Bequest Taxation*

Wealth and bequest taxes impact directly the supply of early stage investment capital. High taxation levels affect negatively the potential supply of liquidity among individuals, which then limits the number and size of investments made by business angels, friends or family. Policy initiatives reducing the wealth and bequest tax rates would enlarge the potential amount of seed and early-stage capital.

### **Policies affecting culture**

#### *Risk attitude in society*

Many people associate entrepreneurship with risk taking although the links are not clear.

#### *Attitudes towards entrepreneurs and desire for business ownership*

Understanding the motivation behind the few entrepreneurs with visions for creating high-growth and global enterprises is difficult. It is furthermore a very challenging and slow process trying to fuel interest in entrepreneurship. Governments can try to enhance the attitudes towards entrepreneurship by implementing entrepreneurship awards and opinion campaigns.

#### *Entrepreneurial education (mindset)*

Entrepreneurship education has become an important component in many countries' attempts to affect the mindset of people, so they become more entrepreneurial. This type of education is not aimed at teaching specific skills that are relevant for entrepreneurship but more introducing the concept of entrepreneurship, its importance for society, and some of the key capabilities of entrepreneurs like pro-active.

**Annex 2 – Overview of available indicators**

The quality assessment of indicators is based on a simple quality framework that draws on the experiences of the OECD, Eurostat and the US Key Indicator Project (OECD, 2003; Wallman et al, 2004; Munoz, 2004). The quality framework has three dimensions: *relevance*, *accuracy* and *availability*. Each indicator is evaluated by grading it for each dimension and by an *overall assessment*.

**Relevance**

The relevance of an indicator is a qualitative assessment of the value contributed by the indicator. That is, the evaluation depends on the proximity between what the indicator measures and the framework condition it is supposed to measure. It is desirable for the indicator to be as close as possible to the framework condition it is intended to measure (Table A1).

**Table A1 Assessment of Relevance**

<b>The Indicator’s Proximity to the Framework Condition it is Supposed to Measure</b>	<b>Direct Measure</b>	<b>Proxy Measure</b>
Mark	A	B

An example is the indicator labelled *Barriers to Competition*. Here the level of legal barriers to entry and number of antitrust exemptions is a direct measure of the level of barriers to competition in existing markets.

Relevance has an additional dimension. If an indicator is applied as a measure for a specific policy, it is useful to know whether a policy initiative has a direct or indirect impact on the indicator (Table A2).

**Table A2 Assessment of Policy Indicator Typology**

<b>Policy initiatives’ impact on indicator</b>	<b>Direct impact</b>	<b>Indirect impact</b>
Mark	A	B

For example, for *Barriers to Competition* changing formal regulation concerning entry barriers and antitrust exemptions will have a direct impact on the size of the barriers to competition.

**Accuracy**

The accuracy of an indicator is the degree to which the indicator correctly estimates or describes the quantities or characteristics it is designed to measure. Accuracy has two dimensions: data collection method and degree of cross-country standardisation.

*a) Data Collection Method*

The data collection method is sound if data correctly estimates or describes the quantities or characteristics that it is designed to measure. Thus, accuracy based on the data collection

method refers to the closeness between the values provided and the (unknown) true value. It is desirable for the value of the indicator to be as close as possible to the unknown, true value.

Major sources of error in data collection include coverage, sampling, non-response, response, processing and problems in dissemination. Addressing these standard problems is common for national statistical offices and international governmental institutions. Data from these sources should not suffer, in general, from these problems, whereas data from other sources should be evaluated on a case-by-case basis.

The appraisal of accuracy is based on the method used in collecting the data. Almost all indicators are based on surveys, polls or censuses. This framework distinguishes between three types: fact-based, action-based and opinion-based surveys.

- *Fact-based surveys* relate to easy quantifiable aspects, in which different people would give the same response to a question. The *OECD Regulatory Database* is an example of this type because respondents are asked about whether or not a country has a given regulation.
- *Action-based surveys* concern issues where respondents are asked if they have performed a given action within a given time period or not. The *European Community Innovation Survey* is an example of this type of survey. In this survey, firms are asked whether they have introduced new or technologically improved products or processes on the market during the last year.
- *Opinion-based surveys* deal with questions asking for a subjective evaluation of a given aspect of the economy. The World Economic Forum’s *Executive Survey* is an example of this type of survey. It asks executives about their opinion of the functioning and the quality of various aspects of the economy.

The accuracy of data collection methods can be evaluated as very good, good, or acceptable (Table A3).

**Table A3 Assessment of Accuracy**

<b>Data Collection Method</b>	<b>Very good</b>	<b>Good</b>	<b>Acceptable</b>
Mark	A	B	C

These scores can be clarified as follows:

- *Very good*: the indicator originates from national statistical offices or international government institutions; or the indicator stems from a fact-based survey.
- *Good*: the indicator comes from an action-based survey.
- *Acceptable*: the indicator comes from an opinion-based survey.

*b) Cross-country Comparability*

Whether an indicator is comparable across countries requires a consideration of the data collection method used across countries. For example, an indicator is comparable if the same question is asked in all countries in the same way and by the same means. Naturally, it is desirable to have the highest degree of comparability across countries (Table A4).

**Table A 4 Assessment of Cross-country Comparability**

<b>The indicator is Cross-country Comparable</b>	<b>Fully comparable</b>	<b>Comparable to some extent</b>
Mark	A	B

**Availability**

The concept of availability relates to the accessibility of a given indicator in various countries and for a given time frame. Clearly, it is desirable to have data from as many countries as possible (Table A5). In addition, an indicator available beyond the initial benchmark year is better than one that is not available beyond that year (Table A6).

**Table A5 Assessment of Availability Across Countries**

<b>The share of OECD countries for which the indicator is available</b>	<b>100 – 76 %</b>	<b>75 - 50 %</b>
Mark	A	B

**Table A6 Assessment of Availability over Time**

<b>The indicator is available beyond the initial benchmark year</b>	<b>Yes</b>	<b>No</b>
Mark	A	B

**Overall Quality Assessment**

The overall quality assessment is divided into three categories: good, acceptable and questionable (Table A7).

**Table A7 Overall Evaluation**

<b>Name of indicator</b>	<b>Good</b>	<b>Acceptable</b>	<b>Questionable</b>
Indicator A	A	B	C

Clarification of the three indicator score categories:

- *Good (A): at least 5 As and no Cs*
- *Acceptable (B): at least 3 As and no Cs*
- *Questionable (C): less than 3 As or one or more Cs.*

**Evaluation of Indicators**

57 indicators are included in the latest collection and evaluation of indicators (Hoffmann, 2006). Most indicators are available for the regulatory framework (Table A8)

**Table A8 Overall Quality Assessment of Available Entrepreneurship Indicators**

Indicator	Overall Grade	Relevance		Accuracy		Availability	
		Relevance	Policy Relevant	Data Collection	Comparability	Across Countries	Over time
Access to R&D and technology							
University/industry Research Collaboration	C	A	B	C	A	A	A
Technological Co-operation	C	A	B	C	A	A	A
Access to Capital							
Extent of Guarantees for SMEs	C	B	A	B	A	B	B
Private Credit	A	A	B	A	A	A	A
Interest Rate Spread	A	B	B	A	A	A	A
Cost to Create Collateral	A	B	A	A	A	A	A
Country Credit Rating - 2.3.04/418	C	B	B	C	A	A	A
Venture Capital - Early Stage	A	A	B	A	A	A	B
Venture Capital - Expansion Stage	A	A	B	A	A	A	B
Capitalization of Secondary Stock Market	A	A	A	B	A	A	B
Newly listed Companies in Secondary Stock Market	A	A	A	B	A	A	B
Capitalisation of Primary Stock Market	A	A	A	B	A	A	A
Turnover in Primary Stock Market	A	A	A	B	A	A	A
Revenue from Bequest Tax	A	A	A	A	A	A	A
Revenue from net Wealth Tax	A	A	A	A	A	A	A
Top Marginal Bequest Tax Rate	B	B	A	A	A	B	B
Taxation of Dividends – Top Marginal Tax Rate	B	B	A	A	A	A	B
Taxation of Dividends –Top Marginal Tax Rate for Self-employed	B	B	A	A	A	A	B
Taxation of Stock Options	B	B	A	A	A	B	B
Taxation of Capital Gains on Shares – Short Term	B	B	A	A	B	A	B
Taxation of Capital Gains on Shares – Long Term	B	B	A	A	B	A	B
Capabilities							
Claims on a Bankrupt’s Assets - Length of Time	C	B	A	A	B	B	B
Entrepreneurship Education at Primary & Secondary Level	C	B	B	C	A	A	A
Entrepreneurship Education at Higher Levels	C	B	B	C	A	A	A

Quality of Management Schools	C	B	B	C	A	A	A
Government Programs	C	B	B	C	A	A	A
<b>Market conditions</b>							
Procurement Regulation	C	B	B	A	A	B	B
Barriers to Competition	A	A	A	A	A	A	B
Public Ownership	A	A	A	A	A	A	B
Public Involvement in Business Operation	A	A	A	A	A	A	B
Export Credits and Insurance	C	B	B	C	A	A	A
<b>Regulatory framework</b>							
Highest Marginal Income Tax Plus Social Contributions	A	A	A	A	A	A	A
Average Income Tax plus Social Contributions	A	A	A	A	A	A	A
SME Tax Rates	A	A	A	A	A	A	B
Taxation of Corporate Income Revenue	A	A	A	A	A	A	A
Actual Cost to Close a Business	A	B	A	B	A	A	A
Actual Time to Close a Business	A	B	A	B	A	A	A
Number of Procedures for Starting a Business	A	A	A	A	A	A	A
Number of Days for Starting a Business	A	A	A	A	A	A	A
Costs required to Start a Business	A	A	A	A	A	A	A
Regulatory and Administrative Opacity - Index	A	A	A	A	A	A	B
Enforcing Contracts - Number of Procedures	A	A	A	A	A	A	A
Enforcing Contracts – Time	A	A	A	A	A	A	A
Minimum of Capital required to Start Business	A	A	A	A	A	A	A
Enforcing Contracts - Cost in percentage of debts	A	A	A	A	A	A	A
Flexibility of Hiring – Index	A	A	A	A	B	A	A
Flexibility of Firing – index	A	A	A	A	B	A	A
Rigidity of Hours Index	A	A	A	A	B	A	A
Number of Administrative Procedures when Recruiting First Employee	A	A	A	A	A	A	B
Number of Administrative Procedures when Recruiting Additional Employee	A	A	A	A	A	A	B
The Costs of Firing	A	A	A	A	B	A	A
<b>Entrepreneurial Culture</b>							
Cultural and Social Norms	C	A	B	C	A	A	B
Entrepreneurial Motivation	C	A	B	C	A	A	B
Self-employment Preference	C	A	B	C	A	B	A
“The wish to own one's own Business”	C	A	B	C	A	B	A

Desirability of becoming Self-employed	C	A	B	C	A	B	A
Proclivity to take Risk	C	A	B	C	A	B	A

Source: Sources/links for the indicators can be found in Hoffmann (2006).