



Venice Summer Institute 2006

Perspectives on the Performance
of the Continent's Economies

21 - 22 July 2006

Venice International University, San Servolo



**Promoting Entrepreneurship - What are
the Real Policy Challenges for the
European Union (EU)?**

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Abstract: The European Union (EU) wants to boost entrepreneurship as part of its strategy to transform its economy and to build its future economic and competitive strength. This objective is based on a perceived large deficit in entrepreneurship performance as compared to the United States (US). Often this deficit is portrayed as a consequence of the lack of *start-ups* in Europe. Many EU policies are consequently targeted towards increasing the number of new firms. However, this paper will argue that the perceived deficit in start-ups is false. Consequently, many EU policies may currently be targeted towards an incorrect objective. The paper shows that start-up rates of new firms in the EU are comparable to the start-up rates in the US (based on new data from national Statistical Offices). The paper also shows that the real problem in Europe is a lack of growth in new firms (based on data supplied by a private publishing firm, which is specialised in cleaning and organising data supplied by national information providers). Finally, the paper attempts to identify the EU's real policy challenges based on a comparative analysis of indicators. While this last section of the analysis is more illustrative than conclusive, several policy areas are highlighted where reforms are needed in the EU. These policy areas are both in the macro and micro economic structures where European framework conditions are less conducive to high-growth firms than the framework conditions in the US.

Introduction

The European Union (EU) wants to boost entrepreneurship as part of its strategy to transform its economy and build up its future economic and competitive strength. The Commission has published several reports highlighting the importance of entrepreneurship and identifying EU's challenges in this domain. The Green Paper on Entrepreneurship states that the main challenge for the EU is “*to boost the Union’s levels of entrepreneurship, [by] adopting the most appropriate approach for producing more entrepreneurs and for getting more firms to grow*” (European Commission, 2003).

Furthermore, the current Action Plan for Promoting Entrepreneurship writes: “*The EU is not fully exploiting its **entrepreneurial potential**. It is failing to encourage enough people to become entrepreneurs [...] Europe, unlike the US, suffers from low expansion rates after start-up[...]. Whereas US entrepreneurs appear to test the market and, if successful, expand rapidly, many business ideas in Europe never come to market, as their viability is questioned before they can be tested in the market place*” (European Commission, 2004; p. 3-4).

The European Council has also addressed the need for more entrepreneurship and discussed possible policy measures on several occasions. The European Council’s latest policy conclusions encourage member states to “*strengthen the measures to promote a more entrepreneurial culture and the skills to encourage more people to consider a career as entrepreneur, including through entrepreneurship education and training at the appropriate level of education*” (EU Council, 2006).

This paper addresses two questions relating to the European Commission and the Council’s recommendations: Have the right challenges been identified for the EU? Have the most appropriate policy measures been suggested?

The first question will be answered by presenting data on firm creation and firm growth from three sources: 1) the work on firm demography published by EUROSTAT; 2) the work on international comparability of firm creation published by the OECD; and 3) new work based on firm registrar in Statistic Denmark (EUROSTAT, 2005 and Vale, 2006). This data will be supplemented by new

analyses on high-growth firms based on a comprehensive commercial database of business accounts.

The second question will be addressed using a regression analysis and a comparative analysis of indicators. The answer to this question will be more speculative than the answer to the first question as the issue is more complex and builds on fewer facts. The comparative analysis is performed within a general theoretical framework for the business environment affecting entrepreneurial performance. The general framework, which builds on Lundström and Stevenson (2005) and Verheul *et al* (2003), is taken from Hoffmann (2006), and is quantified by 61 indicators (Hoffmann *et al*, 2005). Policy actions are very broadly defined as any change in institutions, regulations, or tax and support schemes.

A notable amount of literature has addressed the differences between the EU and the US. Several analyses stand out for the purpose of this paper. Audretsch *et al* (2002) offers a comprehensive theoretical framework and detailed country analysis in the area of entrepreneurship. Lundström and Stevenson (2001 and 2005) carry out a comprehensive review of 10 countries' entrepreneurship policies. Both books have provided input to the theoretical framework utilised in this paper. The empirical part of this paper has also benefited from a series of OECD reports on the differences between the EU and the US in the area of entrepreneurship (OECD, 2003*b* and 2005). Grilo and Thurik (2005) and Van Steel *et al* (2006) offer good insight into the determinants of entrepreneurship in the US and the EU and explore various types of empirical analyses, which have been tested and used in the context of the current paper. The novelty of this paper is that it combines a rigorous data analysis based on official business statistics to decipher the challenges faced by the EU and then juxtapositions these challenges to the underlying business environment affecting entrepreneurship, using a large series of indicators.

What Challenges does the EU Face in Terms of Entrepreneurship?

Entrepreneurship is not easily defined as is not a single event, but rather a process that transforms an idea into a firm. Many people leave the process before they even start a firm and most new firms exit due to failure, while others survive at, or near, the break even point. Only a small minority of new firms turn into high-growth firms, also known as *gazelles*.

The chosen definition of entrepreneurship should be compatible with the macro economic policy objective or the policy context (Storey, 2002). For example, a definition based on Schumpeter's work is often used if the policy objective is to promote innovation and growth (Schumpeter, 1949), whereas another common definition is based on Knight's work and is often used if the policy objective is to create jobs through self-employment (Knight, 1971).

The policy context of this paper is the European Commission's objective to boost entrepreneurship (European Commission, 2003) and, thus, the EU challenges in this domain can be summarised as how best to *increase the number of start-ups* and to *generate more high-growth firms*. Consequently, this paper defines entrepreneurship as the *entry of new firms* and *creation of high growth firms*. This is a definition closely linked to Schumpeter's work on entrepreneurs as innovators.

The link between growth and entrepreneurship is substantiated in several papers (Acs, *et al*, 2005, Audretsch and Thurik, 2000; Scarpetta *et al*, 2002; OECD 2003a; Brandt 2004a). Therefore, this link is not called into question in this paper.

As the optimal level of new firm entry is unknown, the EU's objective to increase start-up rates must be seen in a comparative perspective. Carree *et al* (2004) show that, for example, countries having a self-employment rate deviating from a what the authors define as a 'natural' rate, given the level of economic development, suffer in terms of economic performance. Indeed, the authors conclude that growth is actually reduced by both a too high and too low self-employment rate. Furthermore, Audretsch *et al* (2002) show that deviating from an 'optimal' share of small firm throughout the economy may reduce future economic growth. As the optimal start-up

rate depends on the level of economic development, the start-up rates in the EU and the US should be similar.

An optimal level of high-growth firms does not exist, as more firm sustainable growth is always better. The level of high-growth firms in the EU will be compared to that of the US.

Measuring the Number of Start-ups

Measuring the number of start-ups should ideally be a simple task. However, no agreed international definition exists on what constitutes a start-up firm. In the United Kingdom (UK), for example, VAT registration is the most commonly used measure of start-up activity, whereas the hiring of first employee is measured in the US (Vale, 2006). While most countries use VAT registration as the measure of firm creation, this does not necessarily ensure comparability as the VAT registration thresholds vary from zero up to £60 000 within the EU.

The number of new firms has to be normalised by some measure to allow for a cross-country comparison. Many possible denominators are available depending on purpose of the comparison (Iversen *et al*, 2005). This paper focuses on the generation of growth through Schumpeterian entrepreneurship. Therefore, the denominator is equal to the stock of existing firms within a given country in order to measure the dynamics within the business sector. Alternatively, the number of people in the workforce or population could be used as the denominator although that would more measure the entrepreneurial participation and the industrial structure rather than the competitive pressure from entrepreneurship.

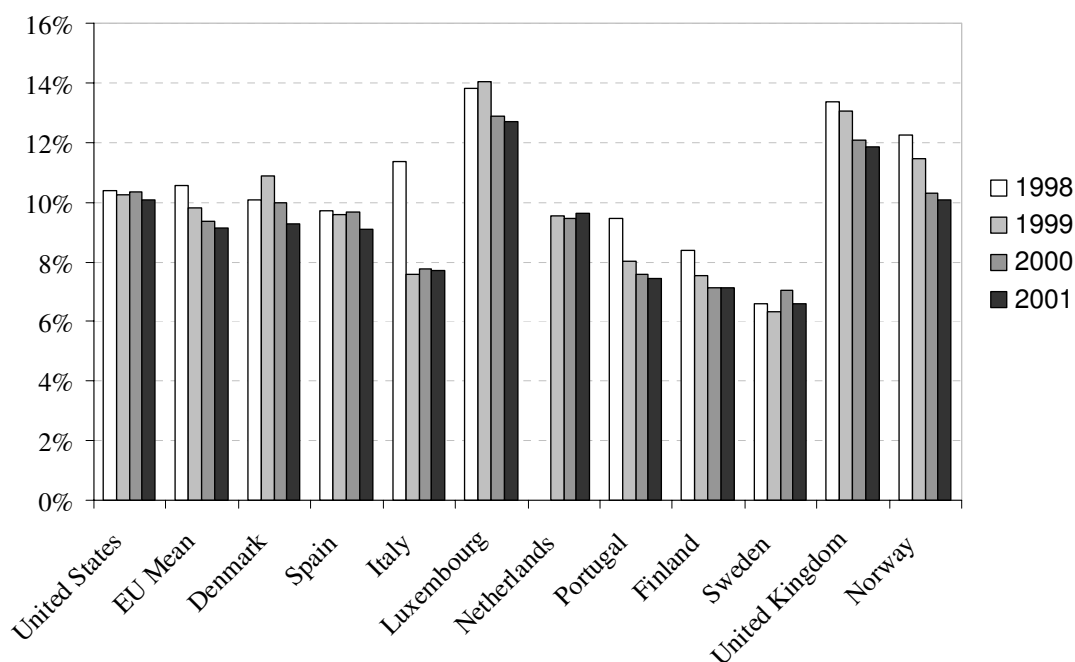
The data used in this paper originates from the EUROSTAT Business Demography Project, which has to some degree been successful in providing comparable data on start-up rates for several European countries (EUROSTAT, 2005).

The US has four main sources of start-up rates, which produce very different start-up rates for the US varying from around 10% to around 20%. Two of the sources are from the US Census Bureau, one is from US Small Business Administration (SBA) and the last one (producing the highest start-up rates) is from the Bureau of Labor Statistics. The first three sources build to some extent on the same metadata

(hiring of the first employee). Definitions of the start-up and stock (number of existing firms) differ slightly across these three, although the resulting start-up rates are somewhat comparable - between 10 and 12% depending on year of comparison. The last source builds on Quarterly Census of Employment and Wages and produces very different results than the other three, which probably is due to the quarterly collection of data where short lived firms and false birth play a larger role (Pinkston and Spletzer, 2004).

Even though definitions applied in the US SBA data are quite similar to EUROSTAT, as both use a similar unit and both define an existing firm on an “alive during the period basis” (Vale, 2006), none of the US figures are directly comparable with the EUROSTAT data. A comparison of the raw data shows that start-up rates are somewhat similar in the US and EU (Figure 1).

Figure 1: A Comparison of US and EU Business Start-up Rates



Sources: United States – Firm Size Data – Small Business Administration; EU – EUROSTAT Business Demography (The full EUROSTAT data set includes several other countries, but only those countries for which data was available for at least three of the above years are shown in this figure).

However, this comparison does have one serious methodological problem. The US data only includes employer firms, i.e. businesses with at least one employee, whereas the EUROSTAT database includes all new firms. The EUROSTAT data does provide a breakdown by size class, including a category for zero employee enterprises. To resolve the methodological problem, one could simply subtract the

zero-employee category from the EUROSTAT data, which would reduce the average EU start-up rate to around 5%. This solution leaves out all firms that existed in period $t-1$ without employees and hired their first employee in period t , as a new firm in EUROSTAT per definition did not exist in $t-1$.

Many countries' business registrars allow for a more detailed analysis, and comparable start-up rates can consequently be calculated. In co-operation with Statistics Denmark, it was possible to calculate comparable Danish start-up rates. The numerator equals the number of new firms entering the market in year t with at least one employee, plus the number of existing firms hiring their first employee in year t . A total of 4,324 firms started in 2003 in Denmark with at least one employee according to EUROSTAT data. A total of 7,155 firms, existing in 2002 without employees, hired their first employee in 2003.¹ Consequently, the population of new Danish employer firms in 2003 consists of 11,479 enterprises (i.e. $4\,324 + 7\,155$).

The denominator equals the stock of employer firms, which is defined as the total population of enterprises with employees at any point during 2003 - a total number of 101,584 firms. The Danish start-up rate for employer firms is thus equal to 11.3%, which is higher compared to its 9.7% start-up rate according to the EUROSTAT data.

This conclusion is supported by preliminary calculations of start-up rates in Finland and the UK, where the actual employer start-up rates are higher than the official EUROSTAT figures. A forthcoming paper will look to expand this analysis to estimate start-up rates for employer firms for several other EU countries (Hoffmann, Nielsen and Vale).

Based on this data, it would appear that the European Commission has misidentified its policy challenge. The Danish case show that the start-up rates in the EU might actually be higher than the US start-up rates if the focus is on employer firms. This work is still preliminary, but it does indicate that the EU countries do not have a start-up problem. The same conclusion was implicitly made in Scarpetta *et al*

¹ The author wants to thank Mr. Peter Bogh Nielsen, Statistics Denmark for providing the data. The calculation is based on Danish Structural Business Statistics.

(2002); although the authors did not correct for differences in the registration method across countries.

This conclusion contrasts starkly to the results of the Global Entrepreneurship Monitor (GEM) Project (GEM, 2005), which may stem to some extent from a common misinterpretation of the GEM data. GEM publicises a so-called Total Entrepreneurial Activity (TEA) index that measure people engaged in the process of firm creation. TEA is therefore not a measure of start-ups, although it is commonly referred to as such. These limitations are recognised by members of the GEM research team. Reynolds *et al* (2005) list for example several ways to construct GEM data that are comparable with start-up rates based on business registrations. They construct start-up rates for eight EU countries and the US. In this constructed data, the large differences between Europe and the US, found in the TEA index, disappear. The US has an 11.5% start-up rate based on GEM data compared to a 9.7% average among the eight EU countries (Reynolds *et al*, 2005). There is also a degree of subjectivity in the GEM data as they are based on interviews about people's attempts and successes as entrepreneurs.

Overall, the presented data suggests that the Commission should change its focus on “*policy measures (that) seek to boost the Union’s levels of entrepreneurship, [...] (by) producing more entrepreneurs*”. The EU has start-up rates of new firms comparable to the US.

Measuring the Generation of High-growth Firms

Defining what constitutes a high-growth firm may even be more difficult than defining start-up rates. The theoretical literature offers several definitions inspired by the work of David Birch (1987 and 1995). In Birch's work, a high-growth firm has at least 20 % growth each year over a five-year period. Other authors define high-growth firms as the 10 % fastest growing firms in the economy (OECD, 2002).

This paper defines high-growth firms as the share of firms with a growth rate (in either employment or turnover) higher than 60 % over a three-year period (from t to $t+2$) and with a growth rate of at least 20 % each year. The requirement of a positive growth rate of at least 20 % is based on Birch work on gazelles (Birch, 1995). The requirement ensures only firms with constant growth are included and not firms

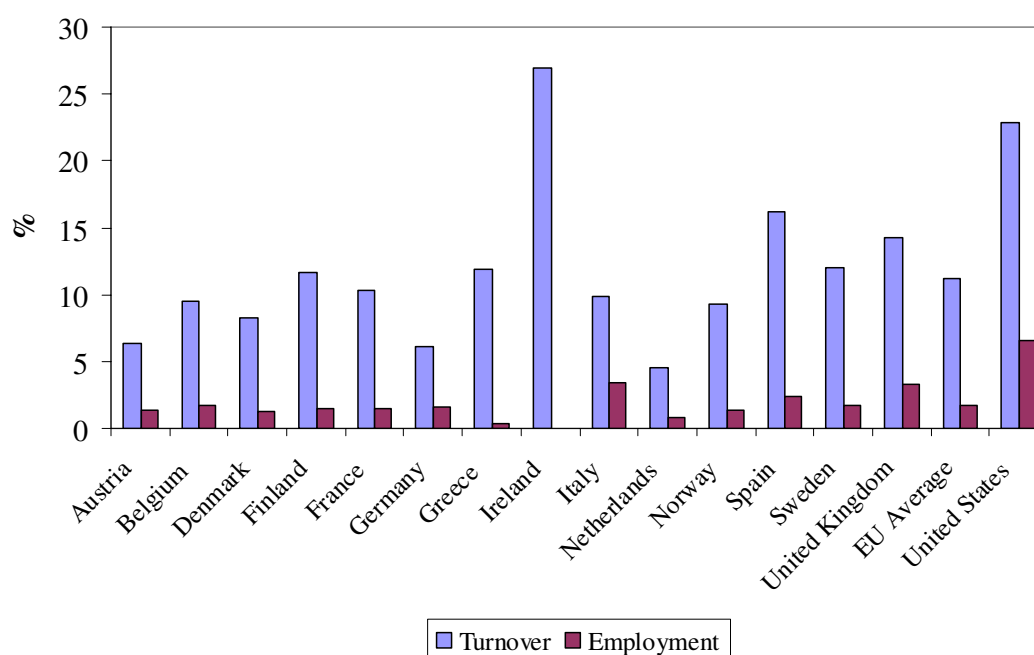
that due to changes in owner structure or other external events have a very high growth in one year and then no growth in the following year. The 60 % threshold is commonly used, but is not based on any hard evidence. Turnover and employment are both included due to the differences in growth patterns across sectors. Knowledge intensive manufacturing firms grow both in employment and turnover, whereas service sector firms mainly have high growth in employment (Delmar *et al*, 2003). The time period is shorter than the original Birch work, as the sample size reduces dramatically in some countries if firms' performance has to be tracked over many years as compared to three years.

The data for calculating the indicators on the share of high-growth firms in a given country is taken from the Bureau Van Dijk (BvD), an electronic publishing firm and documented in Hoffmann and Junge (2006). BvD specialises in cleaning and organising data supplied by national information providers (e.g., Companies House in the UK, INPI in France, National Bank in Belgium). This database has been used by several other researchers (see for example, Desai, Gompers and Lerner, 2003).

In principal, the database covers all firms. However, in the paper by Hoffmann and Junge (2006), the authors show that firms with less than 15 employees are underrepresented in the data. The sample used in this paper is consequently restricted to firms that belong in the size class of 15 to 200 employees. While this threshold does limit the number of firms in the sample, it also has some advantages. For example, many European countries have labour market regulation that take effect at 15 employees, thereby creating problems in comparing growth in smaller firms.

The data clearly shows that EU countries lag behind the US in producing high-growth firms (Figure 2). Only Ireland produces similar high-growth rates to the US. While the focus here is on young firms (firms less than 5 years old in period t), the conclusion holds constant when including all firms.

Figure 2: The Share of High-growth Firms among all new young Firms



Source: Own calculation based on Hoffmann and Junge, (2006)

Note: Applying Birch's definition to the data shows that the share of gazelles in this database is 3.2% for the time period 1999-2003, which is very similar to Birch's 3% (1995).

An extensive sensitivity analysis in Hoffmann and Junge shows that the ranking of countries stands up to changes in the 60 % threshold. The ranking is also robust to corrections for differences in the industry structure across countries. Alternative definitions of high growth and different assumptions about the age range of a young firm have also been tested, but again, with little impact on the ranking of countries or the large difference between the EU average and the US. The only real concern is the representativity of the data. The US is based on a very small sample, although tests on larger samples but shorter time periods do suggest that the large difference between EU and the US is a reflection of the reality.

Overall, the presented data suggests that the Commission has adopted the correct approach when stating that “*Policy measures should seek to boost the Union's levels of entrepreneurship .. for getting more firms to grow*” (EU, 2002).

This conclusion is more preliminary than the conclusion related to start-up rates because the quality of the underlying data does not meet the normal criteria for national statistical offices, used in the previous section. Nonetheless, the richness of

the database does allow for corrections for firm age, size class, business cycle, listed firms, consolidation code and industry structure, which would not have been possible using official statistics as access to the underlying data is restricted.

What are the Key Policy Areas for Stimulating High-growth Firms?

The previous sections clearly show that Europe should focus on getting more firms to grow and not on stimulating more firm creation. The key question is therefore: Which policy areas should the EU include in its policy reform in order to encourage more firms to grow?

Culture and religious orientation have been emphasised as the main reasons for cross-country differences; others emphasise simply market size². However, as Baumol notes “*The most important policy implication is that the stimulation of productive entrepreneurship is a much more straightforward and feasible undertaking than previously recognised*” (Kauffman, 2005; pp. 23).

A three step comparative methodology is used in this paper to identify key policy areas driving entrepreneurship. First, the entrepreneurial business environment is defined and quantified. Second, the empirical links between the indicators measuring the business environment and the indicators measuring high growth are tested. Third, if the correlation between business environment and high-growth firms is significantly positive, then key policy areas for enhancing entrepreneurship performance will be identified based on regression and comparative techniques.

Defining and Quantifying the Entrepreneurial Business Environment

The number of new high-growth firms created each year depends on a myriad of underlying factors coupled with the personal attributes of entrepreneurs. No single paradigm or framework exists (Aldrich, 2000). This section builds on the eclectic theory developed by Audretsch *et al* (2002) and the policy framework developed by Lundström and Stevenson (2002, and 2005). Hoffmann (2006) presents the full theoretical framework. This section summarises the main parts of the framework.

² For example, Nokia’s former CEO Jorma Ollila often joke that when Californian entrepreneurs open their garage doors they had most of the World market waiting in the driveway, whereas the only thing waiting in a Finnish driveway is a meter of snow.

Many words and definitions are used in the literature to describe the factors affecting entrepreneurship. The differences between various studies are often semantic; the essence of the various papers is that a growth-oriented firm is created by a combination of three factors: *opportunities*, *skilled people* and *capital*. *Opportunities* are the ideas that create genuine value in the minds of other people, and they are essential for starting and growing businesses (European Commission, 2002 and Davidson, 1989). *Skills* not only entail basic industry knowledge required to succeed in a competitive environment, but also the ability to seize entrepreneurial opportunities (Reynolds, Hay and Camp, 1999 and Gavron *et al*, 1998). Skills include the competencies of the entrepreneur and also access to other competencies within the entrepreneurial infrastructure (Lee *et. al*, 2000). *Capital* is a necessity for firm expansion and growth. Most studies on entrepreneurship highlight capital as one of the most critical factors for success (EU, 2003). Capital covers all phases of business life, from access to early seed funds to access to the stock markets.

A combination of opportunity, ability and capital does not necessarily lead to entrepreneurship if costs, such as opportunity cost (e.g. forgone salary and loss of health insurance) and start-up cost, outweigh potential benefits. In this event, the opportunity should not be pursued following the rationale of basic economic theory. These *incentives* reflect the classic market clearing condition that marginal cost must equal marginal benefit in equilibrium. The incentive structure component in the model represents the various incentives and disincentives that impact the cost-benefit balance of the opportunity.

A final component in the model is *motivation*. Previous work shows that the willingness to pursue entrepreneurial activities relies only partly on the economic factors described above (Davidson, 1989). Personal motivation plays a decisive role as it is unique and involves a complex combination of factors, such as personal traits, risk aversion and sociological circumstances determined by the national culture. This model's understanding of motivation is based on cognitive theory, which has its roots in psychology (Wood and Bandura, 1989).

Entrepreneurship is also affected by basic macro economic conditions. High unemployment, for instance, will increase the share of individuals motivated to become entrepreneurs as a result of job loss. Despite their obvious importance for

entrepreneurship, these conditions are excluded in the policy framework as the focus is on differences between the EU and the US. The differences in the macro economic conditions are assumed to be a less important determinate of entrepreneurship than the differences in the micro-economic structures defined above. The framework is therefore constructed for what is labelled “opportunity-based entrepreneurs” by the GEM project, and not for “necessity driven” entrepreneurs (GEM, 2001).

Each of the five factors (*skills, opportunities, capital, incentives* and *motivation*) is affected by a series of policy areas. This section focuses on 61 different indicators for the 24 policy areas, which are organised in relation to the factor they affect most based on the author’s qualitative judgement in order to communicate the results in an easily comprehensible manner (Figure 3). The organisation of factors does not play any role in the analytical results as each policy area is analysed independently of the other areas. A full description of the policy areas is given in Annex 2.

The 24 areas in the model should cover all policies affecting entrepreneurship, implying that any policy aimed at affecting growth by stimulating entrepreneurship should belong to one or more of the policy areas. While various aggregation and disaggregation of the 24 policy areas can decrease or increase the number of policy areas. This list forms the basis of the Danish entrepreneurship policy (EBST, 2005).

Figure 3: Overview of the Main Policy Areas at the Micro-level

	Total measure of the business environment for entrepreneurship				
Factors affecting entrepreneurial performance	Opportunities	Capital	Ability	Incentives	Motivation/Culture
Policy areas affecting entrepreneurial performance	Entry Barriers/deregulation	Loans	Trad. Business education	Personal Income tax	Entrepreneurial motivation
	Access to foreign markets	Wealth & bequest tax	Entrepreneurship education	Business tax & Fiscal incentive	Initiatives towards Specific groups
	Technology transfer	Business Angels	Restart possibilities	Social security discrimination	Communication About heroes
	Private demand factors	Venture capital	Entrepreneurship Infrastructure (public)	Administrative burdens	
	Procurement regulation	Capital taxes	Entrepreneurship Infrastructure (private)	Laubor market regulation	
		Stock markets		Bankruptcy legislation	

Note: The darkest policy areas cannot be quantified.

Not all policy areas can be quantified, but a quality assessment of available indicators has highlighted 61 indicators, which can be used to quantify 18 of the policy areas (Annex 2). A quality evaluation of the data suggests that most of the policy areas are measured by accurate indicators, with the exception of taxation where not all aspects were adequately covered (Hoffmann *et al*, 2005)³. Furthermore, additional analyses are needed in the area of entrepreneurship education before policies can be suggested. Thematic studies confirm the results of this analysis and show large differences in the emphasis put on entrepreneurship teaching and attitudes in European and US universities (EBST, 2005).

The construction of composite indicators is almost an art form in itself and highly controversial. This section uses the methods suggested in the *Handbook on Constructing Composite Indicators: Methodology and User Guide* published by the OECD and the Joint Research Centre of the European Commission in Ispra (Giovannini *et al*, 2005). The handbook points to four main problems in constructing composite indicators: 1) selection of indicators; 2) treatment of missing values; 3)

³ The full quality evaluation is found in Hoffmann *et. al* 2005 but Annex 3 summarises the evaluation for the policy areas that are found important in the sections below.

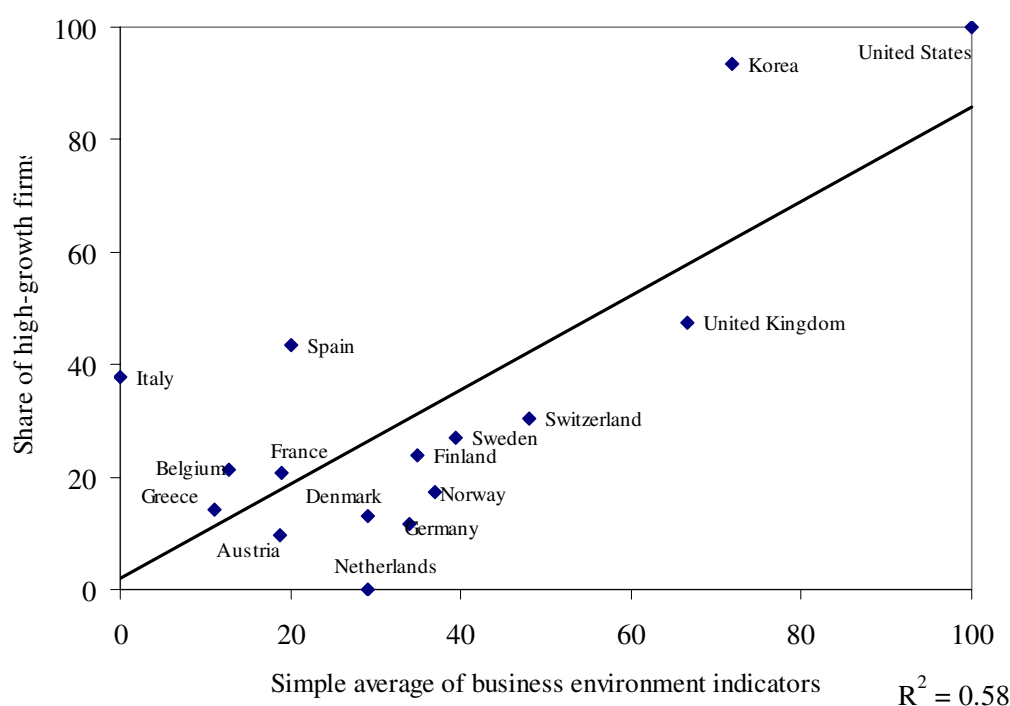
normalisations; and 4) weighting - with weighting as the most important problem. To respond to these concerns, the selection and evaluation of the individual 24 indicators are done in Hoffmann *et al* (2005). No imputation of missing values is attempted, which implicitly assigns all missing values for a country with a value equal to the average of all other available indicators for that particular country. Several techniques can be used to normalise indicators, including the standard deviation from the mean, the distance from the mean (where mean=100), the distance from the best performer (leader=100) and the distance from the best and the worst performing country (the "minimum-maximum method"). For this study, the "minimum-maximum method" has been selected. A sensitivity analysis shows that the ranking of countries is robust to other methods of normalisation.

No direct solution exists to the selection of weights. Therefore, this section will not focus on composite indicators, but rather on composite distributions using a new sensitivity technique where weights are assigned randomly to each of the normalised indicators. The calculation is repeated 10,000 times and the weights are drawn from a uniform distribution (from 0 to 1) for each of the indicators. This calculation gives a distribution of possible values for each country in each policy area. This sensitivity technique also addresses to some extent the problem of the selection of indicators. As the randomly assigned weights vary between 0 and 1 for each indicator, the technique also tests indirectly for the robustness of possibly excluding an indicator.

Linking the Business Environment to the Creation of High-growth Firms

A simple correlation plot clearly indicates the links between the EU objective to generate more high-growth firms and the quantified business environment. This plot shows a high correlation between business environment indicators and the performance indicator (Figure 4). About 55% of the differences in performance among the countries can be explained by the differences in the business environment. While the correlation is not necessarily a sign of causality, the figure does suggest that most of the policy areas that determine performance have been included in the analysis.

Figure 4: Links between Performance and Business Environment



Note: The performance indicator is a simple average of the normalised share of high-growth firms in both turnover and employment in 2001-03. The business environment indicator is the simple average of the normalised values of each of the 18 policy areas that can be quantified.

The correlation depends critically on the inclusion of the US and Korea because the other countries fall in two groups. The first group of Northern European countries seems to require a better business environment for its entrepreneurial performance when compared to the second group of Southern European countries. The difference could perhaps be attributed to some of the macro economic conditions that are not included in the model or some cultural aspects that are not captured by the indicators.

However, the assumption of equal weights is the main reason for the split into two groups. The Southern European countries perform weakly in certain areas, which lowers their average business environment, but they also perform comparably well in some areas to the best countries. For example, Spain has a major weakness in their capital taxes, whereas their bankruptcy legislation is relatively entrepreneurship friendly. The weakness in Southern Europe could be in areas less important for performance.

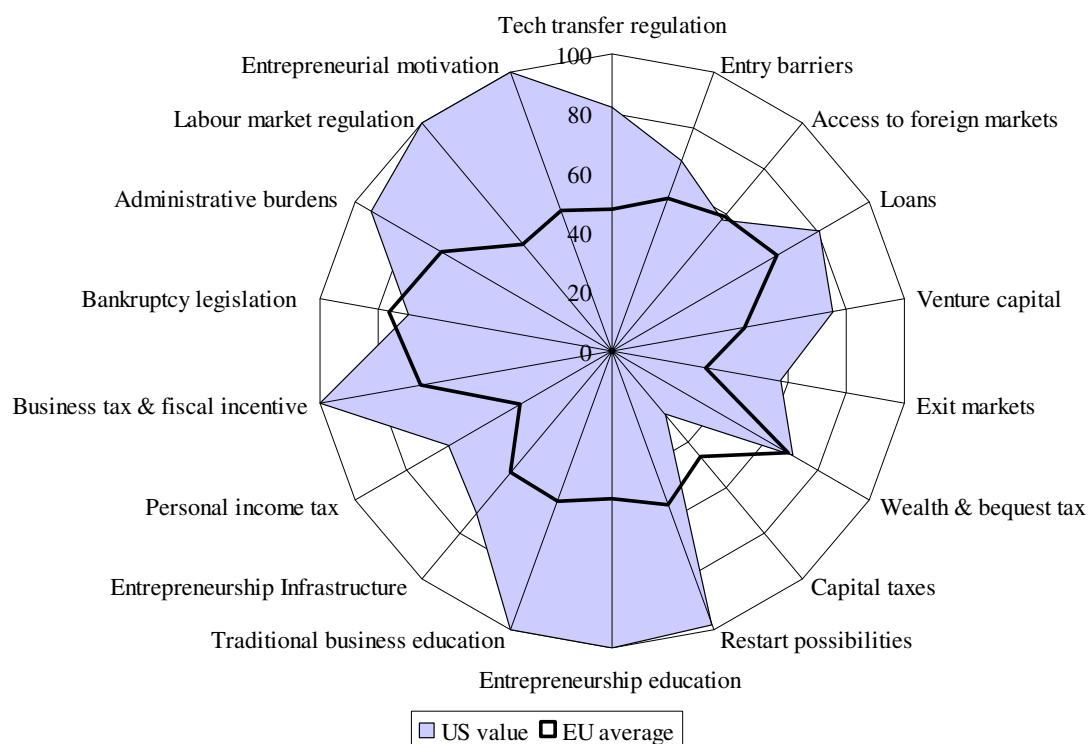
The correlation is quite robust to changes in the weights for the various policy areas. A Monte Carlo Simulation, where the weights are drawn from a uniform

distribution (0-1) shows that the correlations are within a 95% confidential interval of the average correlation, which is always significant when different from zero. Thus, the weights play a very limited role in determining this correlation.

Comparing the EU's and the US's Business Environment

Many differences exist between the EU's and the US's business environments. The quantification of the various policy areas allows for a comparative study, which can be summarised in a radar chart (Figure 5). In the EU, five areas (restart possibilities, entrepreneurship education, traditional business education, labour market regulation and entrepreneurship motivation) are much less conducive to entrepreneurship when compared to the US. In other areas, the EU performs at a par with the US. For example, the EU has better access to foreign markets than the US, capital taxes are quite low in some EU countries and the EU bankruptcy systems are on average quite inexpensive and efficient.

Figure 5: Comparative Analysis of the Business Environment in the EU and the US



Source: Author’s calculations.

Note: EU average covers the EU-15 (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Luxembourg, Portugal, Spain, Sweden and United Kingdom)

The Relative Importance of the Various Policy Areas

While a comparative study provides some input as to what policy areas should be included into the EU’s reforms, it does not measure the relative importance of each policy area to promoting entrepreneurship. Such information is needed in order to move beyond simple benchmarking methods and provide policy makers with clear policy priorities.

Various fallible ways exist for determining the relative importance of each policy area. Preferably, a multiple-regression based on a panel over several years and countries would be used, but the lack of country coverage and time series for many of the indicators make this difficult. Furthermore, the inclusion of all policy areas into a single equation does not provide much insight due to a high degree of multicollinearity among the various policy areas. Therefore, separate regressions are computed for each policy area in order to obtain an initial ranking of the policy areas.

Consequently, multivariate and other types of regression techniques are discussed briefly below.

The regressions are done in two steps. First, the data on high-growth firms is “filtered”. The process controls for possible biases in the database on high-growth firms by filtering out factors that are known to have an impact on growth like sector, age and size, but are unrelated to policy in the short term (see for example, Evans, 1987 or Smallbone *et al*, 1995). Second, the residuals from the first regression are averaged across all firms within a given country and a given year. This results in two panels, one for the employment data and one for the turnover data, over 17 countries and three time periods. These two panels are then used to test the importance of the various policy areas.

The following “filter” equations (one for employees and one for turnover) are estimated for employees and for turnover using the full database of business accounts (14 million firms):

$$d_{ijt} = \alpha + \sum_{k=1}^K \delta^k d_{it}^k + \varepsilon_{ijt}$$

The left hand side is a dummy variable (equals 1 if firm i in country j and year t is a high-growth firm and zero elsewhere). On the right hand side, k refers to the control variables. The control variables are: five age groups (1, 2, 3, 4, and 5 years old), five size classes (15-19 employees, 20-49 employees, 50-99 employees, 100-199 employees and 200+ employees), 17 industry groups (NACE definition), a dummy variable for whether profit and loss accounts are reported consolidated or unconsolidated⁴ and a output gap variable⁵, reflecting differences in business cycles across countries.

In the regression for turnover, all of the age groups were significant at the 5% level. Three of the size classes (15-19, 20-49 and 200+) were significant. Nine of the NACE groups were significant. The output gap and the dummy for consolidated

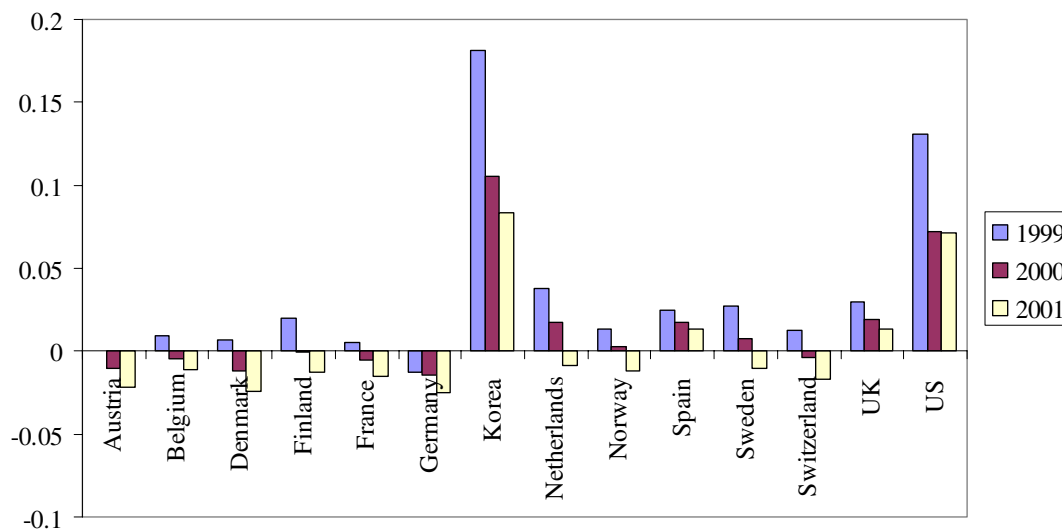
⁴ This relates to whether or not the firm has income from subsidiaries.

⁵ Output gap is estimated by the OECD and can be obtained from the Economic Outlook Database. Yearly output gaps exist for all countries except Korea. Korea is estimated for the output gap by the deviation of output growth from average growth in Korea, 1988-2004. In the regression, the business cycle variable in period t is the average of yearly output gaps from t to $t+2$.

accounts were also significant. Interactions between the various dummy variables were analysed, but the results were not included into the final regression as only a few of them were significant. Similar results were found in the regressions for employment, although slightly fewer dummy variables were significant.

The average of the residuals for all firms within a given year and country was calculated based on the results from the “filter” regressions (Figure 6). These average residuals represent the difference among the countries with respect to the EU challenge related to the generation of high-growth firms when all of the non-policy relevant factors are “filtered out”. These residuals correlated highly (0.9-0.93) with the share of high-growth firms (Figure 2). This suggests that the different country samples in the database on high-growth firms are unbiased with respect to sector, age and size composition. A few of the European countries do however change place in country rankings depending on whether the ranking is based on the residuals or the simple share of high-growth firms. The residuals are then used as the dependent variable in the next regressions.

Figure 6: The Average Residual across all Firms within a Given Year (Turnover)



Source: Author’s calculations

The policy areas are included individually in this second set of regressions as the independent variable (one regression for turnover and one for employment). Data for the policy areas are only available for two time periods, so only two time periods of residuals are included at a time. Large differences exist among policy areas with regard to the time it takes for a change in the policy area to lead to a change in

performance. The policy areas are consequently regressed on both the first two time periods of 1999 and 2000 and the last two time periods of 2000 and 2001.

Ten of 18 policy areas that could be quantified are significantly correlated with some of the residuals. Five areas (venture capital, restart possibilities, personal income tax and bankruptcy legislation) are always significantly correlated with the residuals, regardless of the time period and the definition of high growth (Table 1). Two areas (entrepreneurship education and labour markets) are not significantly correlated with high growth in employment in one time period. Two areas (capital taxes and entrepreneurship motivation) were only significantly correlated with growth in turnover and not in employment. One area (business tax & fiscal incentives) was significantly correlated with growth in employment in older firms but not in younger firms (less than 5 years old).

Table 1: Summarising the Regression Results

	Significantly Correlated with Turnover Residuals	Significantly Correlated with Employment Residuals
Venture Capital	X	X
Exit Markets	X*	X
Capital Taxes	X	
Restart Possibilities	X	X
Entrepreneurship Education	X	X*
Personal Income Tax	X	X
Business Tax & Fiscal Incentive		X**
Bankruptcy Legislation	X	X
Labour Market Regulation	X	X*
Entrepreneurial Motivation	X	

Note: X* not significantly correlated in one of the time periods, but significantly correlated in at the 5% level in a two sided test. X** only significantly correlated if all firm age groups are included in the regression, but not if only young firms are included.

A significant correlation between a given policy area and the residuals suggest that this area is important for the generation of high-growth firms. However, these correlations could be spurious. Some significant policy areas may not be directly important for high growth and, similarly, policy areas that are insignificantly

correlated with the residuals may become significant if other areas are included into the analysis.

Multivariant regressions were carried out to include more policy areas, but proved to add little value to the analysis due to the problems of multicollinearity and the small size of the panel. For example, *entrepreneurial education*, *personal income tax* and *venture capital* were all significant, but when the sequence of eliminating insignificant variables was changed slightly, *venture capital* and *restart possibilities* also became the significant variables. The multivariant regression also showed that *motivation* and *income tax* were potentially significant policy areas together with *venture capital*.

Fixed-effects models were also tested with little success. The policy areas were entered individually, together with country dummies. These regressions proved difficult as changes in the business environment are slow to take effect and not all countries change every aspect of their business environment every year. Consequently, the use of country dummy variables in this analysis was impossible.

What are the Main Policy Challenges for the EU?

The comparative analysis of the business environment in the EU and the US showed major differences in some policy areas. The analysis of the relative importance of the various policy areas identified 10 policy areas that were shown to be significant for entrepreneurship performance. Combining these two analyses provides an overview of the main policy challenges for the EU (Table 2).

Table 2: Summarising EU's policy challenges

	Not Significantly Correlated	Significantly Correlated
Considerable Difference between the EU and the US	<ul style="list-style-type: none"> • Tech transfer regulation • Traditional business education • Administrative burdens 	<ul style="list-style-type: none"> • Venture capital • Exit markets • Restart possibilities • Entrepreneurship education • Personal income tax • Business tax & fiscal incentive • Labour market regulation • Entrepreneurial motivation
Insignificant Difference between EU and the US	<ul style="list-style-type: none"> • Entry barriers • Access to foreign markets • Loans • Wealth & bequest tax • Entrepreneurship Infrastructure 	<ul style="list-style-type: none"> • Capital taxes • Bankruptcy legislation

Note: A large difference is defined as larger than the average difference.

When analysing what policy areas the EU should focus on, a good starting point would be to address the policy areas where there is a significant correlation and, at the same time, a large difference between the EU and the US (i.e the shaded upper right corner in Table 2).

However, the relative cost of policy actions should also be taken into consideration before constructing policy reforms.

Restart possibilities and *labour market regulation* are financially affordable policies as they only involve the redesigning of government regulation; yet at the same time, these policies can be very difficult to implement. *Venture capital* and *exit markets* are private market institutions so government does not have a permanent role to play. Governments can stimulate, through timely, well-designed policies, the creation of a private market at a low cost (OECD, 2004). *Entrepreneurship education* at university level is more expensive. The estimated cost of a US initiative implementing entrepreneurship programmes across all disciplines in eight US universities⁶ was \$100 million (Kauffman, 2006).

Taxation is also highly correlated with high growth, yet changes are often expensive. For example, changes in income taxes are expensive because they benefit

⁶ Florida International University, Howard University, University of Illinois at Urbana-Champaign, University of North Carolina at Chapel Hill, University of Rochester, University of Texas-El Paso, Wake Forest University and Washington University in St. Louis

everybody in the working force and not only entrepreneurs. Similarly, changes in business taxation and fiscal incentives are expensive. Much of the literature concludes that taxation can have a negative impact on entrepreneurial activity (especially progressive tax systems Gentry and Hubbard, 2000). Yet other authors argue that there is little empirical evidence linking taxation and entrepreneurship (Parker, 2003). Changing the income taxes will probably have much larger effect on the supply of labour, rather than on entrepreneurship. Any tax reform should consequently be analysed within the context of the general framework of the labour market and based on a more in-depth analysis of the cost and benefits of the proposed tax changes.

Given the significant policy areas identified for promoting growth-oriented entrepreneurship and the cost factor, the EU should aim at improving:

- Restart possibilities;
- Labour market regulation;
- Venture capital;
- Exit markets; and
- Entrepreneurship education.

Entrepreneurial motivation is also mentioned in most EU papers as an important policy area to boost entrepreneurship. However, the policy instruments to increase entrepreneurial motivation are not clear. In some respects, motivation can be seen as endogenous to this model. Motivation is influenced by the success of others and the benefits to one's self (Wood & Bandura, 1989). Improvement in the general business framework can be argued to produce more successful entrepreneurs, which will in turn increase motivation among potential entrepreneurs. For example, the attitude in the U.S. towards entrepreneurship was negative a half century ago (Acs, 2005). During the 1970s and 80s, independent changes in the US economy produced a more entrepreneurial friendly economy, from which several very successful entrepreneurs benefited (Schramm, 2004). Today, an entrepreneur is regarded positively by American society as the "self-made man", and indeed, entrepreneurship consequently flourishes in the U.S (Hart 2003). Based on this example, the EU should

focus on improving its performance in the other policy areas in order to help stimulate motivation amongst potential European entrepreneurs.

While this analysis is done at the EU level, it needs to be done at the country level in order to have a real impact. The data and the set-up allows easily for this possibility. The country level analysis will identify challenges both in macro and in micro economic structures. Improvements are needed in all areas and not only focus on improvements in one of them. For example, Denmark has a flexible labour market, but still lacks growth in new firms due to a poor performance in the policy areas of *restart possibilities* and *entrepreneurship education at university level*, which lag significantly behind the US.

A note of caution should also be added. Each European country will have to figure out how to improve its business environment in each policy area based on the unique functioning of its economy. Countries can draw lessons and inspiration from the top-performing countries, but the initiatives have to be tailored made to the national context. This conclusion has been clearly demonstrated in the Danish Policy Report (EBST, 2005).

Conclusion

In the beginning of this paper, it was stated that the EU is perceived to have an unexploited entrepreneurial potential by failing to encourage enough people to become entrepreneurs and by failing to encourage the limited number of existing entrepreneurs to grow their firms. This paper concludes that this perception may be inaccurate.

The new data presented in this paper shows that the EU countries have start-up rates that are comparable to the start-up rates in the US. However, the data presented in the paper does confirm that there is a lack of high-growth firms in the EU. The share of high-growth firms is significantly higher in the US than in any EU country. Some variation does exist among the European countries, with the UK and Ireland as the best performing countries.

The policy implication emerging from this paper's results is clear. The EU should focus on getting more firms to grow by improving its entrepreneurial business

environment for high-growth firms and NOT on stimulating more entry. Furthermore, the analysis suggests that the EU can stimulate growth by focusing on improving *restart possibilities, labour market regulation, access to venture capital, exit markets* and *entrepreneurship education at university level*. These critical policy areas are identified through a quantification of all factors of the business environment that affect entrepreneurship and extensive regression analyses.

Taxation was also found to play an important role for entrepreneurship, but the costs of changes in the tax system are high. Changes in European tax systems may be needed, but these changes should be based on cost-benefit analysis and be seen in a much broader policy context.

The policy areas identified in this paper are very different from the ones suggested by the European Council, who focused on changing entrepreneurial culture through education. This paper speculates that culture and motivation might be endogenous and, therefore, change as a result of the other policy improvements suggested in this paper. Regardless, changing culture and motivation will clearly not be enough to boost entrepreneurship in order to meet the EU's challenge. More comprehensive reforms are needed to get European firms to grow.

While the policy priorities suggested in this paper provide a good starting point, future work should focus on using more advanced econometric techniques to identify the critical policy areas as more time series become available for the underlying data. More work on the pre-entry of entrepreneurs is also needed. The US and the EU might have the same share of nascent entrepreneurs, but the quality of these entrepreneurs may differ. For example, an American entrepreneur may have more pre-start experience than the European counterpart, as the pre-entry stage as hobby entrepreneurship may be easier in the US. How to ensure coherency in the policy design at the national level is also an important area for further analysis.

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Annex 1 Data Description

This annex presents a recapitulative table giving a broad overview of the indicators used to define the framework conditions of the business environment. This annex also includes a brief summary of the quality of data used in this analysis.

Table A1 Indicators of Framework Conditions

Factors	Policy area	Indicator Source & Internet link
		Tech-transfer Regulation
		University/industry research collaboration WEF: The Global Competitiveness Report Technological cooperation IMD, World Competitiveness Yearbook
		Entry Barriers
		Barriers to competition - OECD-index OECD, Summary indicators of product market regulation with an extension to employment protection legislation, p. 25 og 75 http://www.oecd.org/olis/1999doc.nsf/c16431e1b3f24c0ac12569fa005d1d99/5ef586bbe13dd52ac125684a003a8da0/\$FILE/00075836.PDF Public ownership - OECD-index OECD, Summary indicators of product market regulation with an extension to employment protection legislation, p. 25 og 74 http://www.oecd.org/olis/1999doc.nsf/c16431e1b3f24c0ac12569fa005d1d99/5ef586bbe13dd52ac125684a003a8da0/\$FILE/00075836.PDF Public involvement in business operation OECD, Summary indicators of product market regulation with an extension to employment protection legislation, p. 25 og 74 http://www.oecd.org/olis/1999doc.nsf/c16431e1b3f24c0ac12569fa005d1d99/5ef586bbe13dd52ac125684a003a8da0/\$FILE/00075836.PDF
		Access to Foreign Markets
Opportunities		Share of new enterprises with exports FORA
		Access to capital markets IMD, World Competitiveness Yearbook
		Export credits and insurance IMD, World Competitiveness Yearbook

Capital	Loans	
	<p>Extent of guarantees EU Commission, p.38 http://europa.eu.int/comm/enterprise/enterprise_policy/analysis/doc/smes_observatory_2003_report2_en.pdf</p> <p>Private credit The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/</p> <p>Interest rate spread The World Bank, Doing Business</p> <p>Cost to Create Collateral The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/</p> <p>Legal Rights Index The World Bank, Doing Business</p> <p>Country credit rating IMD, World Competitiveness Yearbook</p>	
	Venture Capital	
	<p>Venture capital (early stage) OECD, Science, technology and industry. Venture capital: trends and policy recommendations, p.7. http://www.oecd.org/dataoecd/4/11/28881195.pdf</p> <p>Venture capital (expansion stage) OECD, Science, technology and industry. Venture capital: trends and policy recommendations, p.7. http://www.oecd.org/dataoecd/4/11/28881195.pdf</p>	
	Exit	
	<p>Capitalisation of secondary stock markets OECD, Science, technology and industry. Venture capital: trends and policy recommendations, p.25 http://www.oecd.org/dataoecd/4/11/28881195.pdf</p> <p>Market capitalization of newly listed companies relative to GDP World Federation of Exchanges, Annual report and statistics 2004 http://www.world-exchanges.org/publications/WFE%202004%20Annual%20Report%20and%20Statistics.pdf</p> <p>Capitalisation of primary stock market The world Bank http://www.worldbank.org/research/projects/finstructure/structure_database.xls</p> <p>Turnover in primary stock market The world Bank http://www.worldbank.org/research/projects/finstructure/structure_database.xls</p> <p>Buyouts OECD, Science, technology and industry. Venture capital: trends and policy recommendations, p.7. http://www.oecd.org/dataoecd/4/11/28881195.pdf</p>	
	Wealth and Bequest Tax	
	<p>Revenue from bequest tax OECD 2003, Revenue Statistic</p> <p>Revenue from net wealth tax OECD 2003, Revenue Statistic</p> <p>Top marginal bequest tax rate OECD, Directorate for science, technology and industry, Industry issues taxation, SMEs and entrepreneurship. http://www.oilis.oecd.org/oilis/2002doc.nsf/43bb6130e5e86e5fc12569fa005d004c/2137ebc4eaa738a5c1256c10004e37ec/\$FILE/JT00130282.PDF</p>	
	Capital	

	<p>Capital Taxes</p> <p>Taxation of dividends – top marginal tax rate OECD, Directorate for science, technology and industry, Industry issues taxation, SMEs and entrepreneurship. http://www.oelis.oecd.org/olis/2002doc.nsf/43bb6130e5e86e5fc12569fa005d004c/2137ebc4eaa738a5c1256c10004e37ec/\$FILE/JT00130282.PDF</p> <p>Taxation of dividends – top marginal tax rate for the self-employed OECD, Directorate for science, technology and industry, Industry issues taxation, SMEs and entrepreneurship. http://www.oelis.oecd.org/olis/2002doc.nsf/43bb6130e5e86e5fc12569fa005d004c/2137ebc4eaa738a5c1256c10004e37ec/\$FILE/JT00130282.PDF</p> <p>Taxation of stock options Eurostat, Competitiveness and benchmarking enterprise policy results from the 2002 scoreboard. http://europa.eu.int/comm/enterprise/enterprise_policy/better_environment/doc/enterprise_policy_scoreboard_2002_en.pdf</p> <p>Taxation of capital gains on shares – short term OECD, Directorate for science, technology and industry, Industry issues taxation, SMEs and entrepreneurship. http://www.oelis.oecd.org/olis/2002doc.nsf/43bb6130e5e86e5fc12569fa005d004c/2137ebc4eaa738a5c1256c10004e37ec/\$FILE/JT00130282.PDF</p> <p>Taxation of capital gains on shares – long term OECD, Directorate for science, technology and industry, Industry issues taxation, SMEs and entrepreneurship. http://www.oelis.oecd.org/olis/2002doc.nsf/43bb6130e5e86e5fc12569fa005d004c/2137ebc4eaa738a5c1256c10004e37ec/\$FILE/JT00130282.PDF</p>
Abilities	<p>Restart Possibilities</p> <p>Length of time that creditors still have claims on a bankrupt's assets OECD, Science, Technology and industry outlook. Drivers of growth: Information. Technology, Innovation and entrepreneurship http://www1.oecd.org/publications/e-book/9201131e.pdf</p>
	<p>Entrepreneurship Education</p> <p>Entrepreneurship education at primary education Global Entrepreneurship Monitor http://www.gemconsortium.org/</p>
	<p>Entrepreneurship education at higher education Global Entrepreneurship Monitor http://www.gemconsortium.org/</p>
	<p>Traditional Business Education</p> <p>Quality of management schools WEF: The global competitiveness report -</p>
	<p>Entrepreneurship Infrastructure</p> <p>Government programs Global Entrepreneurship Monitor http://www.gemconsortium.org/</p>
	<p>Personal Income Tax</p> <p>Highest marginal income tax plus social contributions OECD, Taxing Wages 2011- 2002. http://emlab.berkeley.edu/users/webfac/saez/e230b_s04/OECD01_02taxingwages.pdf</p> <p>Average income tax plus social contributions OECD, Taxing Wages 2011- 2002. http://emlab.berkeley.edu/users/webfac/saez/e230b_s04/OECD01_02taxingwages.pdf</p>
	<p>Business Tax and Fiscal Incentive</p> <p>SME tax rates OECD, Directorate for science, technology and industry, Industry issues taxation, SMEs and entrepreneurship. http://www.oelis.oecd.org/olis/2002doc.nsf/43bb6130e5e86e5fc12569fa005d004c/2137ebc4eaa738a5c1256c10004e37ec/\$FILE/JT00130282.PDF</p> <p>Taxation of corporate income revenue OECD 2003, Revenue Statistic 1965- 2002</p>
Incentives	

<p>Bankruptcy Legislation</p> <p>Actual cost to close a business The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/ClosingBusiness/CompareAll.aspx</p> <p>Actual time to close a business The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/ClosingBusiness/CompareAll.aspx</p>
<p>Administrative Burdens</p> <p>Starting a business number of procedures The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/StartingBusiness/CompareAll.aspx</p> <p>Starting a business number of days The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/StartingBusiness/CompareAll.aspx</p> <p>Starting a business cost The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/StartingBusiness/CompareAll.aspx</p> <p>Regulatory and administrative opacity OECD, Summary indicators of product market regulation with an extension to employment protection legislation, p. 25 og 75 http://www.oecd.org/olis/1999doc.nsf/c16431e1b3f24c0ac12569fa005d1d99/5ef586bbe13dd52ac125684a003a8da0/\$FILE/00075836.PDF</p> <p>Enforcing contracts - number of procedures The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/EnforcingContracts/CompareAll.aspx</p> <p>Enforcing contracts time The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/EnforcingContracts/CompareAll.aspx</p> <p>Enforcing contracts procedure complexity The World Bank, Doing Business http://www.doingbusiness.org/ExploreTopics/EnforcingContracts/CompareAll.aspx</p> <p>Starting a business - minimum of capital required The World Bank, Doing Business</p> <p>Enforcing Contracts - Cost (% of debts) The World Bank</p>
<p>Labour Market Regulation</p> <p>Flexibility of hiring The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/HiringFiringWorkers/CompareAll.aspx</p> <p>Flexibility of firing The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/HiringFiringWorkers/CompareAll.aspx</p> <p>Rigidity of Hours The World Bank, Doing Business http://rru.worldbank.org/DoingBusiness/ExploreTopics/HiringFiringWorkers/CompareAll.aspx</p> <p>Number of administrative procedures when recruiting first employee EU</p> <p>Number of administrative procedures when recruiting additional employee EU</p> <p>Firing Costs The World Bank, Doing Business</p>
<p>Motivation</p>

Cultural and social norms

Global Entrepreneurship Monitor

Schøtt, Thomas (2005B). Iværksætterkulturen i Danmark og andre lande
<http://www.sam.sdu.dk/~tsc/CESFOkultur1.doc>.**Entrepreneurial motivation**

Global Entrepreneurship Monitor

Schøtt, Thomas (2005B). Iværksætterkulturen i Danmark og andre lande
<http://www.sam.sdu.dk/~tsc/CESFOkultur1.doc>.**Selfemployment preference**

Eurobarometer

http://europa.eu.int/comm/public_opinion/flash/fl160_en.pdf**The wish to own one's own business**

Eurobarometer

http://europa.eu.int/comm/public_opinion/flash/fl160_en.pdf**desirability of becoming selfemployed**

Eurobarometer

http://europa.eu.int/comm/public_opinion/flash/fl160_en.pdf**Risk**

Eurobarometer

http://europa.eu.int/comm/public_opinion/flash/fl160_en.pdf

Annex 2: Quality of the Data

The quality of the paper's conclusions depends critically on the quality of the underlying data measuring the policy areas. All of the indicators used to quantify the policy areas are from Hoffmann *et al* (2005), which includes a quality assessment of each indicator evaluated on the basis three quality dimensions - relevance, accuracy and availability. These dimensions are taken from the OECD's Quality Manual for Data Collection (OECD, 2003). The quality assessment can be summarised by dividing the significantly correlated areas into four groups.

The first group of policy areas (*venture capital, labour market regulation and exit markets*) is measured by accurate and relevant indicators. Venture capital is measured by actual venture capital investment as share of GDP in a given year. Labour market regulation is measured by OECD quantifications of difficulties in hiring and firing employees. Exit markets are measured by capitalisation of both primary and secondary stock market and by turnover in primary markets.

The second group of policy areas (*capital taxes, personal income tax, business tax & fiscal incentive*) are measured by accurate indicators, but not all the relevant aspects of the policy area are captured. The tax policy areas are based on comparisons of actual tax rates. These rates only cover part of the taxation system. Large differences exist, for example, in exceptions and aversion across countries.

The third group of policy areas (*restart possibilities and bankruptcy legislation*) is based on relevant indicators, but it is not clear whether they accurately measure the policy areas. All of the included indicators are based on expert judgements of the efficiency in handling a given bankruptcy case across OECD countries. Expert judgement can be biased even though substantial checks are included in the collection of these data by the World Bank (*Doing Business*, 2005).

The fourth group of policy areas (*entrepreneurship education and entrepreneurial motivation*) is based on relevant indicators, but the underlying data is not collected by standardised procedures and they are based on a value judgement. Therefore, more detailed analyses are needed in these areas.

Annex 3 Description of the 24 Policy Areas ⁷

Policy areas affecting opportunities

Entry Barriers/Deregulation

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.

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 new firms.

Technology Transfer

Effective technology or knowledge transfer regulation opens up 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.

Private Demand Conditions

The willingness of established firms to use new firms as suppliers or partners plays a crucial role in the development of 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. Policies have only a limited impact on private demand, but the public sector can be a role model in their procurement.

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 Abilities

Traditional Business Education

Traditional business education, including basic accounting, marketing and finance, are without doubt important abilities not only to run a company, but also to start 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 possess 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.

⁷ Annex is taken from Hoffmann (2006).

Entrepreneurship Education

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.

Restart Possibilities

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 the failure is debated. The possible lessons from failure versus the lessons from success are more a 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.

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.

Policy Areas Affecting Capital

Loans

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.

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.

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.

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.

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.

Stock Markets and Buy Outs

An efficient stock market, a secondary stock market or efficient markets for buyouts are important in order to gather needed capital 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. The development of critical mass must balance two interests. On the one hand, listing requirements and regulations must be simple enough to encourage small businesses to make their initial public offerings through a secondary market. On the other hand, there must be sufficient disclosure, supervision and enforcement to protect and attract investors.

Policies Affecting Incentives

Personal 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.

Social Security Discrimination

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.

Administrative Burdens

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.

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.

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.

Policies Affecting Culture/Motivation

Entrepreneurial Motivation

Understanding the motivation behind the limited number of entrepreneurs that aim to create high-growth and global enterprises is difficult. It is furthermore a very challenging and slow process of trying to fuel interest in entrepreneurship. Governments can try to enhance preference towards entrepreneurship by implementing entrepreneurship awards and opinion campaigns.

Group-specific Initiatives

Awards and opinion campaigns can be targeted towards specific groups, such as women or minority groups, in order to boost the number of entrepreneurs in those groups.

Communication about Heroes

Elaborating on entrepreneurship history and by communication about and by “heroes” and others help to create a sense of entrepreneurial history, which is important for the evolution of a cohesive entrepreneurship culture. Policy initiatives could ensure the communication of entrepreneurial history and “heroes” in public schools. Policy initiatives could reward “heroes” for communicating their stories in public and acting as role models encouraging others to engage in entrepreneurship.