

**MICRO-POLICIES FOR GROWTH AND
PRODUCTIVITY**

SYNTHESIS AND BENCHMARKING USER GUIDE



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DEVELOPMENT

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FOREWORD

This brochure is intended as a brief synthesis to the final report of the project on Micro-Policies for Growth and Productivity as well as a guide to the benchmarking methodology used in the analysis. The project was undertaken in response to the request by Ministers, at the OECD Council Ministerial in 2001, to strengthen benchmarking as part of the follow-up to the Growth Project and to strengthen the OECD's peer reviews of structural reform. Its objective has been to identify critical policy areas for each of the micro-drivers of growth – entrepreneurship, information and communications technology (ICT), innovation and human capital – through a quantitative benchmarking methodology.

Anders Hoffmann was the principal author of the report. Drafts of the report were discussed at meetings of the main committees of the Directorate for Science, Technology and Industry and at four workshops organised jointly with member states (Finland, Norway, Sweden and the United Kingdom). Grants from the Danish and Swedish governments are gratefully acknowledged.

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INTRODUCTION

The 2001 OECD Ministerial report, *The New Economy: Beyond the Hype*, concluded that entrepreneurship, information and communications technology (ICT), innovation and human capital were key elements for enhancing productivity and growth performance in knowledge-based economies (OECD, 2001). Despite the technology downturn in 2000, it found that “*the evidence suggests that something new is taking place in the structure of OECD economies*”. The very high growth in multifactor productivity (MFP) in some OECD countries in the 1990s fuelled speculation about a “new economy” driven by investments in technology and high value-added intangibles. Understanding these micro-drivers of productivity and growth, and particularly the policies needed to create and sustain them, rose in importance on the OECD policy agenda.

While a stable macro-economic environment and flexible labour market policies provide the basis for growth, micro-economic policies are the key to realising the benefits from the new drivers. The activity on *Micro-Policies for Growth and Productivity* was developed to further explore these micro-drivers and identify effective policy practices. The project was initiated in response to the OECD Council Ministerial in 2001, where Ministers asked the OECD to strengthen benchmarking as part of the follow-up to the Growth Project and to strengthen its peer review of structural reforms. It also responds to the 2002 Council Ministerial request to monitor the implementation of the policy recommendations of the Growth Project.

The Committee on Industry and Business Environment (CIBE) embarked on a project to compare country performance and identify key micro-economic factors and policies needed for sustained growth. Inputs were provided by the Committee for Scientific and Technological Policy (CSTP) with regard to the innovation driver and by the Committee for Information, Computer and Communications Policy (ICCP) concerning ICT issues. The Directorate for Employment, Labour and Social Affairs (ELS) and the Education Directorate (EDU) provided comments concerning performance and policies in the area of human capital.

In this project, the benchmarking analysis has been supplemented by country peer reviews to delve further into the micro-policies needed to maximise the

four growth drivers (Box 1). The intent is to combine the findings of the more quantitative “top-down” benchmarking approach with the more qualitative results of the “bottom-up” peer reviews. In this way, the benchmarking analysis can test established policy frameworks and highlight new areas and directions for policy, while the peer review process can examine in more detail the policy frameworks and initiatives in individual countries. Country notes have been prepared on specific aspects of entrepreneurship, ICT, innovation and human capital and related policies, and these are subject to review and discussion by peers in the relevant Committees (CIBE, CSTP, ICCP). Once a critical number of countries has been reviewed in each area, a cross-country comparative synthesis is prepared containing agreed policy recommendations.

Box 1. Country peer reviews of micro-policies

Increasing access to venture capital is the policy domain for peer reviews with regard to the driver “fostering firm creation and entrepreneurship”. Based on reviews of Canada, Denmark, Israel, Korea, Portugal, Spain, Sweden, the United Kingdom, and the United States, a synthesis report has been published containing policy recommendations (OECD, 2004c). These concern the need to ease quantitative restrictions on institutional investors, decrease high capital gains tax rates, use public equity funds to leverage private venture capital, develop second-tier stock markets and foster business angel networks.

Enhancing public-private partnerships for innovation is the policy domain for peer reviews with regard to the driver “harnessing the potential of innovation and technology diffusion”. A synthesis has been prepared based on reviews of Australia, Austria, France the Netherlands and Spain (OECD, 2005e). Dimensions covered include the selection process for participants, financing and cost-sharing arrangements, participation by small firms and foreign firms, intellectual property rights provisions and evaluation procedures.

Promoting ICT diffusion to business is the policy domain for peer reviews with regard to the driver “seizing the benefits of ICT”. Reviews have been conducted of Denmark, Finland, Italy, Korea, the Netherlands, Norway and Switzerland. A synthesis has been prepared which discusses policies for ensuring competitive network infrastructure, supporting ICT research, expanding ICT training, assisting ICT uptake in small firms, and promoting development of digital content (OECD, 2005c).

Developing highly-skilled workers for future industry needs is the policy domain for peer reviews with regard to the driver “enhancing human capital and realising its potential”. Based on reviews of Belgium, Canada, Denmark, Finland, Korea, the Netherlands, Norway and Sweden, the synthesis report contains relevant policy recommendations (OECD, 2005b). Among other issues, these concern the need to involve industry in higher education planning, develop co-financing schemes for worker training, enhance worker mobility through better wage signals and less regulation, and improve education and careers for science and technology professionals.

The *Micro-Policies for Growth and Productivity* project also provides the basis for future analyses concerning the role of the micro-drivers in some of the major policy challenges confronting OECD countries. With varying degrees of success, countries are managing a structural transition from manufacturing to higher value-added service activities. At the same time, global outsourcing is accelerating with implications for high-skilled employment. Previously targeted at lower-skilled jobs in manufacturing, multinational enterprises are now offshoring more highly-skilled positions in both manufacturing (including research and technology functions) and services (including business processes and computer software development). Many OECD firms are not taking full advantage of their intellectual assets, including patents, human capital and innovative approaches to work. A four-point strategy (focused on entrepreneurs, ICT, innovation and skills) is the path forward to maintaining higher value-added productive capacity and employment at home.

More in-depth analysis is needed to further understanding of the micro-drivers of growth, their inter-linkages and the policies needed to develop and sustain them. Benchmarking methodologies based on OECD indicators are one analytical tool for structural analysis. Other approaches can be used to assess private sector performance and the role of public policies in shaping the business environment, including firm-level analysis and data linking. New methods should also be developed to explore the links between micro-level performance and policies, particularly those which could serve to integrate the micro-drivers.

THE BENCHMARKING METHODOLOGY

A number of analytical tools could be used to identify effective policies for advancing on the four micro-drivers of growth. Here, a three-step benchmarking approach compares country performance and highlights important policy areas, based on an assumption that good performance follows from good policies. Quantitative data and qualitative information are combined to select benchmark countries for the four micro-drivers and to assess similarities in their business environments. Their policy approaches are then reviewed in more detail to pinpoint effective measures which might inform the policies of other countries. The full technical report for the project explains the methodology, data sources, analyses and best practice policies in detail (OECD, 2005*d*).

In the first step, a benchmark is defined for each driver. The benchmark refers to the group of countries with outstanding performance considering a combination of driver-related performance indicators. The benchmark score is therefore an indication of the average performance of the best countries (the *benchmark countries*) on the particular driver.

In the second step, the business environment for each growth driver is defined. This refers to a mix of market, business and policy areas considered relevant for the respective driver. Most aspects can be quantified, but qualitative information is also used to judge relative characteristics of the business environment, which is a product of both structural factors and policy actions. Some indicators measure inputs that are not directly controlled by public policy, *e.g.* availability of digital content or access to capital for new firms, but these dimensions are likely to be indirectly affected by government policies. Other indicators are a direct quantification of government policies, *e.g.* government equity capital, timeframes included in bankruptcy legislation. The *environment countries* are among the outstanding performers on each individual business and policy area related to the growth driver. As such, this group may change from indicator to indicator. One may think about the area spanned by the environment as the best possible score, on average, among the OECD countries.

In the third step, analysis of the relative importance of the various parts of the business environment is based on linking performance with regard to the four micro-drivers to their respective business environment characteristics. The assumption is that those areas where the benchmark countries are also among the environment countries could be potentially more important for overall performance. Regression analyses are then used to confirm the results. These approaches are intended to highlight key policy areas for consideration by governments. However, the benchmarking methodology is still experimental and the results must be interpreted with caution (Box 2).

Box 2. Weaknesses of the benchmarking methodology

Indicators – The identification of benchmark countries is based on selected performance indicators for each micro-driver of growth. In general, the results concerning country performance are sensitive to the indicators used and their coverage. Ideally, indicators should be chosen on the basis of their analytical soundness and measurability, but a lack of data often leads to poor quality indicators and missing values. The indicators in this study have been selected on the basis of their ability to explain performance on the micro-drivers, but also their availability and country coverage. Quantitative indicators of performance from the OECD and other organisations are used to the extent possible, but qualitative information from innovation surveys (e.g. the European Commission) and executive surveys (e.g. the World Economic Forum) are also included. The combination of hard and soft data, as well as the need to estimate missing values, are among the weaknesses of the underlying statistics.

Composites – The benchmark countries and their business environments are evaluated through aggregating individual indicators into composites by country. Composite indicators have advantages in their ability to integrate large amounts of information into easily understood formats and are valued as a communication and political tool. However, many challenges exist in constructing and using composite indicators (Freudenberg, 2003). The OECD and the EC Joint Research Centre have jointly developed a handbook for the construction and application of composite indicators (OECD/EC, 2005). The handbook recommends practices for developing and using composites in as sound and transparent a manner as possible. For example, variables must be standardised or normalised before they are aggregated as well as weighted, a process which can heavily influence the outcome of the composite. There are also a number of sensitivity tests which should be performed to help assure the reliability of outcomes.

Country comparisons – Countries are compared not only with regard to their performance on the micro-drivers, but also on individual aspects of the broader business environment for each driver. The business environment constitutes the overall framework for performance and includes market dimensions as well as the public policies and regulations which influence the private sector. The benchmarking analysis assumes that the policy areas where the benchmark countries are also among the business environment countries are potentially most significant for overall growth. Areas evidencing large distances between these sets of countries are considered less important. However, overlaps in the indicators used to measure performance on the micro-drivers vs. the business environment have raised questions concerning causality and the robustness of the correlations.

COUNTRY BENCHMARKING

The benchmarking methodology provides an analytical tool for policy-makers to identify strong and weak areas in their country's performance on the four micro-drivers of growth. It allows governments to relate their own business environment for the micro-drivers to that of other countries based on a wide array of indicators. From this, they can obtain a snapshot of their strengths and weaknesses in the areas of entrepreneurship, innovation, information technology and human capital.

For each micro-driver, spider diagrams can be created which compare the performance of a designated country against the performance of other OECD countries. The spider diagrams compare three levels: *i*) the performance of individual countries on a given indicator or aspect of the business environment, *ii*) the average value for those countries considered the best performers on the micro-driver (*benchmark countries*), and *iii*) the average value for those countries considered the best performers on the individual indicators of the business environment (*environment countries*). While the benchmark countries remain the same for each driver, the environment countries change from indicator to indicator.

In this way, countries can review their relative capabilities as identified through the benchmarking exercise and use this information in their own policy-making process. The characteristics of individual countries can be plotted to help identify core areas where special interest and attention might be directed in fostering better performance. However, the importance of policy areas for individual countries will depend on the institutional context and country-specific factors. The policy and programme examples included in the full report are intended as inspiration for reforms, but should be adapted to the specific conditions and institutions of individual countries. While all countries need to develop strategies to advance on the four micro-drivers of growth, approaches and measures should be tailored to the national context.

In the sections that follow, examples are given of what individual countries might learn about their relative standing as shown by the general benchmarking results for entrepreneurship, ICT, innovation and human capital. The main

indicators used to measure country performance and evaluate the business environment for each micro-driver are explained. Certain indicators are missing for some countries, but these are indicated in the figure notes. General policy areas found to be particularly important to performance are highlighted, including new policy areas which go beyond the findings of the original OECD Growth Project. Countries can request to be benchmarked against different combinations of countries, *e.g.* all OECD countries, the benchmark countries, the Nordic countries. These country profiles are available from the Secretariat (dsti.contact@oecd.org).

FOSTERING FIRM CREATION AND ENTREPRENEURSHIP

Small firms and entrepreneurs are key to realising value-added from new ideas and innovations. In the benchmarking analysis, the assessment of country performance for the driver “fostering firm creation and entrepreneurship” is measured by *i)* the entry and exit of firms and *ii)* the creation of high growth firms. The entry and exit of enterprises and the share of high-growth firms have been directly linked to productivity growth in OECD countries. New firms are created by people with the right skills and sufficient capital, while they are sustained by available entrepreneurial opportunities and market demand. Entrepreneurship is also dependent on the perceived trade-off between the benefits of succeeding and the risks of failing in a new venture.

The business environment for fostering firm creation and entrepreneurship is largely shaped by four factors: skilled people, capital, opportunities and perceived risk/benefit trade-offs. These four factors can be influenced by several different policies (Table 1). The number of skilled people is affected by entrepreneurial and management training but also by the availability of training, business and technology services and the functioning of labour markets. The amount of capital available for entrepreneurs is affected by government loans and loans guarantees, venture capital and second-tier stock markets as well as wealth taxation. Entrepreneurial opportunities are influenced by regulations, administrative burdens and access to international markets, among other variables. Finally, perceived trade-offs can be affected by bankruptcy regimes, fiscal policies and informational campaigns.

Analysis based on the performance and policies of the benchmark countries for this micro-driver (Canada, Finland, Korea and the United States) suggests certain policy areas as key to fostering firm creation and entrepreneurship. In addition to the recommendations of the original Growth Project regarding enhancing access to financing in order to foster start-ups, benchmarking analysis highlights the importance of reform of bankruptcy regimes (*e.g.* reducing the time that creditors have claims on assets, introducing tougher regimes for irresponsible bankrupt parties) and fiscal systems (*e.g.* lowering personal income and capital taxes, reducing tax compliance and administrative costs).

Table 1. The business environment for fostering firm creation and entrepreneurship

Access to skills	Access to capital	Access to opportunities	Influencing the risk-reward trade-off
Entrepreneurial education	Loans and loan guarantees	Administrative simplifications for start-ups	Campaigns to promote entrepreneurship
Publicly-supported training, business and technology services	Venture capital	Administrative simplifications of legal framework for existing firms	Bankruptcy legislation
Labour market regulation	Stock markets	Deregulation of protected sectors and competition	Business taxation
	Wealth and bequest taxes	Access to international markets	Income and capital tax
		Spin-offs and licensing from public research	

As examples, spider diagrams of Austria and the Netherlands show the application of the benchmarking technique to individual countries for the driver “fostering firm creation and entrepreneurship”. Austria performs well in the key policy areas of bankruptcy regimes and wealth taxes, but could focus more policy attention on increasing access to venture capital (Figure 1). Austria was not among the countries assessed in the peer reviews of venture capital performance and policies, but the policy recommendations concerning increasing access to capital for start-ups and entrepreneurs could apply to the Austrian situation (OECD, 2004c). The Netherlands exhibits better comparative policies relative to bankruptcy and venture capital, although its fiscal policies affecting small firms and entrepreneurs could be reviewed (Figure 2). Lowering taxes on income earned by entrepreneurs, more liberal provisions for carrying-forward losses, simplifying the value-added tax system and reducing tax compliance and administrative costs can reduce burdens on small firms (Chen *et al.*, 2002).

Figure 1. Austria: policies for entrepreneurship

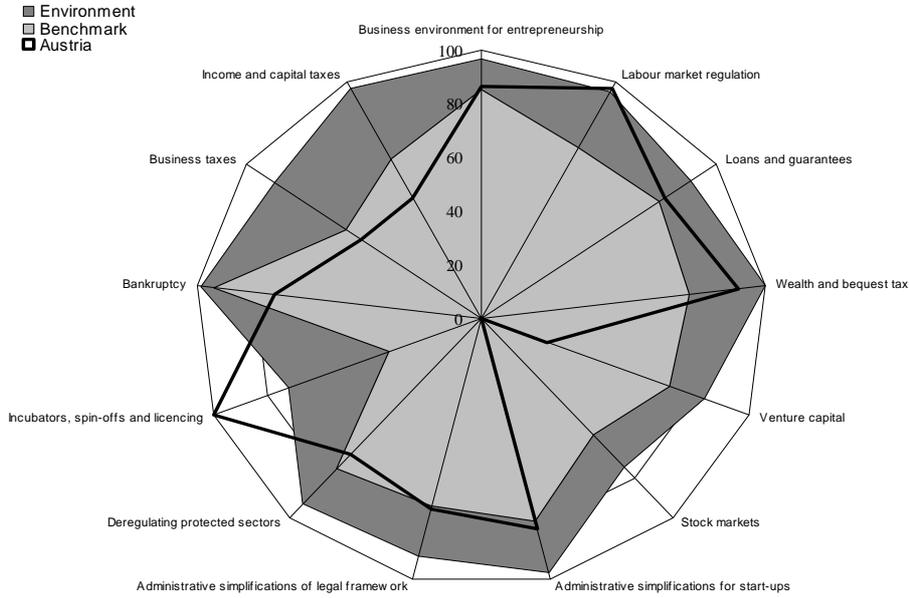
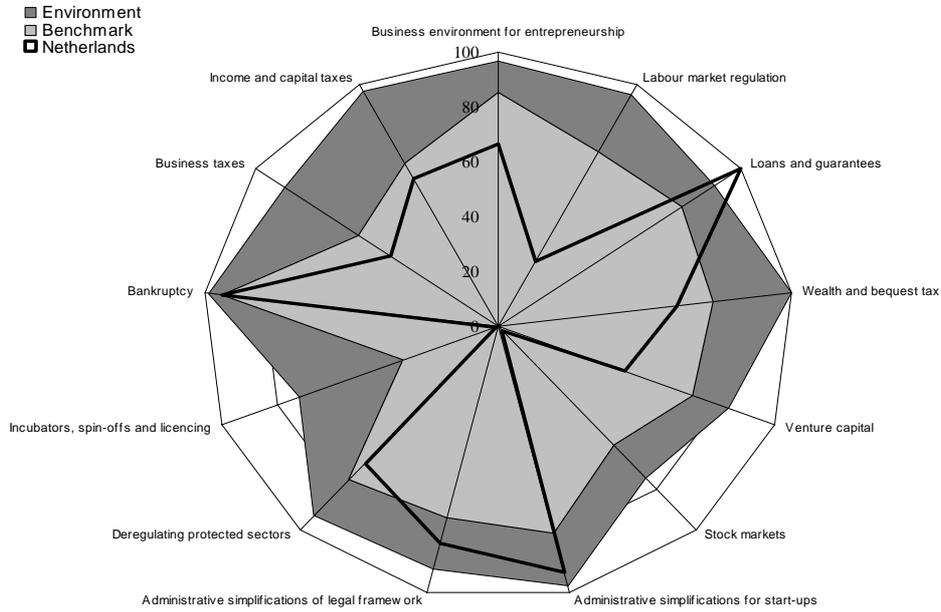


Figure 2. The Netherlands: policies for entrepreneurship



SEIZING THE BENEFITS OF ICT

Greater use of information and communications technologies (ICT) has allowed production, consumption and trade to be reorganised in ways that economise on labour and capital and boost multi-factor productivity (MFP). Analyses find a significant link between ICT investment and MFP growth at the firm level. While not all countries are large producers of ICT equipment, they can nonetheless realise the economic benefits of investments in information technology by enterprises, schools and individuals. In the benchmarking analysis, country performance on the driver “seizing the benefits of ICT” is measured by *i*) ICT investments and *ii*) ICT use (*e.g.* share of business using the Internet).

In the benchmarking exercise, the business environment for seizing the benefits of ICT is influenced by four broad factors: availability of technology, skills and digital content as well as the level of security and trust in information technology. These factors are affected by several different actions and policies (Table 2). Access to hardware and networks is partly determined by the degree of competition in ICT markets as well as expenditures on ICT. ICT skills are categorised as basic, applied and professional skills, where basic and applied skills are learned either in schools or through training programmes and professional skills are acquired primarily through tertiary education. Managerial and organisational changes may be needed in order to make the best use of ICT skills. Digital content can either be produced by the private sector or by the public sector in the form of e-government. Finally, security and trust depend mainly on ICT-related regulations and institutions, but also on public awareness of such rules and frameworks.

Table 2. Business environment for seizing the benefits of ICT

Access to ICT	Access to ICT skills and organisational change	Access to digital content	ICT security and trust
Competition in communication markets	Basic and applied ICT skills in schools	E-government	Awareness of security
Expenditure on ICT	Basic and applied ICT skills in the workforce Professional ICT skills ICT-related managerial and organisational change	Private digital content	Regulations and institutions

Analysis based on the performance and policies of the benchmark countries for this micro-driver (Australia, Canada, Finland, Sweden and the United States) suggests certain policy areas related to this set of indicators as important for seizing the benefits of ICT. These include stimulating competition in communications markets (*e.g.* accelerating the process of unbundling local loops, increasing competition across different communications platforms), fostering ICT skills (*e.g.* helping schools buy computers and get online, providing ICT training for teachers), and implementing e-government (*e.g.* increasing online government services, creating common government portals). The benchmarking analysis also highlights the need to develop digital content through facilitating entry of new market players, clarifying regulatory frameworks and promoting exploitation of public sector information.

As examples, Finland and Germany are here compared to other OECD countries on selected ICT indicators. As shown in the spider diagram, Finland excels in most areas highlighted as important by the benchmarking analysis – competition in communications markets, ICT skills, e-government and digital content (Figure 3). The high level of ICT skills largely explains the extensive uptake of information technology in small Finnish firms relative to other countries (OECD, 2004*b*). Germany, on the other hand, may need to focus more policy attention on developing e-government and digital content as well as fostering ICT skills in schools (Figure 4). Although Germany is not among the countries being reviewed regarding its performance in diffusing ICT to business, the policy lessons from peer reviews could provide important policy insights (OECD, 2005*c*).

Figure 3. Finland: policies for ICT

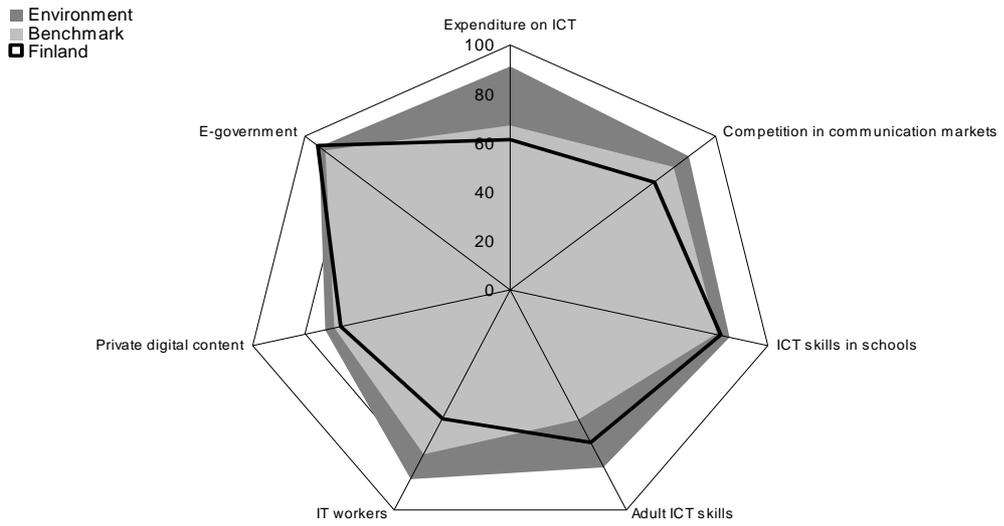
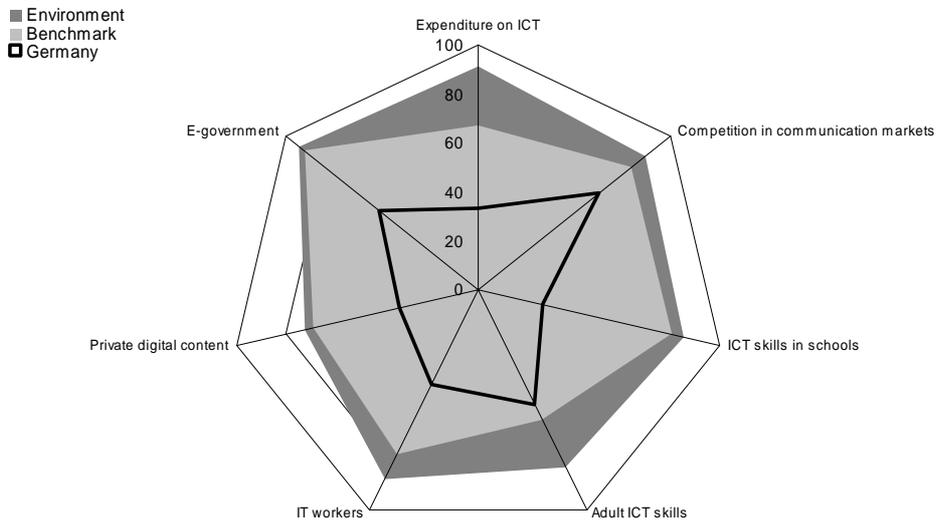


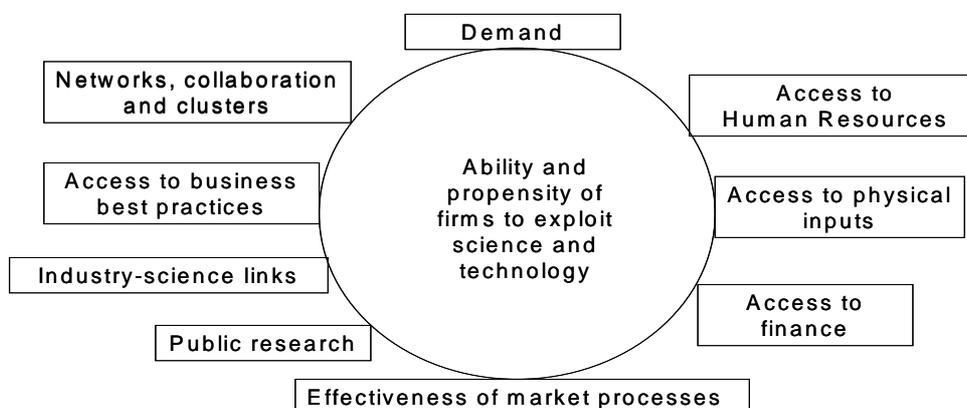
Figure 4. Germany: policies for ICT



FOSTERING DEVELOPMENT AND EXPLOITATION OF SCIENCE AND TECHNOLOGY

For this analysis, the innovation driver has been narrowed to focus on the development and exploitation of science and technology. In the benchmarking analysis, country performance on this driver is measured by *i*) ability to develop new products, processes, services and systems and *ii*) ability to diffuse technologies (both domestic and foreign) throughout the economy. The development and exploitation of novel products, processes, services and systems and their constant upgrading is key to sustaining growth and productivity. Even more important is their subsequent diffusion. For all but the largest of OECD countries, the great majority of novel products and ideas will come from abroad, and countries must be effective at exploiting new science and technology appropriate to their needs. This partly depends on a country's "national innovation system" including the competitive environment surrounding firms and access to knowledge through various public and private channels (OECD, 2005*a*).

The business environment for "developing and exploiting science and technology" is examined through a national innovation system framework, where ten broad factors are featured (Figure 5). A firm's ability to exploit science and technology partly depends on the quality of management and organisation. External factors which influence the firm, and which themselves can be affected to various degrees by government policies, include demand for new goods and services, access to inputs to the innovative process (physical inputs, human capital and finance) and access to various forms of public and private knowledge (public research, basic science, business best practices, and collaborative networks and clusters).

Figure 5. Business environment for developing and exploiting S&T

Analysis based on the performance and policies of the benchmark countries for this micro-driver (Finland, Japan, the Netherlands and the United States) suggests certain policy areas as key to developing and exploiting science and technology. These include enhancing the quality of public research (*e.g.* creating centres of excellence for research, developing competitive mechanisms to identify research areas) and promoting industry-science links (*e.g.* developing public/private innovation partnerships, fostering spin-offs and licensing agreements from public research). In addition to S&T supply factors, the role of demand for innovative products and processes has been highlighted by the benchmarking analysis. Governments can stimulate such demand through increasing public acceptance of new technologies as well as public procurement of new products and services.

As examples, spider diagrams for Norway and Japan show the potential results from benchmarking performance in the S&T area. In the case of Norway, the country's greatest weakness appears to be in the quality and relevance of public research (Figure 6). Enhancing public research is a challenge confronting many OECD countries, who can apply best practices in priority-setting, funding, management of research institutions and performance assessment (OECD, 2003a). Both Norway and Japan need to strengthen the links between industry and science (Figure 7). One channel is through developing public/private innovation partnerships whose optimal design and functioning is being assessed through peer reviews (OECD, 2005e). In addition, greater commercialisation of public research can not only enhance ties between the public and private sectors but also help realise more economic and social benefits from government research funding (OECD, 2003b).

Figure 6. Norway: policies for developing and exploiting S&T

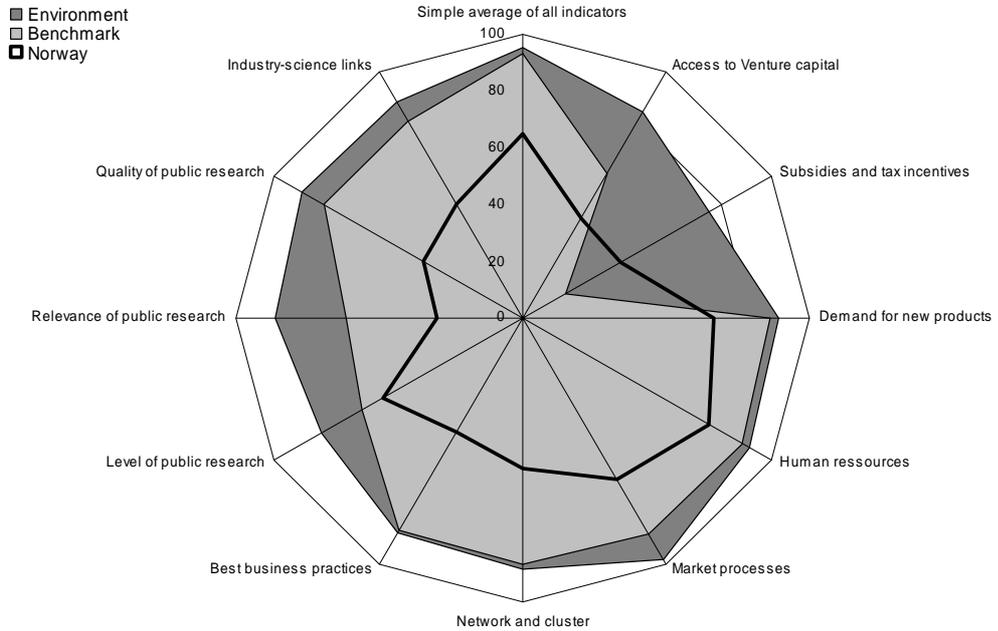
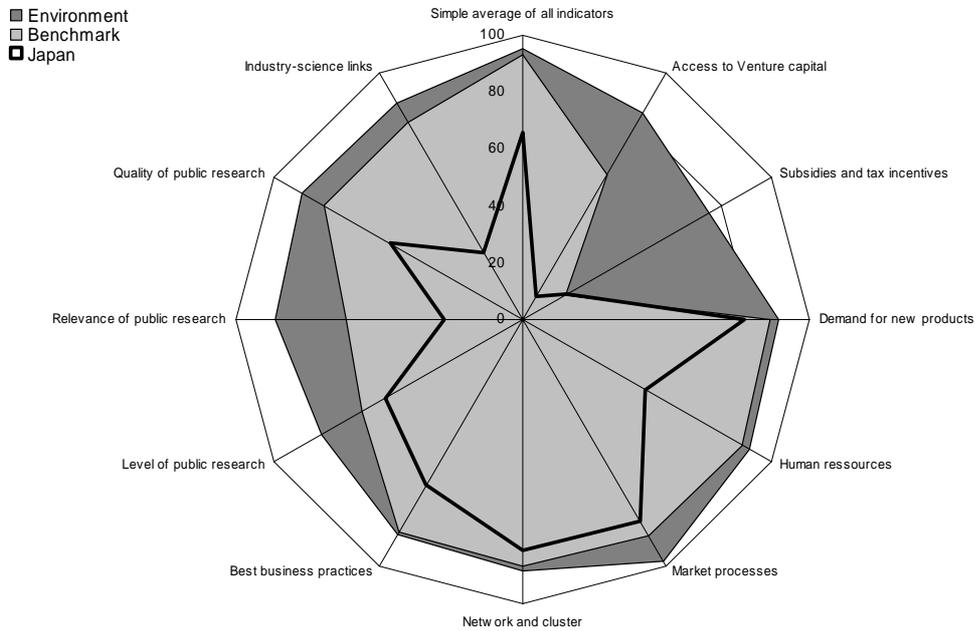


Figure 7. Japan: policies for developing and exploiting S&T



ENHANCING HUMAN CAPITAL AND REALISING ITS POTENTIAL

Skilled human capital is essential to making the best use of the other micro-drivers of growth – entrepreneurship, information technology and innovation. Increasing the number of knowledge workers and augmenting the quality of the knowledge-based workforce is critical. In the benchmarking analysis, country performance on the driver “enhancing human capital and realising its potential”, and specifically making productive use of highly-skilled workers, is measured by *i*) the number and quality of knowledge workers in the private sector (*e.g.* share of employees in high-skilled jobs) and *ii*) the firm-level management and organisational structures that determine how the stock of knowledge workers can be used most productively.

The business environment for enhancing human capital is shaped by four broad factors: availability of skilled workers from the education system, access to workplace training, firm-level managerial and organisational practices, and labour market characteristics. These factors can be influenced by several types of public policies, either directly (*e.g.* public expenditures on education) or indirectly (*e.g.* use of flexible work arrangements) (Table 3). Access to the highly-educated from the formal education system is an important factor in expanding the number of people capable of doing high-skilled work. The provision of on-the-job training and systems for lifelong learning is key to updating skills, facilitating workplace adjustments and matching supply and demand for skills. Investments in managerial and organisational changes at firm-level are complementary to investments in human capital. Meeting skills shortages also depends on the flexibility of the labour market, including participation by foreign workers and underrepresented groups, such as educated women who may favour part-time or flexible work arrangements.

Analysis based on the performance and policies of the benchmark countries for this micro-driver (Finland, the Netherlands, Sweden and the United States) suggests certain policy areas as key. The importance of enhancing the firm-level management and organisational structures that enable the productive use of knowledge workers is highlighted by the benchmarking analysis. This can be

done through promoting flexible work approaches, adopting knowledge-based management systems in the public sector and upgrading managerial skills in small firms. Other policies of importance are increasing the quality and relevance of educational attainment (*e.g.* providing cost-effective support to higher education, stimulating competition among educational institutions) and providing incentives to training and lifelong learning (*e.g.* negotiating agreements for enterprise training with the social partners, developing schemes to promote training in small firms, offsetting the cost and time constraints of individual investment in training).

Table 3. Business environment for enhancing human capital

Access to highly-educated	Access to training/lifelong learning in the workplace	Access to knowledge-based management and organisation	Knowledge-based labour markets
Educational attainment	Incentives to firms to finance training for their employees	Availability of trained managers	International worker mobility
Support to education	Incentives to individuals to invest in training	Preconditions for organisational change	Workforce participation of underrepresented groups
The learning environment			Flexible work practices through flexible labour markets
Links between education and labour markets			

Belgium and the United Kingdom are here used as examples of the application of the benchmarking technique to the area of “enhancing human capital and realising its potential”. Belgium’s performance on all aspects is about at the average of OECD countries with a need particularly to increase educational attainment as well as lifelong learning (Figure 8). The United Kingdom does well on most aspects of the business environment surrounding development and use of human capital, but could also raise educational attainment as well as stimulate more organisational and managerial innovations in enterprises (Figure 9). Peer reviews can offer insights into policies for developing highly-skilled workers and more closely matching supply and demand for skills (OECD, 2005*b*). There are diverse approaches for creating incentives and developing co-financing arrangements for lifelong learning (OECD, 2004*a*), while promoting organisational change in enterprises is a theme of ongoing analysis regarding making the best use of intellectual assets in enterprises.

Figure 8. Belgium: policies for enhancing human capital

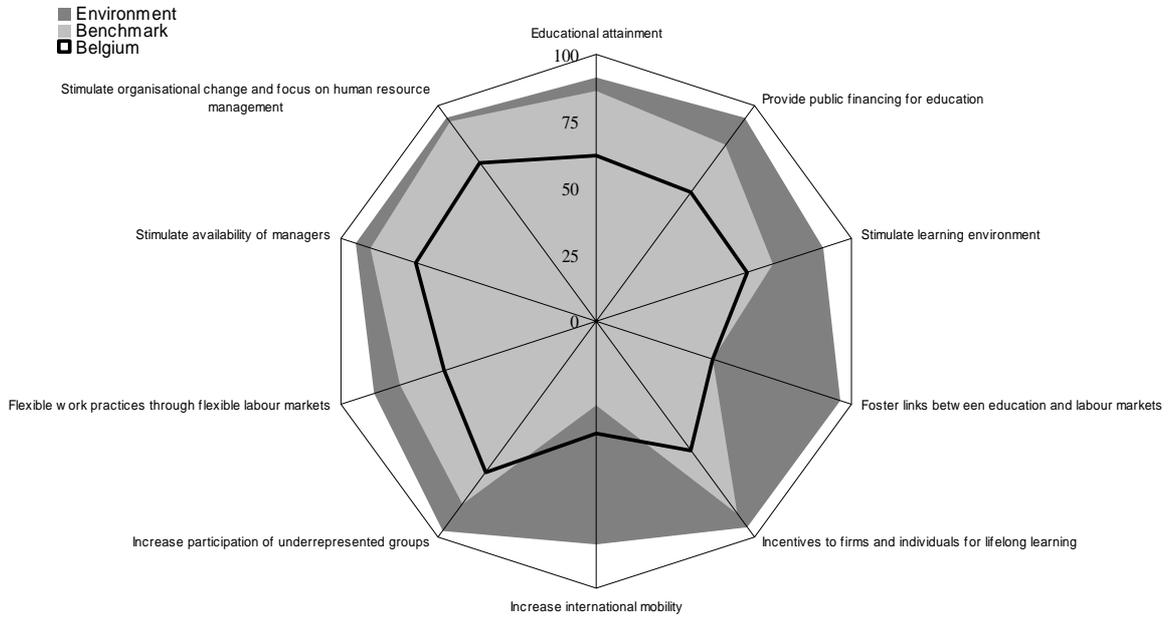
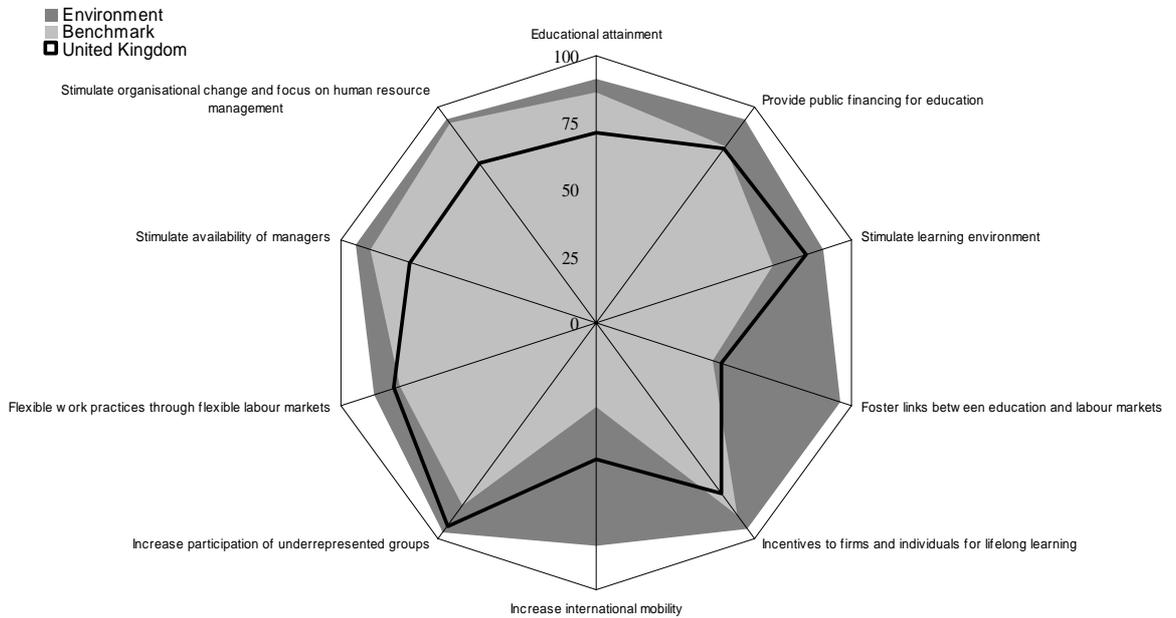


Figure 9. United Kingdom: policies for enhancing human capital

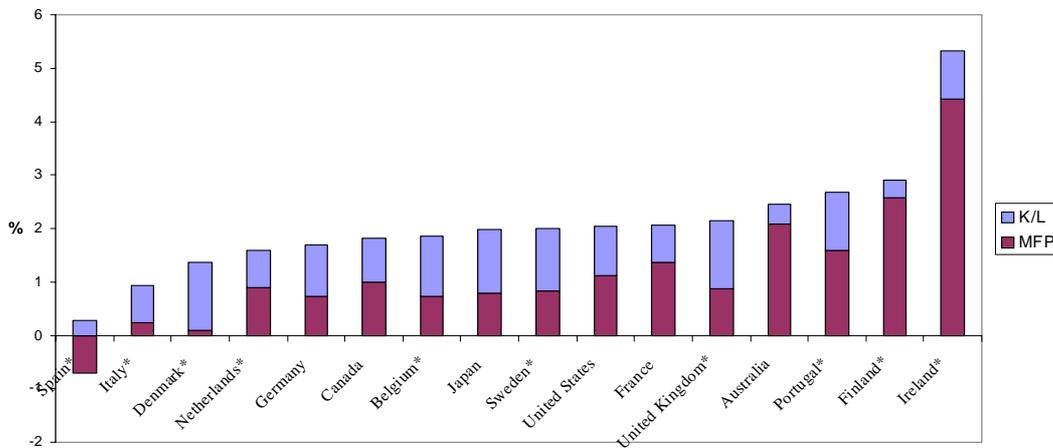
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THE LINKS TO GROWTH

While a stable macro-economic environment provides the overall basis for growth, investment in factors at the micro-level is crucial for sustained development in knowledge-based economies. Structural factors are now playing a greater role in economic growth as seen in the contributions of multi-factor productivity (MFP). MFP, which reflects the use of intangible resources such as knowledge and management, played a major role in the 1990s growth performance of certain OECD countries (Figure 10). Improvements may reflect better skills and technology, while organisation and innovation have also enabled given labour/capital combinations to lead to more efficient production.

Figure 10. Growth in labour productivity (1995-2002)

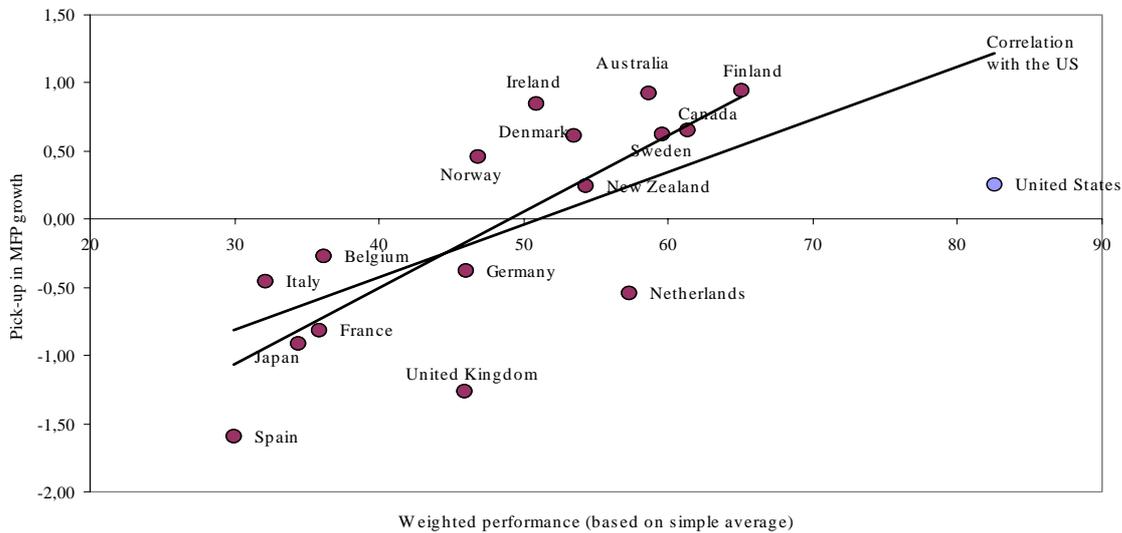


Notes: Yearly changes in labour productivity split into capital deepening (KL) and multifactor productivity (MFP). MFP covers the total economy and is based on hedonic prices calculated by the OECD; * countries are 1995-2001.

Source: OECD Productivity Database, 2004.

The increasing role of MFP is a sign that something new at the micro-level is now contributing to growth and this needs to be factored more fully into analyses of economic behaviour at country level. Achievements on micro-drivers – such as entrepreneurship, ICT, innovation and human capital – help explain variations in economic performance across OECD countries. The four micro-drivers -- as measured by the average of available indicators on entrepreneurship, ICT, innovation and human capital – are correlated with growth in MFP. They explain almost 60% of the variation in the pick-up of MFP growth from the 1980s to the 1990s among OECD countries (excluding the United States) and 44% of the variation when the United States is included (Figure 11).

Figure 11. Performance on micro-drivers and MFP growth



Notes: Pick-up in MFP growth measures the change in growth in multi-factor productivity from the 1980s to the 1990s in the business sector. Weighted performance is the simple average of the country's performance on the four micro-drivers.

DEVELOPING A COHERENT GROWTH STRATEGY

Among the goals of the project on *Micro-Policies for Growth and Productivity* is to create a more coherent growth strategy for the micro-level of the economy. The benchmarking analysis demonstrates that the contributions of the micro-drivers are greater when taken together rather than separately. Certain countries perform worse at the macro-level in terms of overall productivity growth than their performance on some micro-drivers would suggest. This is largely because of weaknesses in complementary areas. An integrated policy approach where the four micro-drivers are promoted together is the best means for enhancing overall economic performance.

For example, countries may not reap the full benefits of science and technology (S&T) if they lack entrepreneurs to exploit and diffuse these outputs. Structural factors such as entrepreneurship and S&T tend to interact and build on each other. Certain countries may not realise their innovative potential if they lack entrepreneurs to turn ideas into profit. Other countries may lack the scientific and technological base needed to benefit fully from their many entrepreneurs.

Similarly, the successful exploitation of information technology requires skilled human capital. Appropriate training and education are an important prerequisite for the effective implementation of ICT and e-business solutions. Research suggests that 10% of enterprise investments in ICT is spent on hardware and about 15% on technology complements, while the remainder (75%) is best invested in enhancing work practices, human capital and organisational restructuring (Brynjolfsson, 2003).

Analysis also underlines the strong relationship between human capital and the exploitation of S&T. Human resources in science and technology (HRST) are essential to innovation and to generating productivity growth. The development and effective use of human capital, including adopting new approaches to work organisation, are key to the ability of enterprises to improve their competitiveness by developing new products, processes and services. The quantity and quality of human capital, which correlates as well with

performance in entrepreneurship and ICT use, is the essential foundation for growth strategies in knowledge-based economies.

The policy benchmarks and micro-policies discussed in this report should be seen as interrelated building blocks of an overall growth strategy. In this regard, countries can review their relative performance on all four growth drivers in order to identify the most significant bottlenecks to growth. The example of Denmark is used here to illustrate where policy attention should perhaps be focused in order to advance on the four growth drivers and improve overall performance.

Denmark performs very well in the areas identified as important to overall performance with respect to ICT, *i.e.* developing ICT skills, stimulating competition in communication markets, fostering the development of private digital content and implementing e-government (Figure 12). However, the country performs poorly in key areas regarding the enhancement of human capital (Figure 13), which could affect the growth potential stemming from ICT. In particular, Denmark needs to focus more attention on increasing educational attainment as well as the availability and quality of professional managers. On the positive side, Denmark does better than most other OECD countries in providing incentives for continuous training and lifelong learning as well as fostering organisational change in enterprises, which fits well with the country's flexible labour market and are key areas in a changing economy.

With regard to innovation (Figure 14), Denmark performs very well in the important area of enhancing the quality and relevance of public research. Research, however, has only limited economic value if it is not propagated and the country performs poorly in creating the industry-science links that could foster such diffusion. This gap regarding industry-science connections could be linked to lags in performance on the entrepreneurship driver, particularly with regard to limited spin-offs and licensing from public research (Figure 15). Although performance in ensuring efficient labour market regulation and simplifying administrative burdens for start-ups is among the best, Denmark does less well in two areas which were highlighted as important in the overall benchmarking exercise on entrepreneurship – increasing access to venture capital and creating an effective secondary stock market. Performance in both innovation and entrepreneurship might also improve with increased availability of highly-skilled human resources, as emphasised by the human capital driver.

Figure 12. Denmark: policies for ICT

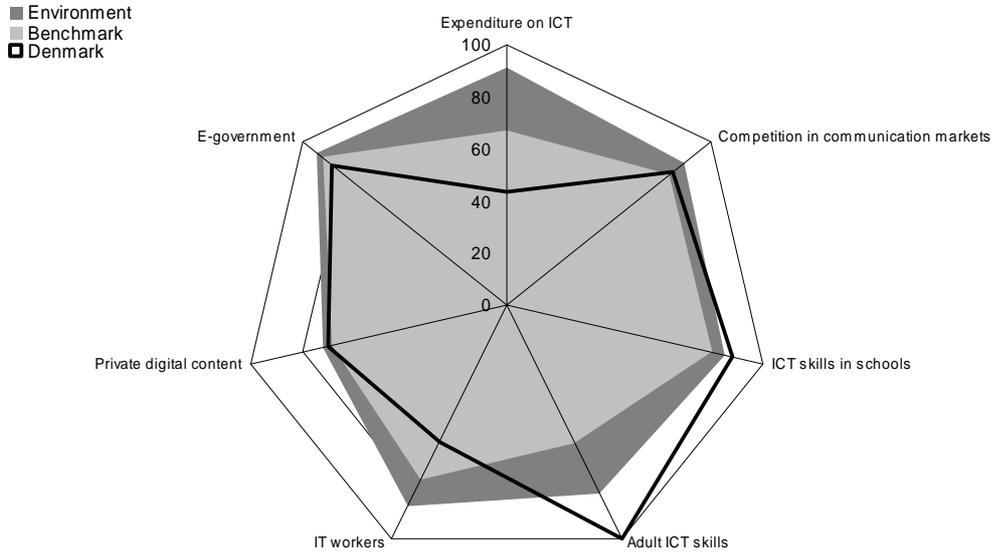
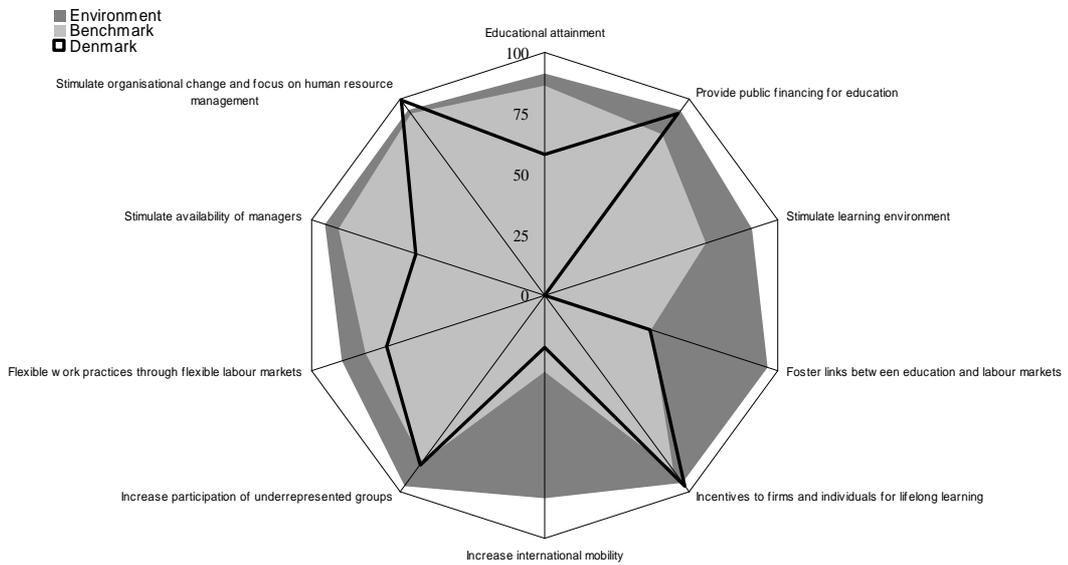


Figure 13. Denmark: policies for human capital



Note: Data is missing for Denmark on the indicators for “stimulating a learning environment”.

Figure 14. Denmark: policies for S&T

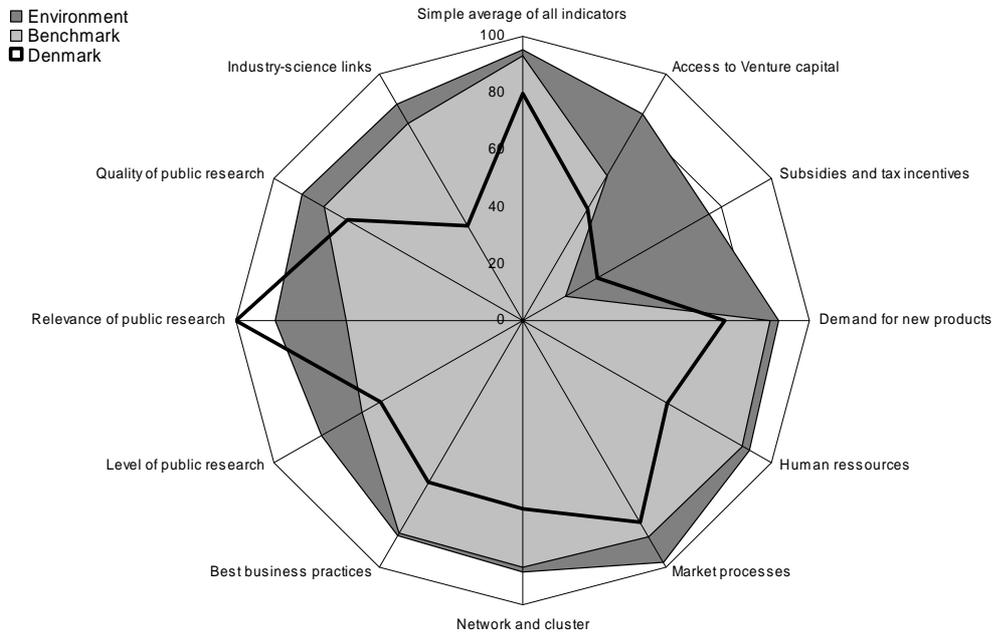
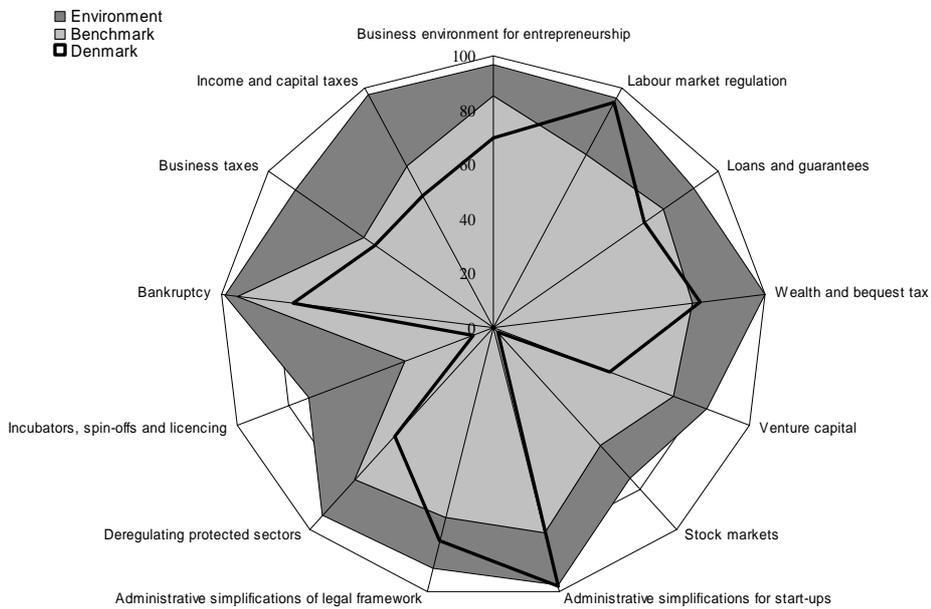


Figure 15. Denmark: policies for entrepreneurship



The overall priorities for a Danish growth strategy thus appear to be producing more skilled workers and managers through tertiary education, developing better linkages between public and private research, and increasing venture capital supply. These steps would help ensure that Danish industry has better access to the personnel, knowledge and finance it needs to enhance productivity and growth.

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