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RESTARTING THE GROWTH ENGINE IN FINLAND

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by **Henrik Braconier**

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ABSTRACT / RÉSUMÉ

Restarting the growth engine in Finland

Impressive productivity performance during the last decades has weakened since 2007, reflecting the 2008-09 recession but also a poor performance in important sectors, like the information and communication technology sector. Reforms to raise long term productivity growth need to be pursued. Current project-based R&D-support and business subsidies seem inefficient and should be scaled back and remaining support should focus on addressing externalities in terms of the creation of high productive jobs and R&D spillovers. A R&D tax credit could provide higher flexibility, equity and efficiency than current targeted support. Capital taxation should be streamlined to improve incentives for entrepreneurship and growth. The performance of the higher education system could be improved through allocating more R&D funding and teaching resources based on quality rather than block grants. Productivity performance could be enhanced by exposing sectors like health provision, network industries and retailing to more competition through lowering government dominance in provision and loosening planning restrictions.

This Working Paper relates to the 2012 OECD Economic Survey of Finland (www.oecd.org/eco/surveys/finland).

JEL classification codes: H2, I23, J6, L63, O3, O4

Keywords: Growth, productivity, structural change, R&D, retailing, ICT, competition, entrepreneurship, Finland

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Relancer le moteur de la croissance en Finlande

Les remarquables performances en matière de productivité des dernières décennies ont fléchi depuis 2007, du fait de la récession de 2008-09 mais aussi des médiocres résultats obtenus dans des secteurs essentiels, comme celui des technologiques de l'information et des communications. Les réformes visant à renforcer la croissance de la productivité à long terme doivent se poursuivre. Sous leur forme actuelle, le soutien à la R-D sur la base de projets et les subventions aux entreprises paraissent inefficients et devraient être revus à la baisse, et les autres mesures de soutien devraient essentiellement se concentrer sur les externalités du point de vue de la création d'emplois hautement productifs et des retombées de la R-D. Un crédit d'impôt au titre de la R-D pourrait offrir davantage de flexibilité, d'équité et d'efficacité que le soutien ciblé actuellement mis en œuvre. La taxation du capital devrait être rationalisée de manière à renforcer les incitations à l'entrepreneuriat et à la croissance. Les performances du système d'enseignement supérieur pourraient être améliorées en allouant à la R-D des ressources de financement et d'enseignement sur des critères qualitatifs plutôt que sous la forme de subventions globales. Les performances en matière de productivité pourraient être améliorées en ouvrant davantage à la concurrence des secteurs tels que les soins de santé, les industries de réseau et le commerce de détail en réduisant la place prépondérante du secteur public dans leur fourniture et en assouplissant les restrictions en matière d'aménagement du territoire.

Ce Document de travail se rapporte à l'Etude économique de l'OCDE de Finlande 2012 (www.oecd.org/eco/etudes/finlande).

Codes JEL: H2, I23, J6, L63, O3, O4

Mots-clés : Croissance, productivité, le changement structurel, la R & D, la vente au détail, les TIC, la concurrence, l'entrepreneuriat, la Finlande

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TABLE OF CONTENTS

Restarting the growth engine in Finland	5
Finland’s strong productivity performance started to weaken before the recession	5
Productivity growth has been uneven	9
Rigidities hamper structural transformation and thus slow productivity growth	14
Extensive employment protection can impede functioning of labour markets with adverse effects on productivity	16
Greater work-time flexibility and stronger incentives for part-time work could improve employment outcomes and productivity.....	17
Further deregulation, opening of markets and more competition would benefit especially service sector productivity.....	18
More competition and deregulation in retailing would raise productivity.....	21
Policies bearing on entrepreneurship, innovation, investment and R&D could be more efficient.....	24
Conditions for start-ups are beneficial in Finland.....	25
...but new entrants are often inefficient.....	26
...and start-ups tend to grow slowly.....	28
Government direct support has had little if any long-term impact on employment and productivity and should be reduced further	29
Tax policies should support high productivity and growth	33
R&D policies should be modernised and redirected to more general support for innovation.....	33
Bibliography	38

Tables

1. Nokia’s Finnish operations in relation to the Finnish economy (Per cent)	9
2. Policy variables	20
3. Baseline regression.....	20
4. Impact of policy variables	20
5. Staffing and funding of Nordic competition authorities, 2010.....	22

Figures

1. Labour productivity and GDP growth.....	6
2. The information and communication technology (ICT) sector	8
3. Decomposition of labour productivity growth in selected OECD countries.....	10
4. Labour productivity.....	11
5. Labour productivity based on Trend Output Indicator.....	13
6. Relationship between productivity and GDP growth around recessions	13
7. Service employment share and GDP per capita	14
8. Decomposing labour productivity growth.....	15
9. The firm’s productivity level and employment growth are positively correlated	15
10. Protection of permanent workers against dismissal	17
11. Part time employment	18
12. Product market regulation and prices.....	19
13. The retail sector	21
14. Size distribution of food retail stores.....	24
15. Access to capital.....	26

16. Contributions to labour productivity growth in Finnish firms	27
17. Productivity in Finnish firms.....	28
18. Entry rates and productivity growth.....	29
19. Innovation support organisations in Finland	32
20. R&D and innovation	35
21. Size distribution of university departments.....	36

Boxes

1. The impact of the ICT sector and Nokia on the Finnish economy.....	7
2. Structural breaks in Finnish labour productivity	12
3. Institutions and labour productivity in the OECD area	19
4. Retail sector reforms in Nordic countries.....	23
5. Government-funded finance companies and support schemes in Finland	31
6. Recommendations for productivity enhancing reforms	37

RESTARTING THE GROWTH ENGINE IN FINLAND

by Henrik Braconier¹

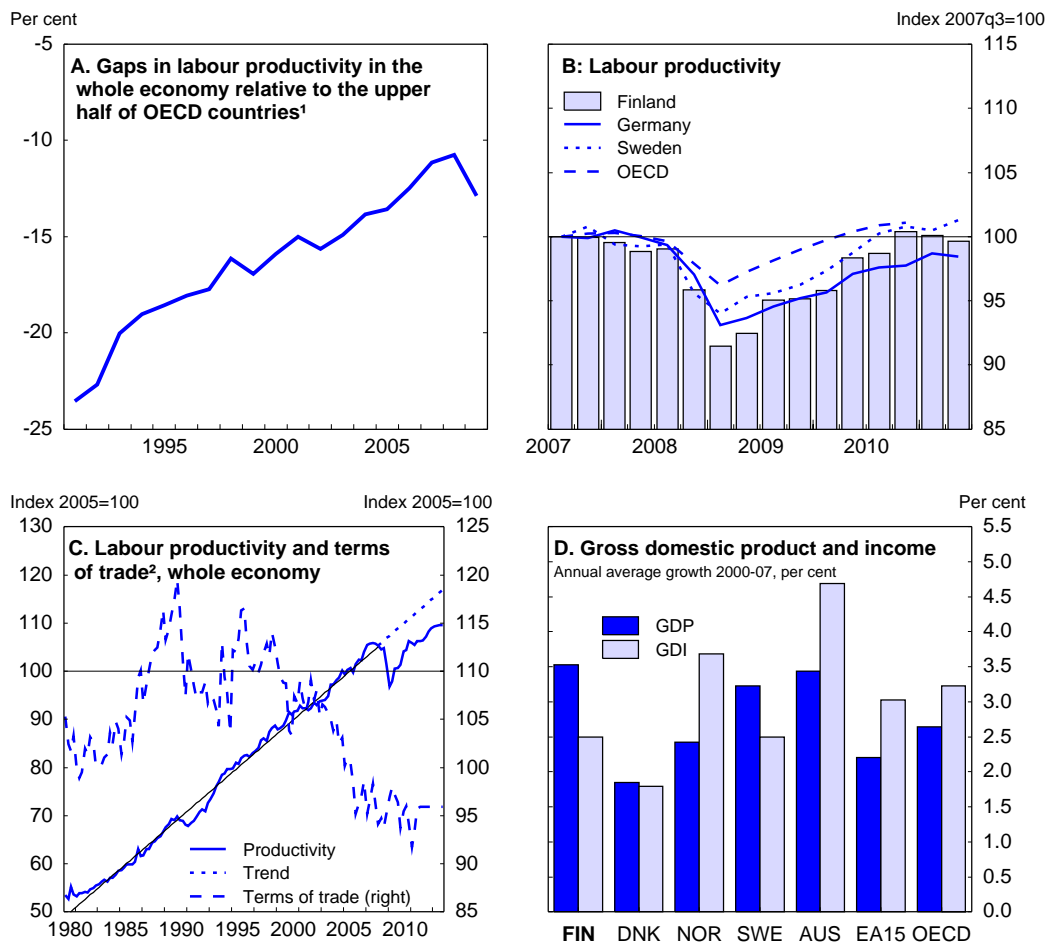
Finland's strong productivity performance started to weaken before the recession

Productivity grew rapidly in the decades up to the 2008 financial crisis, boosted by a cyclical expansion in the wake of the deep recession in the 1990s, significant structural reforms and an excellent information and communication technology (ICT) sector. Between 1991 and 2008 labour productivity grew at an annual rate of 2.8%, measurably shrinking the productivity gap relative to the best-performing OECD countries (Figure 1, panel A). The 2008-09 recession halted the productivity convergence. While labour productivity fell by almost 4% from peak to trough in the OECD area, the decline was more than twice as large in Finland (Figure 1, panel B). Finland's weakening performance recently can to a large extent be explained by a sharp fall in value added per employee in the ICT sector that coincided with the downturn (Box 1). Productivity growth has resumed, but the level of labour productivity remains roughly 7% below the pre-recession trend compared with an OECD average around 5% (Figure 1, panel C).

Finland's impressive productivity performance was not fully translated into equivalent increases in living standards, as the worsening terms-of-trade dissipated some of the productivity gains to trading partners (Figure 1, panel C). This is mainly due to the importance of ICT goods in exports, for which prices have been falling fast. As a result, the terms-of-trade decline has reduced the purchasing power of Finnish households. This drag has been significant and real income, measured as GDI, grew slower than in comparator countries during the years before the recent recession (Figure 1, panel D).

1. Henrik Braconier is Senior Economist on the United Kingdom/Finland desk in the Economics Department of the OECD. This paper was originally produced for the 2011 *OECD Economic Survey of Finland* published in February 2011 under the authority of the Economic and Development Review Committee (EDRC) of the OECD. The author would like to thank Christophe André, Andrew Dean, Robert Ford and Piritta Sorsa and members of the EDRC for valuable comments. He is also grateful to Jérôme Brezillon, Dilyana Dimova and Clara Garcia for statistical analysis and Olivier Besson for secretarial assistance.

Figure 1. Labour productivity and GDP growth



1. Percentage gap with respect to the simple average of the highest 17 OECD countries in terms of GDP per capita and GDP per hour worked (in constant 2005 PPPs).
2. Ratio of the deflator of exports of goods and services to deflator of imports of goods and services.

Source: OECD, National Accounts; OECD Economic Outlook No. 88 & 90 Databases; OECD, *OECD Going for Growth 2010* and OECD, *OECD Going for Growth 2011*.

The outlook for a resumption of high productivity growth is clouded. The Nokia-led ICT production boom in Finland during the 1990s and 2000s was most likely a “once-in-a-lifetime” experience. The virtuous cycle of rising profits, more R&D investment and superior products has come to an end and is unlikely to be repeated (Box 1). More broadly, the successful catch-up in productivity levels already achieved makes further improvements more difficult, as productivity in many sectors in the Finnish economy is now on a par with the best-performing OECD countries. Finally, the pace of structural reforms has slowed in recent years in Finland which is lowering growth-contributions from structural change and to falling public sector productivity. These less advantageous prospects have also been borne out in recent data, with the recovery in productivity being shallower than after the 1990s recession (Box 2). In addition to the downward shift in the trend level of productivity, long-term productivity growth may thus settle at a slower pace than before the recession and more in line with the OECD average, as has been the case for the 2007-11 period (Figure 1, panel B).

There is plenty of room to improve productivity performance with further structural reforms. Innovation activities need to be broadened to a wider range of sectors to maintain current high R&D spending, which sustains growth. Market-oriented structural reforms could also boost productivity growth,

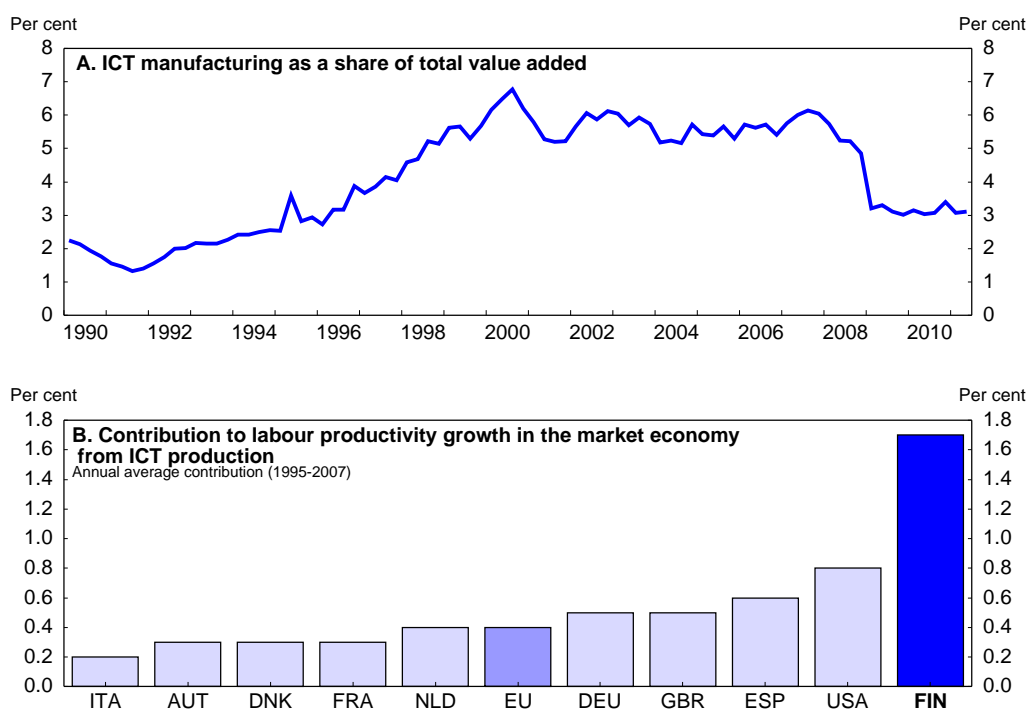
especially through supporting structural transformation and raising productivity in low productive service sectors. If labour productivity in services and other non-exposed sectors (such as construction, electricity, gas and water) were at the OECD average, Finland's GDP per capita would be 5% higher, almost making up for the productivity drop during the 2008-09 recession. Aiming higher than the OECD average could yield additional returns; if productivity in the wholesale and retailing sector had developed in line with Sweden's since 1998, GDP per capita would have been 6% higher today. Similarly, achieving the same productivity in the health care sector as the best performing OECD countries could lower health spending by 2.5% of GDP without affecting health outcomes (OECD, 2010a).

This paper starts by analysing the recent growth performance of Finland in more detail. It then moves on to assess the evolution of sources of growth and how they may continue to develop going forward. This analysis can then form a basis for paths and patterns of future growth. Finally, structural policy measures and recommendations that can enhance productivity growth are developed.

Box 1. The impact of the ICT sector and Nokia on the Finnish economy

The ICT sector grew spectacularly in Finland from the early 1990s until 2008, primarily reflecting the rapidly expanding manufacturing part of the sector.¹ As a share of total value added, the total ICT sector peaked at 10% in 2002 and remained largely unchanged at 9.5% in 2007. Roughly 2.3% of the Finnish labour force was employed in the sector in 1995 as well as in 2010, and the ICT sector's contribution to overall productivity growth was extraordinary in an OECD perspective (Figure 2, Panel B). Due to data availability and the fact that the most dramatic development in the total ICT sector relates to the manufacturing part, the following analysis will be focused on this sub-sector, which in 2007 made up 6% of total value added in the economy (Figure 2, panel A). Between the first quarters of 2008 and 2009, value added fell by 48% in the sector, deducting 5.5% from economy-wide value added. Roughly half of Finland's exceptional fall in GDP during the recession can thus be attributed to this sector, and correcting for this factor Finland was not worse hit than other OECD countries. The sector has recovered from the beginning of 2009, but employment and especially output remain significantly lower than before 2008. The sector's contribution to annualised GDP growth switched from 1.3 percentage points during 2000Q1-08Q1 to -1.0 in 2008Q1-11Q2.

Figure 2. The information and communication technology (ICT) sector



Source: Statistics Finland and OECD calculations.

Pure volume indexes exaggerate the impact on the local economy of export-oriented sectors that enjoy fast productivity growth, as fast-falling prices improve living standards of (mainly foreign) buyers of the products. Output prices in the ICT sector fell by 3.7% per annum in 1995-2010, while overall output prices increased by 1.8%. From a welfare perspective, nominal value added in the sector is a better measure of its economic impact as this relates to wages and profits that the sector generates. The industry's share of total nominal value added can thus be used as an indicator of the 'excess' value to the domestic economy that the sector has created.² As panel A of Figure 2 shows, the ICT sector's share of total value added surged from 3% in 1995 to 6% in 2007, before falling back to 3% in 2009. From this perspective, less than 30% of the productivity contribution from ICT during 1995-2007 actually contributed to higher living standards in Finland and the remaining gains were lost in the recent contraction.³ The 'excess' contribution for the full period 1995-2010 is therefore close to zero. While the previous productivity performance is unlikely to be regained, the negative drag on overall productivity growth is likely to have largely vanished. The shrinking importance of the ICT-sector should eventually slow the persistent terms-of-trade deterioration, but so far there is little evidence of this (Figure 1, panel C).

The sharp contraction in the Finnish ICT sector since 2007 reflects growing structural challenges that were aggravated by the recession. These structural challenges mainly related to outsourcing of production – whereby many of Nokia's Finnish partners were unable to follow the firm's global expansion (Seppälä, 2010) – the persistent problems in integrating Nokia's and Siemens network services and Nokia's problems in maintaining market leadership in the mobile phone sector and especially the smartphone segment. Between the third quarters of 2010 and 2011, Nokia's market share in smartphones fell from 36% to 17% (Gartner, 2011). Announced cutbacks in staff during 2011 amounted to 10500 employees worldwide in both production and R&D activities. With the mobile phone sector continuing to develop rapidly and disruptively, the future development is difficult to predict, but many analysts are pessimistic about Nokia's ability to maintain its leading position in the mobile phone market (see e.g. Kenney and Pon, 2011).

Table 1. **Nokia's Finnish operations in relation to the Finnish economy (Per cent)**

	1995	2007	2009
Value added	1.1	3.2	1.5
Employment	0.9	0.9	0.8
R&D	16	31	n.a

The decline of the ICT sector poses challenges to policy makers. Firstly, down-sizing will contribute to a weakening labour market. Although a large share of laid-off employees are likely to have a strong educational background, skills may not always be attuned to labour demand, creating needs for further training and geographic mobility. As discussed in the previous Survey (OECD, 2010b), improvements in activation policies and 'make work pay' policies would also support faster reemployment. Secondly, the adjustment in the ICT sector is one major factor behind the downward level adjustment in labour productivity seen during the recession. As discussed in Box 1, this shift should be viewed as a permanent rather than cyclical adjustment, with implications for potential output and therefore fiscal sustainability going forward. The effect on the overall productivity level from the adjustment of the ICT sector is estimated at 3% of GDP here. Thirdly, it should be noted that a disproportionate share of Finland's high R&D spending is performed within the ICT sector. In 2007, Nokia by itself stood for roughly 30% of R&D spending in the Finnish economy which, according to the estimates reported in Box 3 would contribute to 1.5-2.0% of the level of overall productivity. Creating better conditions for innovation and R&D across a larger share of the economy and increasing returns to R&D could maintain high R&D spending and contribute to stronger productivity growth.

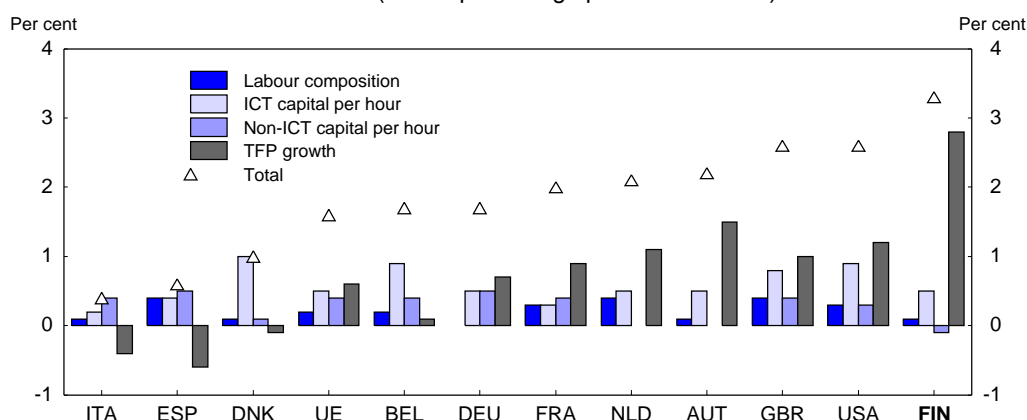
1. The manufacturing part of the ICT sector is here defined as manufacturing of of electronic products and electric equipment (SIC 26-27), Telecommunications services (SIC 61) and Computer and information services (SIC 62-63). The total ICT sector also includes some service outputs.
2. This is only an approximation, due to two counteracting forces. Firstly, some of the sector's production is used and consumed domestically, meaning that the exercise underestimates the true impact. Secondly, with a global ownership of stocks, most of the profits are being distributed to foreign owners, leading to an overestimate of the local impact.
3. This estimate follows from that ICT as a share of nominal value added increased by 3 percentage points, while the share in constant prices increased by 11 percentage points.

Productivity growth has been uneven

The rapid labour productivity growth before the 2008-09 recession was largely driven by high total factor productivity (TFP) growth, while skill accumulation and capital deepening only provided minor contributions (Figure 3). This exceptional performance in TFP can to a large extent be attributed to the productivity development in the ICT sector (Box 1) and a huge shift in investment patterns from physical capital towards R&D.² Therefore, Finland's long-term productivity performance is not only characterised by strong growth, but it also stands out in terms of composition.

2. While total investment in manufacturing, measured in terms of physical capital and R&D, remained fairly constant as a share of value added between the early 1990s and 2010, the R&D share increased from less than 20% in 1991 to more than 60% in 2010 (EK, 2011).

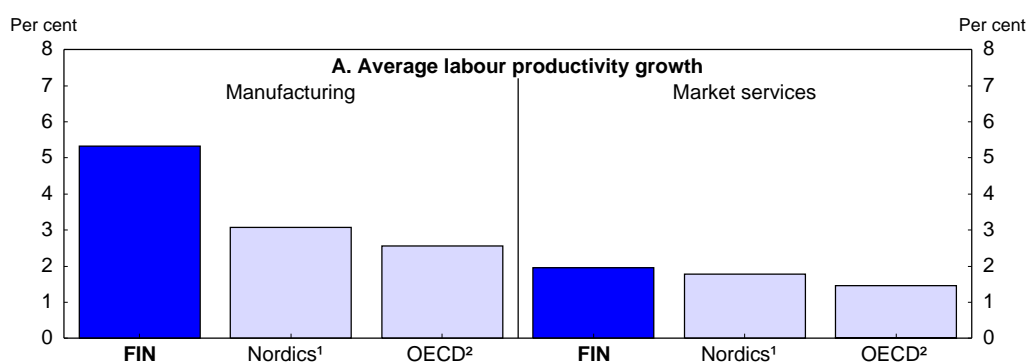
Figure 3. **Decomposition of labour productivity growth in selected OECD countries**
1995-2007 (% and percentage point contribution)



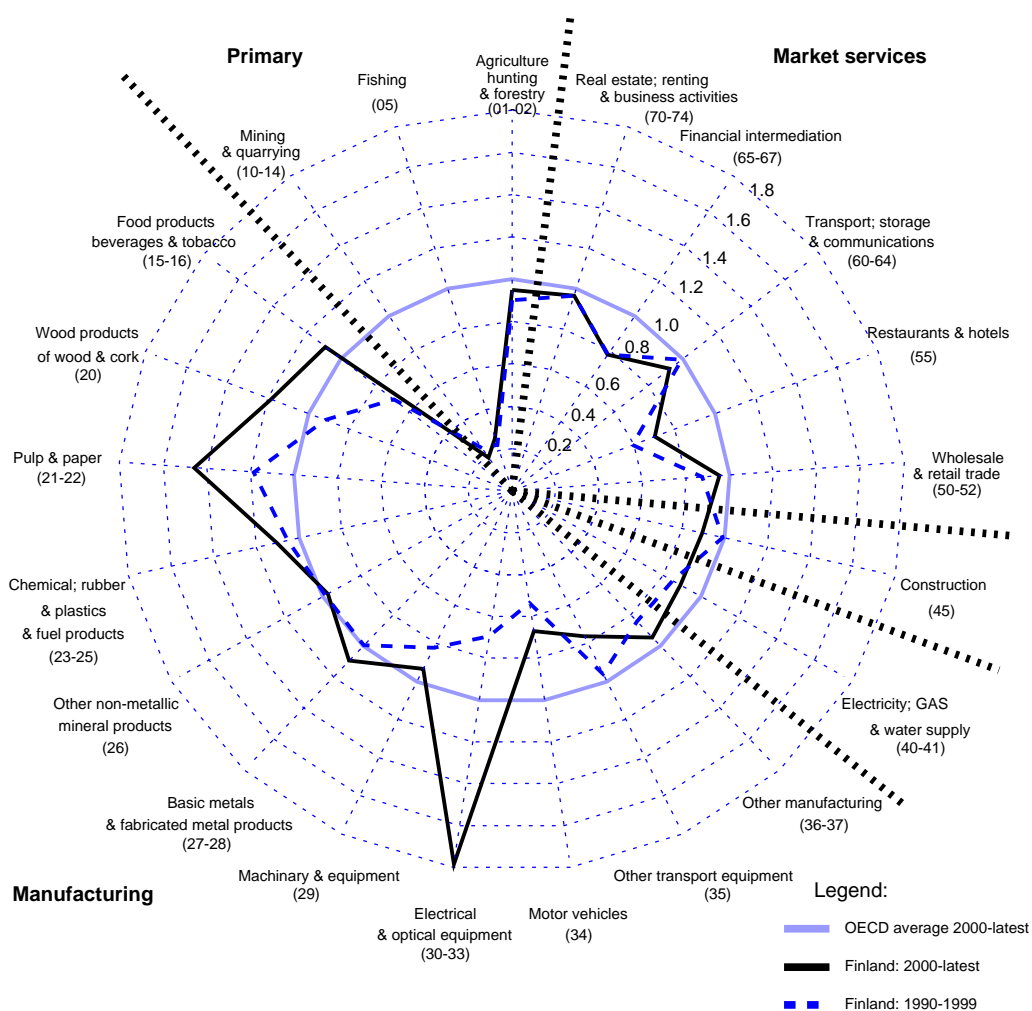
Source: van Ark (2011), Up the hill and down again.

Finland's catch-up in overall labour productivity *vis-à-vis* other OECD countries also masks significant differences in productivity performance across sectors (Figure 4, panel A). The manufacturing sectors have in general caught up with - and often surpassed - OECD average productivity levels. Productivity in the manufacturing sector is now higher than the OECD average and close to the international productivity frontier, largely on par with, for example the United States and Sweden (Figure 4, panel B; Maliranta *et al.*, 2010). However, labour productivity still lags the OECD average in services, primary production, utilities and construction, but also some manufacturing sectors.

Figure 4. Labour productivity
1980-2008 or latest available figure



B. Relative labour productivity (in comparison to other OECD countries²).



1. DNK, NOR and SWE.

2. AUT, BEL, DNK, FRA, DEU, GRC, ITA, NLD, NOR, ESP, SWE and GBR. Figures are based on ISIC 3 classification

Source: OECD STAN database.

Box 2. Structural breaks in Finnish labour productivity

The 2008-09 recession was accompanied by an unprecedented drop in labour productivity in Finland. While productivity levels in the past, e.g. after the recession in the early 1990s, tended to recover to the previous trend, there is scant evidence as yet of that happening this time (Figure 1, panel C). If productivity levels have indeed shifted down permanently, this will have wide-ranging consequences for long-term economic performance and the need for long-term fiscal consolidation. These consequences would be aggravated if the long-term growth rate has slowed.

This box applies statistical techniques to systematically detect and identify structural breaks in Finnish labour productivity. Structural breaks are identified by splitting the sample at all possible breakpoints, and comparing the variance of the resulting sub-samples.¹ Once a breakpoint has been identified, further breaks are detected by sequentially testing the resulting sub-periods (see e.g. Chong, 1995). Additionally, the robustness of the break dates is assessed by contrasting the results with the simultaneous estimation method discussed by Bai and Perron (1998). The advantage of these methods is that they do not rely on “priors” to identify breaks, but rather let the data detect when breaks occur and estimates the shape of the structural change. The models do not provide any structural explanations of why a break has occurred.

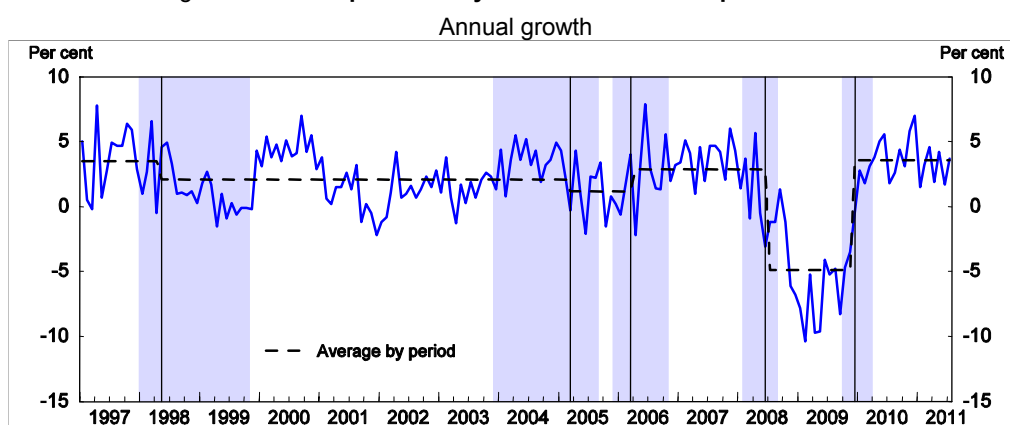
Assume a simple dynamic model where labour productivity develops according to a first-order autoregression:

$$y_t = \alpha + \rho y_{t-1} + \varepsilon_t$$

where y_t denotes the annual growth in labour productivity, measured as output per employee. Quarterly national accounts have too low a frequency to correctly identify potential structural breaks lying close to the recent recession. Instead, the monthly Trend Indicator of Output compiled by Statistics Finland is used. This variable is harmonised with the quarterly national accounts calculations, and it is deemed as “capable of predicting the development of the value added in the national economy at least fairly well” by Statistics Finland. Unfortunately, it is available only from January 1997. For robustness purposes the analysis is also performed using monthly industrial production and quarterly value added, which are available further back in time.

Five structural breaks are detected by the sequential method, and confirmed by the Bai and Perron (1998) technique (Figure 5): May 1998, March 2005, March 2006, June 2008 and December 2009. The breaks in March 2006, June 2008 and December 2009 appear to be particularly strong: apart from the evidence of a break in the regression model, there is a statistically significant change in the autoregressive parameter and in the mean growth rate in those sub-periods. Estimates based on industrial production and quarterly GDP identify breaks at similar points in time.

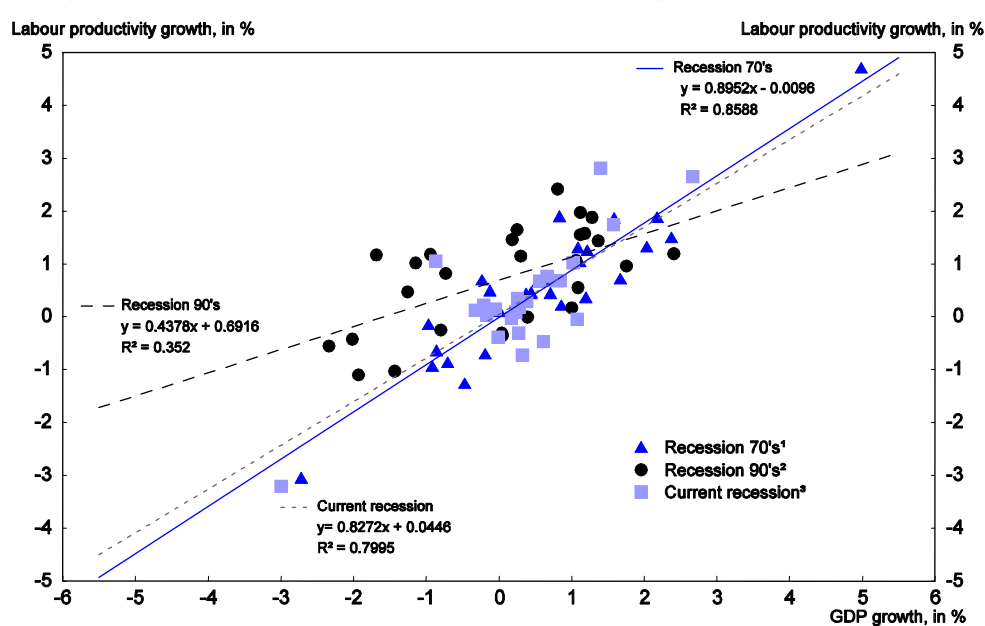
Focusing on the 2008-09 recession and its aftermath, the analysis shows that growth before (April 2006–June 2008), during (July 2008–December 2009) and after the recession (January 2010–July 2011) was 2.9%, –4.9% and 3.6% respectively. Thus growth was higher during the economic recovery after the recession than before, suggesting that some cyclical recovery is taking place. This is usually the case after recessions, as underutilised labour and other resources can be used to increase output without corresponding increases in inputs during upturns. The recovery seems quite weak however, and the growth rate is not statistically different from the period preceding the recession.

Figure 5. Labour productivity based on Trend Output Indicator¹

1. Structural breaks are denoted by vertical lines; shaded areas represent the confidence intervals around estimated breakpoints.
 Source: Statistics Finland and OECD calculations.

Unfortunately, the availability of high-frequency data is not sufficient to perform similar analyses for previous recessions in order to investigate whether the post-recession recovery is unusually weak compared to pre-recession growth. This comparison relies instead on the relationship between productivity and GDP growth, which indicates that the aftermath of the 2008-09 recession is more similar to the 1975 recession (when trend productivity growth slowed after the recession) than to the 1990s recession (when trend productivity growth accelerated; Figure 3). Thus, there is little evidence that productivity will be able to revert to its previous trend level, and some indications that trend productivity growth may have slowed.

Figure 6. Relationship between productivity and GDP growth around recessions



1. Recession 70s: 1974q2-1981q1.
 2. Recession 80s: 1989q2-1996q1.
 3. Current recession: 2007q3-2011q2.

Source: OECD, *OECD Economic Outlook No. 90* Databases.

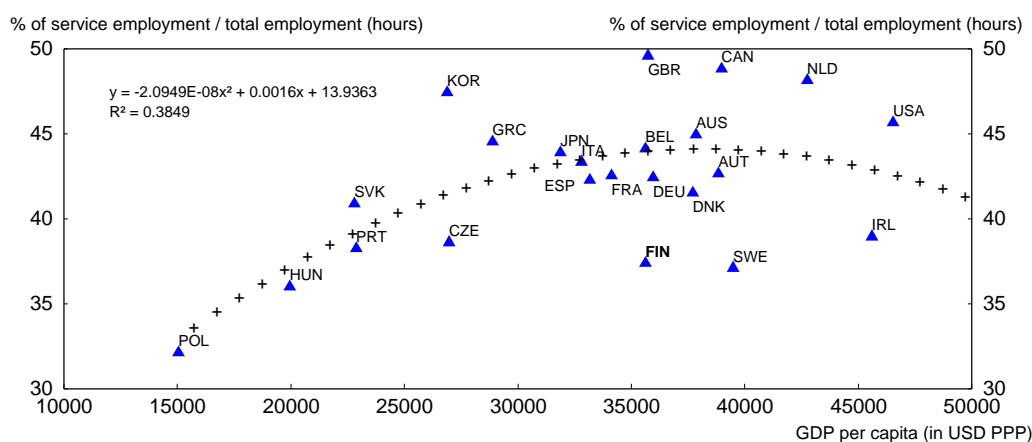
1. See e.g. Hansen (1997).
 2. We prefer to follow the iterative method, as the built-in Bai and Perron simultaneous method does not exploit changing variance and autocorrelation to get a more precise estimate of the breakpoint.

High productivity in manufacturing and low productivity in sectors less exposed to international competition points to some of the opportunities and challenges that Finland faces:

- Sectors less exposed to international competition – such as parts of market services, publicly provided services and utilities – could play a more important role in productivity growth going forward, given their current low relative levels of productivity. Low productivity in services contributes to keeping prices high and to a relatively small size of the sector in Finland (Figure 7), with negative welfare effects for consumers. Public sector reforms, including opening up larger swathes of the public sector to competition should play a prominent role as productivity has fallen the last decade and seems to lag other OECD countries in some areas, such as health. Such reforms could also provide larger markets to support innovation and growth in connected private service sectors.
- Achieving above-average growth in manufacturing in Finland will be more challenging as the catch-up potential has largely vanished. Better technologies and improved organisational practices will to a larger extent have to be developed through innovation rather than imitation, which tend to be more costly and risky. It may also require a different approach to business support and science and innovation policies, as targeting of support is becoming more difficult (Sabel and Saxenian, 2008).
- Structural transformation between sectors, firms and jobs should be harnessed and encouraged in such a way that resources are channelled towards the most productive uses.

Figure 7. **Service employment share and GDP per capita**

2008 or latest available year



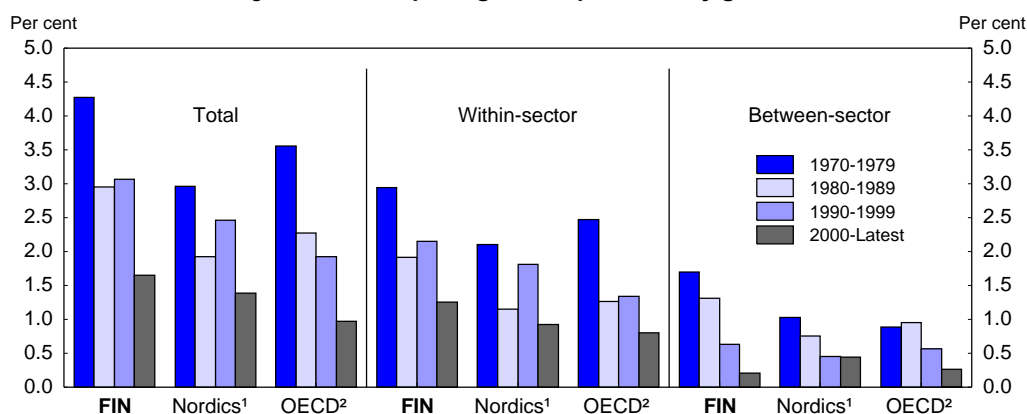
Source: OECD, STAN Database.

Rigidities hamper structural transformation and thus slow productivity growth

Structural change in terms of shifting resources from low to high productivity jobs is currently relatively low in Finland, although it could give a lasting contribution to growth. This can be illustrated by decomposing improvements in labour productivity into a within-sector-effect – measuring how much productivity improvements within a sector contribute to overall growth - and a between-sector-effect - measuring how much the movement of labour from low- to high-productive sectors contributes to growth. While productivity growth in Finland, as in other high-income OECD countries, is primarily attributed to rising productivity within sectors rather than through the relocation of resources, the contribution from the so-called between-sector-effect is now lower in Finland than in the other Nordic countries and the

OECD average (Figure 8). The rapid slowdown in the between-sector-component, especially compared to other Nordic countries, illustrates that some of the benefits from earlier structural reforms are waning in Finland. At the firm level, recent OECD estimates also show that employment in high-productive firms has grown more slowly in Finland than in several comparable countries (Figure 9). Productivity should be boosted by spurring labour relocation from low to high productive jobs within and between firms, industries and regions.

Figure 8. **Decomposing labour productivity growth**



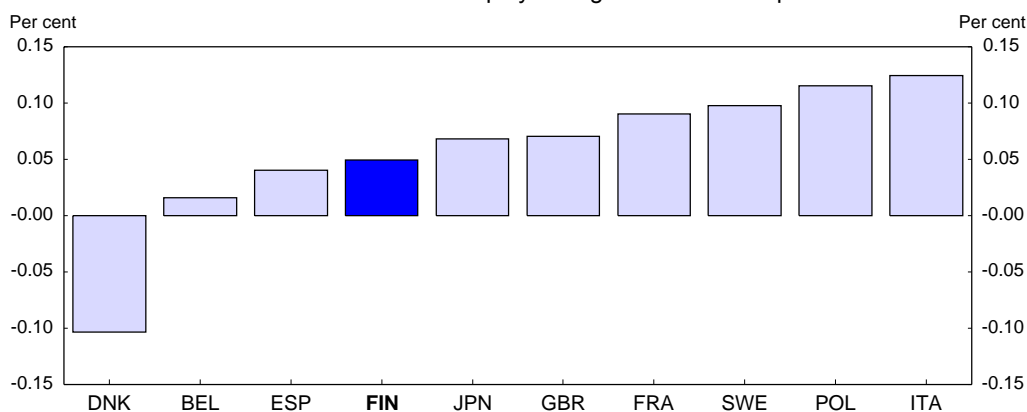
1. DNK, NOR and SWE.

2. AUT, BEL, DNK, FRA, DEU, GRC, ITA, NLD, NOR, ESP, SWE and GBR.

Source: OECD, STAN Database.

Figure 9. **The firm's productivity level and employment growth are positively correlated**

Residual correlation coefficients between employment growth and other performance variables¹



1. Size-weighted correlation coefficients among residuals from the employment growth and performance equations of Seemingly Unrelated Regressions (SUR) models including firm age, detailed firm-size classes, detailed geographical areas, detailed industry and common time dummies as co-variates. Growth rates are specified as changes of log variables. Productivity levels are lagged one year. Labour productivity is defined as value added per head. Firms with less than 20 employees are excluded. Data refer to continuing firms with published accounting data. Belgium, 2000-04; Denmark, 2001-05; Finland, 2002-04; France, 2000-04; Italy, 2002-03; Japan, 2004-06; Poland, 2001-04; Spain, 2001-04; Sweden, 2000-05; and the United Kingdom, 2000-04.

Source: OECD, *OECD Employment Outlook 2009*.

Extensive employment protection can impede functioning of labour markets with adverse effects on productivity

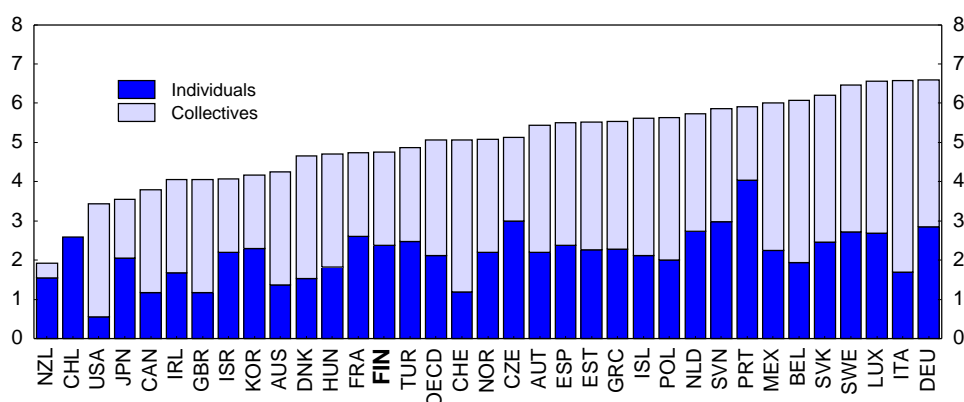
A well functioning labour market will improve individuals' chances of finding new and more productive employment. Job search, geographic mobility and skill-upgrading therefore need to be promoted; they are influenced by policies bearing on stringency of employment regulation, work-incentives, incentives for geographic mobility, wage flexibility and training.

Excessive employment protection legislation (EPL) for employees on permanent contracts can hamper productivity growth by inhibiting structural change (Bassanini *et al.*, 2008) through several channels. EPL raises the cost of downsizing, as downsizing costs increase, in turn weakening incentives for expanding high-risk projects and reacting to changing markets. Uncertainty about future exit costs may lower investment further. High EPL may also make employees more complacent about their own and their employers productivity, leading to less effort and less intense search for new (and more productive) jobs, which may be especially detrimental for productivity among less productive workers, as indicated by the results in Box 3. OECD (2010c) also finds that high levels of EPL lead to lower job to job transitions, especially within sectors where wage premia (and productivity differences) are large.

On top of damping labour mobility from less to more productive firms, high EPL may stifle innovation and hamper commercialisation of new technologies. Due to high costs of failure, innovation may be more focused on incremental improvements rather than disruptive and risky but possibly high-yielding new innovations. Nokia's 20-year transformation from a sprawling conglomerate to a global ICT firm clearly illustrates this incremental approach and its benefits. Extensive EPL may however tilt incentives against commercialising new products within Finland, leading inventors to either never commercialise or preferring to sell new inventions at a relatively early stage. The operating system LINUX and the database system MySQL are recent examples of Finnish innovations for which commercial development and economic returns were mainly reaped abroad.

Lowering EPL could thus support productivity growth, although the level of EPL is close to the OECD average (Figure 10). However, legislated and formally agreed costs related to redundancies often only form a part of firm's total layoff costs, as informal agreements often add to them. Mandatory redundancy pay in Finland equals 14 days to 6 months of pay (MEE, 2010), severance packages in the December 2010 Nokia cut amounted to 5 to 15 months pay. Any reforms therefore should focus on total redundancy costs, rather than pure legislative changes. Uncertainty about future redundancy costs can also contribute to lower investment in high risk ventures. From this perspective, the government also needs to think carefully about pushing for larger employer contributions when downsizing or closures occur, as has been the case in the government's "Handle the structural crisis-model" applied to the current Nokia downsizing. Such policies add to uncertainty and expected costs of future adjustment or exit with possible ramifications for entry. They also make redundancy costs contingent on size and profitability. One way forward could be for all firms to make recurrent payments into a system that can provide severance pay to laid-off workers, as is currently the case in the Austrian *Abfertigung Neu*-system.

Figure 10. **Protection of permanent workers against dismissal**
In 2008, scale from 0 (least restrictions) to 12 (most restrictions)



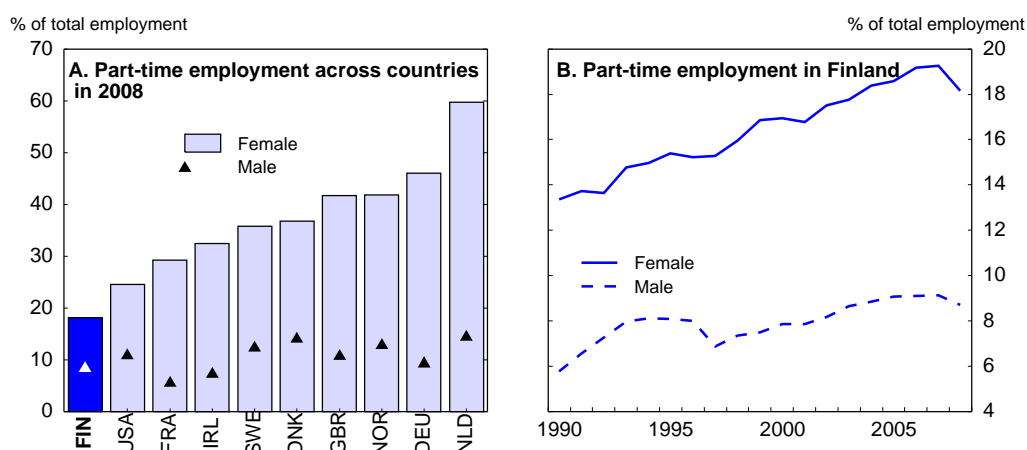
Source: OECD, Employment Protection Database.

Greater work-time flexibility and stronger incentives for part-time work could improve employment outcomes and productivity

Low levels of labour market flexibility are likely to have a disproportionately large negative impact on service sector development and productivity. Firms in the service sector typically have a greater need to match production to demand over the working day and week than manufacturing firms, and hence they would benefit more from greater flexibility in working hours. As a consequence, the service sector relies more on part-time workers. Low flexibility in working hours may cause overstaffing during slow hours and understaffing during peak-hours, affecting productivity negatively. In an OECD perspective, the incidence of part time work is low in Finland, especially among women (Figure 11). While this is likely a consequence of a number of factors, weak incentives for individuals to participate in the labour market at least on a part time basis contribute.

Providing stronger work incentives for groups where labour force participation is low and where full time work may not be an option, such as second-earners in families with small children and pensioners, would spur labour supply and improve the functioning of labour markets. Incentives for part time work among those groups are often relatively limited in Finland. Single parents and potential second-earners in families with small children face strong disincentives for part time work due to income-dependent transfers, such as the Home Care Allowance, and childcare fees (OECD, 2005). Economic incentives for individuals on national, earnings-related or full-time disability pension to work even part time are weak, due to low income thresholds (Hytti, 2006; OECD, 2010b). Furthermore, active labour measures targeted at incapacitated individuals, which exist in other Nordic countries, would also be useful.

Figure 11. Part time employment



Source: OECD, Labour Force Statistics Database.

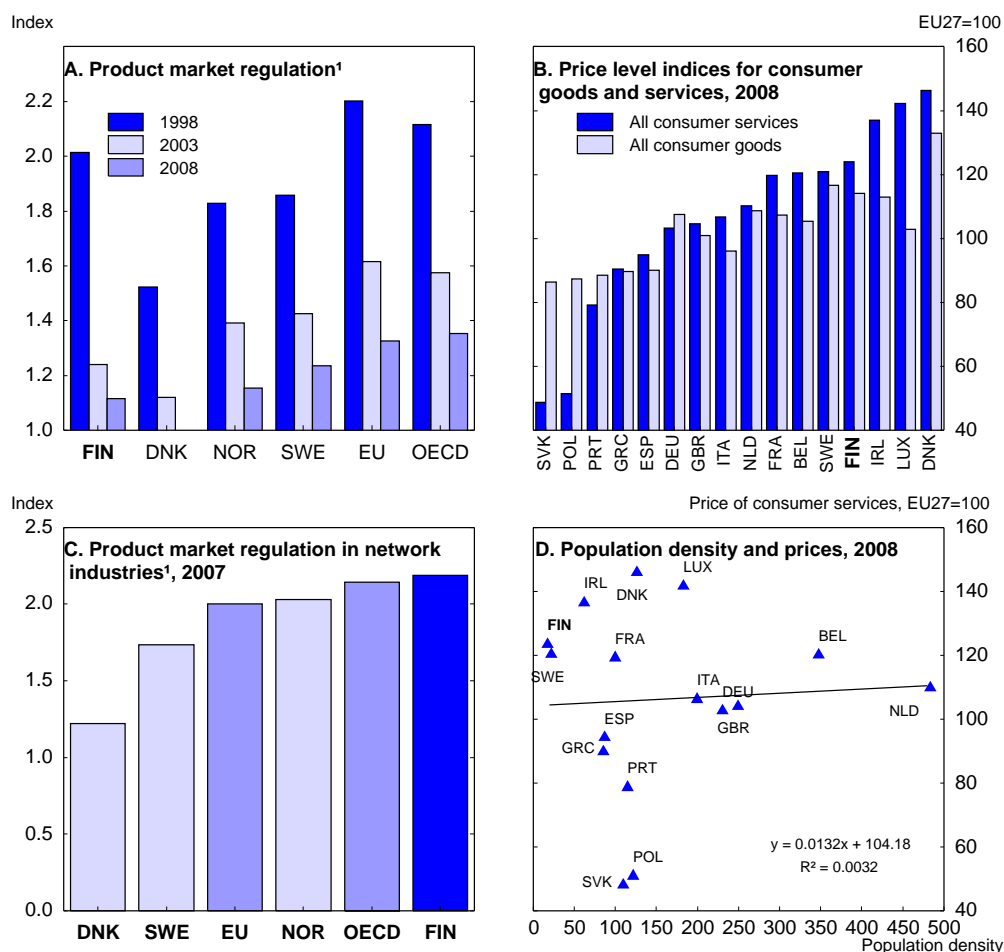
Further deregulation, opening of markets and more competition would benefit especially service sector productivity

In 2009, average labour productivity in market services was roughly 75% of that in manufacturing in Finland, while it was 115% in the average OECD country. Transition further into a service economy will therefore prove more costly for Finland than for comparable countries, unless the low productivity in services is addressed. Productivity gains in services and other less exposed sectors generally have a higher direct impact on domestic welfare, as the gains in consumer surplus from lower prices or better quality are fully retained within the country.

While product-market regulation (PMR) has become less intrusive in most OECD countries during the last ten years, improvements have been larger in Finland (Figure 12, panel A). PMRs are now in line with the other Nordic countries and are slightly lower than in the average EU and OECD country. However, prices of consumer goods and services remain high in comparison to other EU countries (Figure 12, panel B), although this partly reflects a high VAT rate (Kotilainen *et al.*, 2010).

Strong competition fosters low prices, high productivity growth and efficient resource allocation while boosting employment (Arnold *et al.*, 2011). In the tradeable sectors, international competition can provide such pressure and measures to expose more sectors to international competition should therefore be pursued (Box 3). For sectors that are less internationally exposed, policy makers need to provide robust frameworks in terms of competition policy and product market regulation to support growth. Weak regulatory frameworks and low levels of competition in upstream activities also reduce productivity in downstream sectors, regardless of whether the latter are exposed to international trade or not (Bourlès *et al.*, 2010). While some progress has been made in fostering competition in network industries in Finland, improvements have been slower than in other countries, largely reflecting a high share of public ownership in the transport and utilities sectors (Figure 12, panel C). Productivity remains relatively low in government-dominated sectors like electricity, gas and water distribution, but also in transport, storage and communication (Figure 4). Government plans to introduce competition in the rail sector in metropolitan areas is therefore welcome.

Figure 12. Product market regulation and prices



1. Scale from 0 (least restrictions) to 6 (most restrictions).

Source: Panels A & C: OECD, Database on Product Market Regulation. Panels B & D: Eurostat.

It has been argued that country-specific factors, such as a peripheral geographical position and low population density are the real drivers behind high price levels and low productivity. While it is true that agglomeration of skilled labour may be important for some skill intensive activities like R&D, there is little evidence that price levels of consumer goods and services are correlated with population density, as higher transport costs tend to be compensated through lower land prices, congestion and wages (Figure 12, panel D). In any case as in other OECD countries, the majority of the Finnish population lives in urbanised regions.

Box 3. Institutions and labour productivity in the OECD area

This box estimates how some institutional settings - such as barriers to entrepreneurship and investment - impact labour productivity in OECD area industries. Specifically, labour productivity is estimated as a function of a lagged productivity-gap (to capture potential catch-up effects), the capital intensity, R&D-spending and a set of institutional variables. The policy variables are explained in Table 2, and capture barriers to entrepreneurship, investment, construction and starting a firm.

Table 2. Policy variables

Variable	Explanation	Source
Barriers to entrepreneurship	A composite indicator of the degree of regulatory and administrative opacity, administrative burdens on start-ups, barriers to competition, and state involvement in business operations.	OECD
Barriers to investment and trade	A composite indicator of direct and indirect obstacles to FDI and trade.	OECD
Cost of construction permits	The ratio of expenses related to securing a construction permit relative to average income per capita.	World Bank
Time it takes to start a business	The time it takes to start a business measured as the number of days it takes to secure all operational permissions.	World Bank

Cross-country cross-industry data for sixteen OECD member countries¹ and 21 sectors for the period 2006-2010 is used. The dependent variable and the control variables are available per industry and country combinations, but policy variables vary only across countries. Specifically, the following equation is estimated (with industry dummies):

$$\ln(Y_{ij}/L_{ij}) = a_0 + a_1 \ln((Y_{ijt-1}/L_{ijt-1})/(Y/L)_{\max(i,t-1)}) + a_2 \ln(K_{ijt}/L_{ijt}) + a_3 \ln(R\&D_{ijt}/Y_{ijt}) + a_j \text{Policy}_{jt}$$

where i, j and t denote industry country and time period respectively. The dependent variable is the log of labor productivity which is regressed on capital intensity, R&D intensity, lagged productivity gap, policy indicators and industry dummies. The lagged productivity gap measures the distance between the labor productivity in an industry in a country relative to the best performing country within the same industry in the previous period, thus capturing the scope for catch-up.

As shown in Table 3, the included control variables have the expected signs and are highly significant. A low level of productivity in the previous period leads to a low level in the current period too, but the size of the negative coefficient shows catch-up or conditional convergence towards the industry frontier. Higher capital intensity and higher R&D intensity also affects productivity positively. The capital-intensity coefficient is more than four times larger if industry dummies are excluded (not shown here), suggesting that capital intensity is to a large extent driven by industry-specific technological factors.

Table 3. Baseline regression

	Baseline
R&D-intensity	0.044***
Capital-labour ratio	0.065***
Lagged productivity gap	-0.539***
Observations	209
R-squared	0.857

The institutional variables are included one at a time as the precision of estimates fall when they are estimated jointly. The coefficients of the control variables remain stable across the set of included policy variables. Estimates for policy variables are reported in Table 4 and show that barriers to entrepreneurship, barriers to investment and trade, and time it takes to start a business significantly affects productivity in the expected way.

Table 4. Impact of policy variables

	1	2	3	4	5	6
	Estimated coefficient	Mean	Minimum	Maximum	Finland	Effect on Finnish labour productivity
Barriers to entrepreneurship	-0.207***	1.22	0.82	1.95	1.36	-0.030
Barriers to investment and trade	-0.065***	1.18	0.19	2.64	1.71	-0.035
Costs of construction permit	0.000	78.98	19.23	143.58	128.28	Not significant
Time it takes to start business	-0.004***	17.17	3.50	47.00	14.00	0.013

The estimates in Table 4 suggest that Finland could gain substantially in terms of productivity in moving adverse policy settings. Lowering barriers to investment and trade and barriers to entrepreneurship to the OECD average could yield an increase in aggregate labour productivity of almost 3% and 3.5% respectively. Altogether, these estimates suggest that improved policy settings in these areas could increase labour productivity by almost 6.5% by moving to

OECD average and up to 25% by reaching the best performers' level.

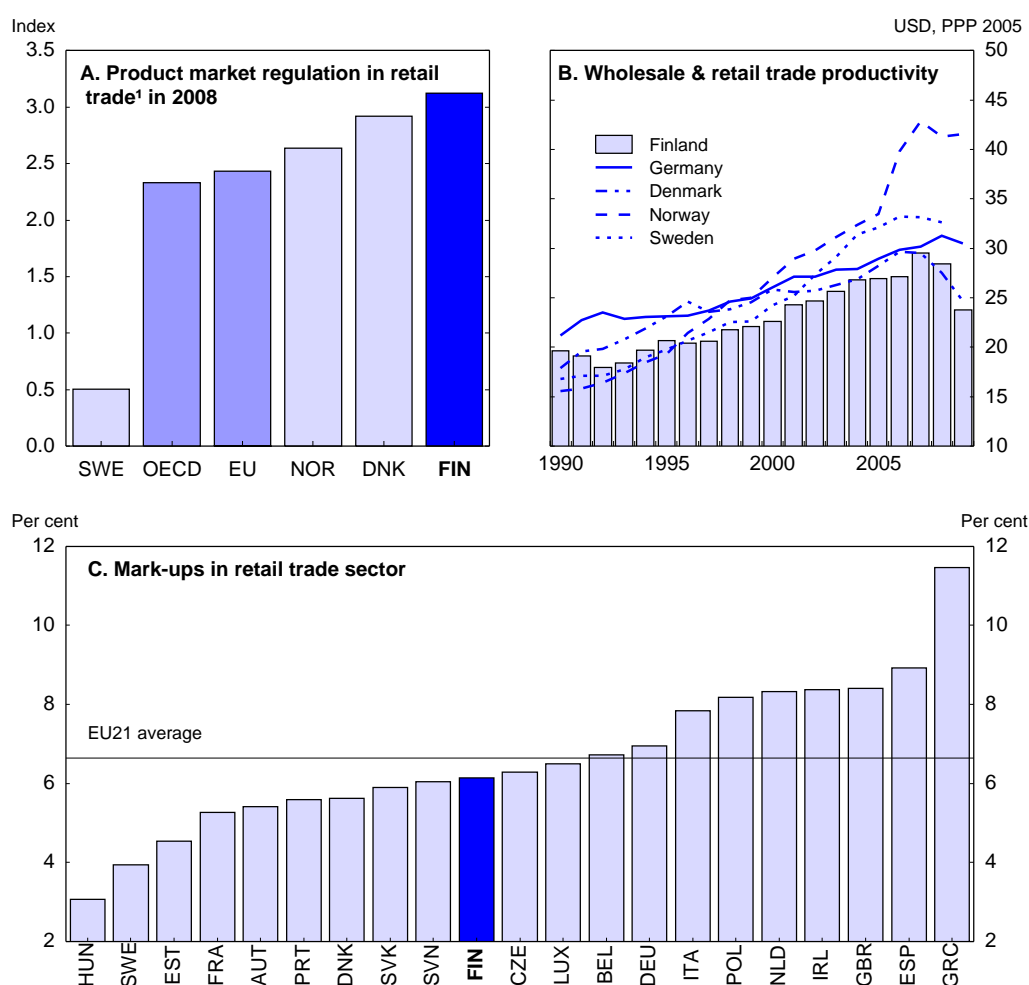
A set of extensions are estimated, exploring the impact of policy variables and controls interacted with sector characteristics (results not shown here) indicate that barriers to investment and trade are more detrimental for sectors that are relatively far from the industry's productivity frontier, indicating that relatively low productive Finnish service sectors are negatively affected by detrimental policy settings in these areas. There is scant evidence that groups of sectors (manufacturing, services, etc.) are affected in different ways by policy variables across the OECD area.

1. The included countries are Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Japan, Korea, Netherlands, Norway, Spain, Sweden and United Kingdom.

More competition and deregulation in retailing would raise productivity

Despite recent deregulation, domestic regulatory barriers in the Finnish retail sector are among the most restrictive in the European Union (Figure 13, panel A). As in the other Nordic countries, market concentration is high. The three main retail food groups account for more than 85% of total retail food sales (GAIN, 2010). Labour productivity in wholesale and retail trails Norway, Sweden and Germany (Figure 13, panel B).

Figure 13. **The retail sector**



1. Scale from 0 (least restrictions) to 6 (most restrictions).

Source: Panel A: OECD, Database on Product Market Regulation. Panel B: OECD, STAN Database and OECD calculations. Panel C: OECD, Industry and Services, SDBS Structural Business Statistics.

In the food retail sector, concentration has increased in the last few years, despite the entry of the German Lidl group into the Finnish market. Traditional measures of concentration, such as the Herfindahl-Herschman index, show that concentration now is as high as in the other Nordic countries, with mark-ups higher than in Denmark and Sweden, though lower than the EU average (Figure 13, panel C). There is also growing evidence that the structure of the market, at least among the larger stores, is converging towards a duopoly between the K- and S-groups (Niemi and Xing, 2011). These tendencies were reinforced by the S-group's acquisition of a large share of the SPAR-group, which was approved by the Finnish Competition Authority (FCA) in 2006. Given that there is no evidence of firm level (as opposed to store level) economies of scale in Finnish retailing, the increased concentration is likely to contribute to stronger market power and higher prices (Aalto-Setälä, 2002). Lower concentration could therefore contribute to stronger competition and lower prices, and although there appears not to be any evidence of improper conduct, it could be useful for the FCA to conduct a market study of the food retail sector.

Competition law and merger control have been more lenient than what the European Commission has recommended (EC, 2011). The new Competition Act which came into force in November 2011 rectifies shortcomings relating to stricter merger control, expanding investigative powers for the competition authority, enhancing damage compensation and introducing "whistle-blowing" instruments. The increased powers are welcome, but the government should consider whether the FCA is sufficiently funded and staffed in light of its expanded remit. In terms of staffing and budget, it is small compared to corresponding organisations in similar-sized countries (Table 5), although its staff has been expanded by 15 persons recently.

Table 5. **Staffing and funding of Nordic competition authorities, 2010**

	Staff	Budget (million €)	Population (million)
Finland	70	5	5.4
Denmark	145	28	5.5
Norway	109	11	4.9
Sweden	135	14	9.4

Zoning and planning restrictions hamper retail development, as new firms are often dependent on using new rather than existing locations. For big international retailers, out-of-centre location may be the only real option given that they may pursue larger-sized shops and greenfield locations. As has been discussed extensively by *e.g.* Gordon (2004), the development of out-of-centre "big box" retailing has been one major source of differences in productivity growth between the United States and Europe. In Finland, municipalities are responsible for land-use planning decisions according to the Land Use and Building Act of 2000. The Act shifted planning in a more restrictive direction, with a presumption towards the establishment of hypermarkets in city centres and larger developments to be agreed with neighbouring municipalities and the Ministry of the Environment. The Revised National Land Use Guidelines of 2009 put further restrictions on out-of-centre developments, as "major retail trade units should be located so as to support the urban structures" (Ministry of the Environment, 2009). In 2011 these restrictions were extended to hitherto excluded retailers in furniture, hardware and cars. Deviations from these guidelines are only allowed if impact studies show that the proposed development is in line with sustainable development. The more restrictive approach to land-use has been effective in containing retailing expansion, with no net growth in retail space between 2004 and 2009.

Box 4. Retail sector reforms in Nordic countries

Significant liberalisation in retailing has been pursued in Norway and Sweden during the last 15 years, leaving the overall regulatory frameworks less intrusive than in Finland. The reforms have contributed to impressive increases in productivity in the sector as well as the wider economy.

In Norway, consumer prices have traditionally been high compared even to other Nordic countries, reflecting high wages, import protection and costs of agricultural products and transport, as well as weak competition in wholesale distribution and strong market concentration in retailing. In 1998, retail regulation was more restrictive than in the other Nordic countries, but subsequent reforms lowered regulatory levels below those in Denmark and Finland, but left them significantly above those in Sweden. Labour productivity rose spectacularly by around 7% per annum between 1998 and 2008, and while food prices remain high in comparison to other Nordic countries and to the EU, price differentials have shrunk (Konkurrenstillsynet, 2006). Market concentration has increased, with the four major players accounting for 98% of food retailing. Since 2008, there has been some back-tracking, with tighter restrictions on opening shopping centres outside urban areas and making it simpler for the government to overrule the Norwegian competition authority (OECD, 2010d).

In Sweden, retailing reforms started in earnest in 1992 when municipal planning restrictions were successively loosened, the country decided to join the EU and a new competition authority was set up. Danish and German retailers entered the market, spurring competition. Opening hours were deregulated already in 1974, with the exception of the government monopoly on alcohol sales which still remains in place. In 2010, the government's retailing monopoly on drugs was dismantled, thereby opening competition between pharmacies. These reforms brought large benefits as between 1996 and 2005 food prices rose by roughly 0.5% per year less in Sweden than in the EU-15, and between 1998 and 2008 labour productivity in wholesale and retailing increased by almost 5% per annum. Expansion abroad has been strong, including well known examples as IKEA and H&M.

Several factors behind the rapid growth in productivity in Swedish retailing may be worth mentioning. The weakened role for municipalities and trade associations in planning decisions meant that large, and often out-of-centre, stores increased market shares rapidly. During the last 10 years, these are estimated to have increased from 250 to 350 (Invest in Sweden, 2011). At the same time, market concentration has largely been kept at bay through entry. Furthermore, there is evidence that new entrants in retailing, combined with more stringent competition legislation, weakened the traditional market power of the main wholesale distribution chains, forcing them to compete more vigorously. For food products, this tendency is illustrated by the rapid rise of private label products. During the last few years market concentration has increased slightly, with some firms withdrawing from the market.

Apart from restricting entry, excessive planning regulations may hamper productivity through keeping down the size of retail stores. Aalto-Setälä (2002) finds significant store-level economies of scale, and hence the large share of small shops (less than 400 square meters) in Finland and the development constraints from planning laws which impede productivity. Aalto-Setälä's (2002) estimates that a doubling of the average size of stores would increase average productivity by roughly 3%.³

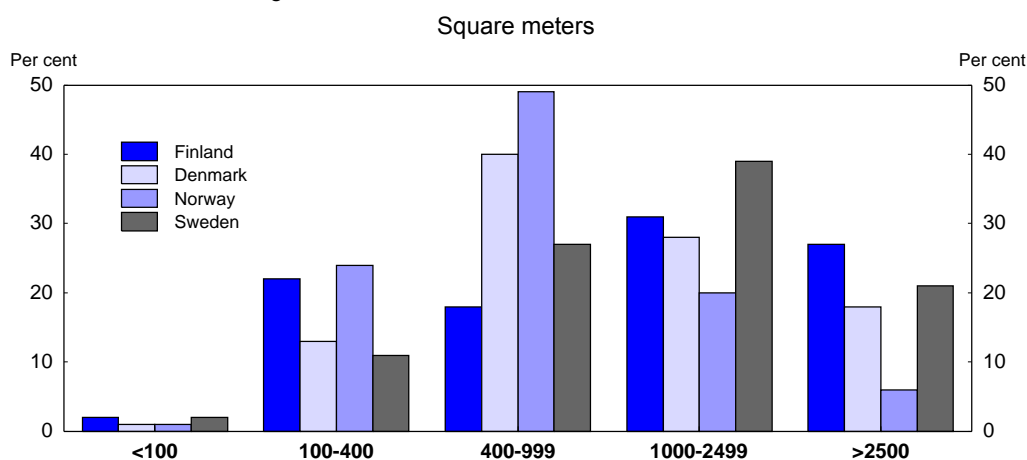
While planning and land-use regulations need to consider environmental and access concerns (Pilat, 1997), current legislation takes a heavy-handed and excessive approach. Simulations of economic and environmental effects on urban development strategies in the United Kingdom tend to show small increases in greenhouse gas emissions from dispersed development, but also a positive distributional impact through lower land prices and rents (Solutions, 2009). To what extent these results would hold in Finland remains an open issue, but it seems unlikely that the environmental benefits from more compact developments could outweigh the significant productivity gains that out-of-centre developments can yield.

3. Average turnover around 14 million times -0.27 as the estimated coefficient.

Relevant concerns about greenhouse gas emissions related to urban sprawl should rather be addressed through making the polluter pay, *e.g.* in terms of petrol taxes or congestion charges. Price-based measures would be more predictable and transparent and would also be less exposed to the vested interests of incumbents, who have an explicit role in planning discussions in the current planning legislation. There may also be scope for more level treatment of zoning for housing and retailing; to the extent that housing development remains less restrictive than retailing, it makes sense to ensure that appropriate retailing can develop in near proximity.

Restrictive and discriminating legislation on opening hours also contributes to raising retailers costs. For small retailers, opening hours are unregulated. Medium-sized and large outlets still face some restrictions, although legislation on opening hours has been liberalised successively, with the latest reform in 2009 allowing retailers of all sizes to be open between 12.00 and 18.00 on Sundays. Restrictions on opening hours create inconveniences for consumers, increase costs for stores and distorts supply in favour of small high-cost retailing stores. It is sometimes argued that size restrictions favour independent retailers, but evidence from Italy suggest that discrimination in favour of small shops does not measurably improve conditions for them, as major retailing groups respond by setting up smaller shops (Schivardi and Viviano, 2009). In Finland, grocery sales in (smaller) convenience stores and gas station marts are also dominated by the ‘big three’ retailing groups (GAIN, 2010). The distortion created by size discrimination can be seen from the size distribution of retailers in Finland compared to Denmark, Norway and Sweden (Figure 14). The incentives for retailing units to be kept below the 400 square metre restriction is evident. Relevant concerns about working time should be addressed through the collective bargaining system and hence opening hours should be unrestricted for all retailers, with the exception of sales of alcohol and pharmaceuticals which may need a more restrictive regime for health and social reasons.

Figure 14. **Size distribution of food retail stores**



Source: Einarsson, 2007.

Policies bearing on entrepreneurship, innovation, investment and R&D could be more efficient

TFP growth is the main source of labour productivity growth in most OECD countries, and especially in Finland (Figure 3). Factors that are closely linked to TFP growth are innovation, entrepreneurship and R&D. Improving outcomes in these areas would help sustain growth going forward. A well functioning system to support innovation and entrepreneurship has several dimensions in addition to above-mentioned labour market flexibility, access to sufficiently large markets and efficient provision of intermediate inputs. Most important are supply of ideas and entrepreneurs, access to capital and incentives for innovation and growth.

Conditions for start-ups are beneficial in Finland....

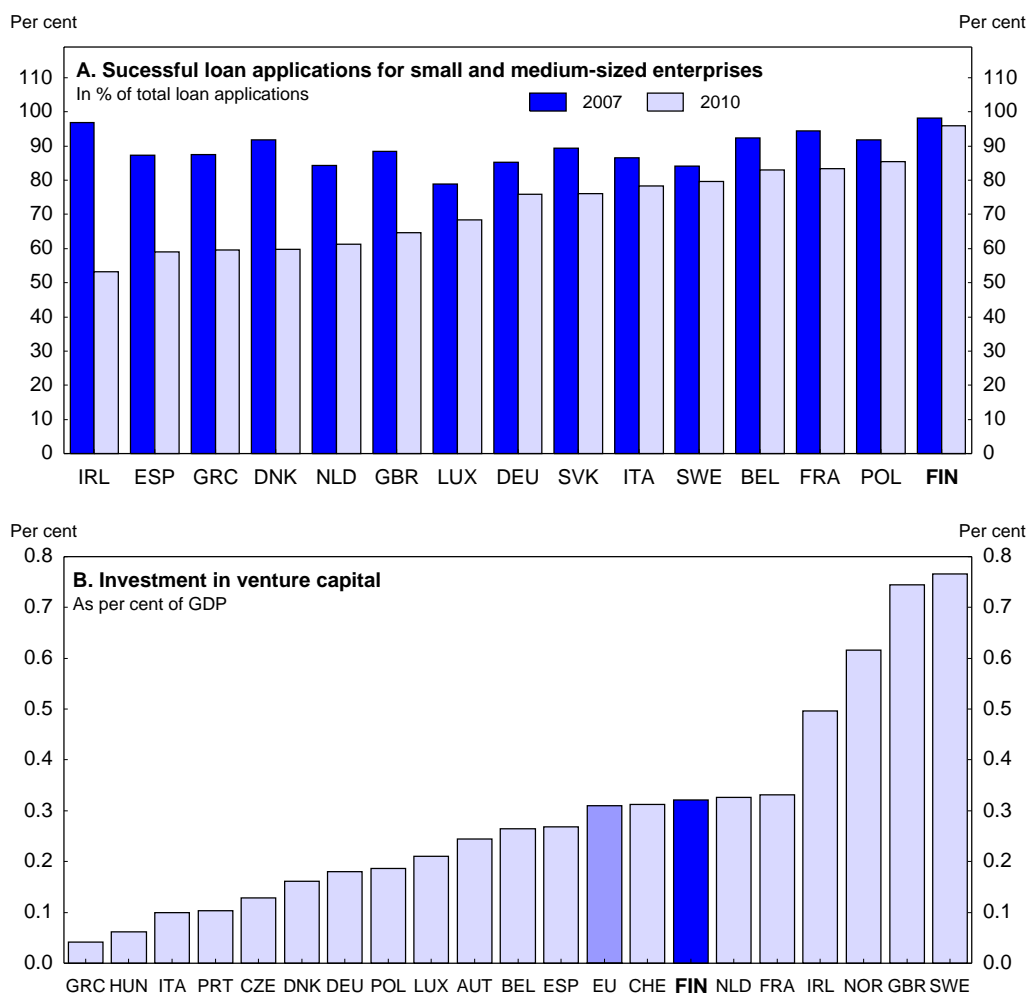
Conditions for start-ups are broadly favourable in Finland, as indicated by relatively high rates of firm creation – above those in neighbouring Nordic countries but on a par with the OECD average (OECD, 2009b). Favourable supply conditions include a high general education level, relatively wide-spread training in starting a business and that comparably few Finns seem to see the risk of failure as a hindrance to starting a business (Criscuolo and Wilson, 2010). The overall regulatory framework of doing business also performs relatively well in Finland, and the country ranks as number 13 out of 183 in the World Bank's *Ease of Doing Business* index.⁴ However, institutional barriers to entrepreneurship tend to be slightly higher than in the average OECD country (OECD, 2010e), which is likely to impact productivity negatively (Box 3). Entrepreneurial aspirations also seem to be lower than in neighbouring Nordic countries (Autio, 2009).

Access to private sector finance seems better in Finland than in most OECD countries. For most small firms debt financing is the most common source of funding. Although access to credit became a bit more restricted during the financial crisis also in Finland, the robust state of the financial sector and temporary funding through Finnvera cushioned the impact. Access to credit for small firms remains excellent (Figure 15, panel A). Debt financing may not be appropriate for many start-ups, however. For firms with little collateral, undeveloped products and unsure future market prospects, equity financing through business angels, venture capital (VC) and later on stock markets plays an important role. While VC markets developed relatively late in Finland, private VC investments are higher than the European average but lower than in most Nordics, perhaps reflecting extensive government schemes in this area in Finland (Figure 15, panel B).⁵ The causal effect of VC funding on firm productivity may not be large anyway, as a significant share of the productivity differences between VC and non-VC supported firms seems to come from VC firms ability to chose the most promising projects rather than VC funding increasing the likelihood of success (Hirukawa and Ueda, 2008).

4. <http://www.doingbusiness.org/rankings>.

5. Anyway, levels and composition of VC activity are likely to reflect demand as much as supply. In Finland, private equity and venture capital is highly skewed towards *Communications* and *Transportation*, while sectors like *Consumer goods and retail*, *Consumer services* and *Energy and environment* receive much less funding, reflecting the role of demand ((EVCA, 2011).

Figure 15. Access to capital



Source: Eurostat news release 144/2011 and European Private Equity and Venture Capital Association, Yearbook 2011.

... but new entrants are often inefficient....

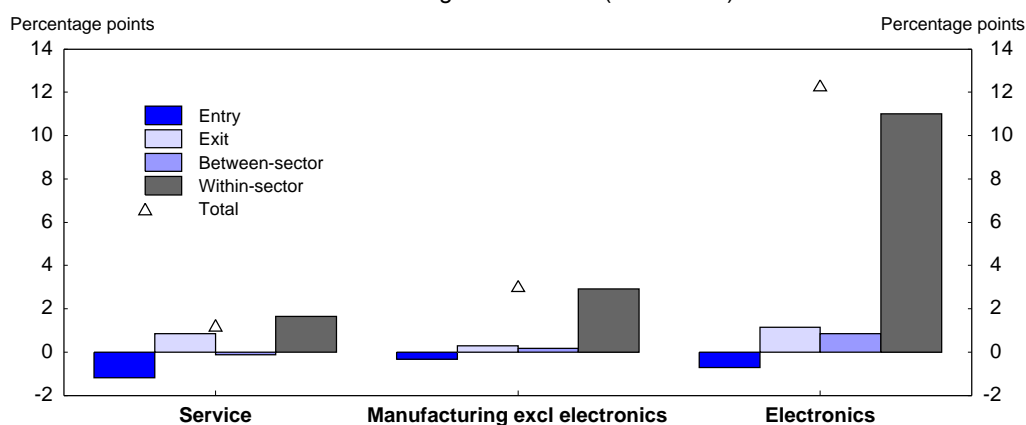
The dynamic process of firm creation and destruction is an important source of productivity growth among OECD countries, although the measured impact depends on the length of the studied period and measurement methods. One way to analyse the contribution from firm dynamics to growth is to utilise “shift-share” analysis to decompose productivity changes into effects from entry, exit, ‘within-firm’ growth and shifts in labour between firms. Productivity growth in Finland, as in other OECD countries, is to a large extent driven by large positive within-firm effects. In Finland, contributions to firm’s productivity from net entry are negative due to negative contributions from entry and relatively small positive contributions from exit (Figure 16).⁶ The negative effect from entry is more pronounced in services than in manufacturing. Productivity contributions from net entry in manufacturing in Finland are smaller than in most other OECD countries (Bartelsman *et al.*, 2009). This reflects the fact that entry

6. The large and negative contribution from entry is also evident in plant-level analysis (Hyytinen and Maliranta, 2011).

contributes negatively to Finnish productivity while exit has a comparatively small positive productivity effect.

Figure 16. Contributions to labour productivity growth in Finnish firms

Annual average contribution (1996-2007)

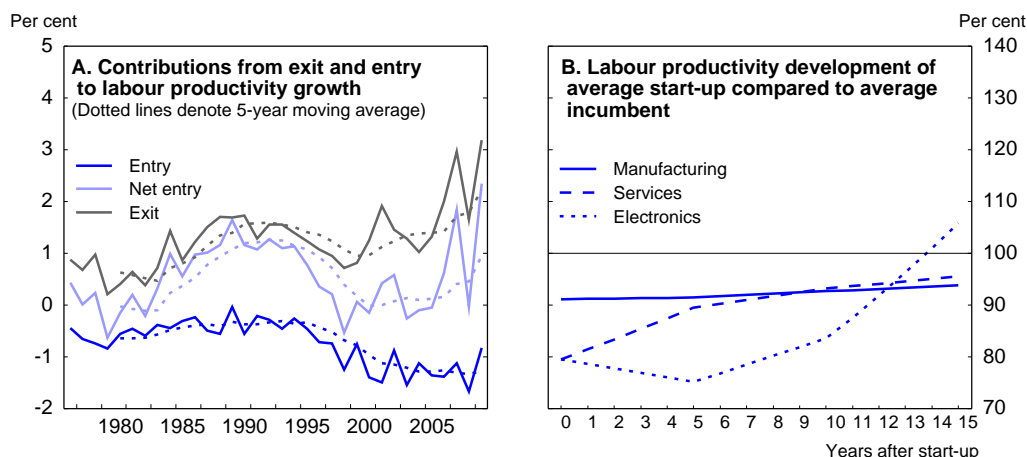


Source: Hyttinen and Maliranta (2011).

The negative contribution of firm entry to productivity means that entering firms have substantially lower productivity *vis-à-vis* incumbents. This gap spans from -9% for manufacturing firms to -20% for services and for the electronics sector (Hyttinen and Maliranta, 2011). Several factors may explain why firms enter despite their average labour productivity being low. First, entrants tend to have limited information on their productivity and therefore need to test it under market conditions. Second, lower capital intensity among entrants may also be reflected in lower labour productivity. Finally, measurement issues can be a problem. As Foster *et al.* (2008) show, entering firms initially tend to set lower prices than incumbents, which means that industry level deflators will underestimate their true productivity.

Since the mid-1990s, start-ups in the Finnish manufacturing sector seem to have become less efficient in relation to incumbent firms, which has led to increasingly negative contributions from entry (Figure 17, panel A). As many of the entrants were forced out of business, positive contributions to productivity from exit have risen with a lag. Exit-contributions rose further in manufacturing during the recent recession, when manufacturing employment fell by more than 11%. While this cleansing can contribute to higher productivity in the manufacturing sector, the effect on overall productivity is less clear and depends on what happens to dislocated labour. As a result of the sharp fall in manufacturing employment, an increasing share of employment is now located in lower productivity service sectors with average productivity in market services being only 75% of manufacturing. Furthermore, if shed workers have higher labour productivity than the average worker and leave the workforce, the net effect of their leaving employment on overall productivity will be negative, not to mention the detrimental effect of lower employment on output. The extent and quality of reemployment possibilities are therefore crucial for the overall outcome.

Figure 17. Productivity in Finnish firms



Source: Maliranta, M. 2011, unpublished results; and OECD calculations.

... and start-ups tend to grow slowly

Low productivity at entry would not necessarily be a drag on growth if sufficiently many firms survive and experience strong productivity growth during their first years. Negative static productivity effects from entry would then be compensated through positive dynamic within-firm effects.⁷ There is, however, little evidence suggesting that gains in productivity among Finnish start-ups are sufficient to compensate for the initial productivity gap, as productivity levels are estimated to trail incumbents more than 10 years after entry (Figure 17, panel B). Finnish start-ups also tend to expand less rapidly than those in most other OECD countries (Bartelsman *et al.*, 2003). High numbers of entry and exit combined with slow growth among start-ups suggest that too many low-quality firms enter and that incentives for subsequent growth may be too weak.

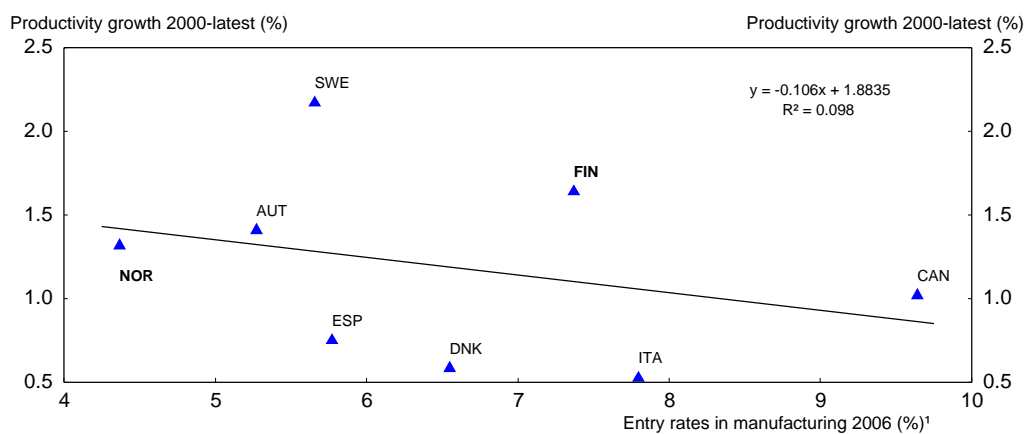
In general, there is little evidence that high entry rates are positively related to productivity growth; if anything, the correlation seems negative (Figure 18). Sanandaji (2011) reports a negative correlation between entrepreneurship and self-employment in cross-country data, highlighting that the latter is not a good proxy for the former. To raise productivity, policies should aim at aligning economic incentives for entry and firm-growth with social returns. First, improvements in the average quality of start-ups should be pursued by increasing quality of business ideas, *e.g.* through improvements in higher education and basic R&D discussed later, and through lowering entry of firms with low productivity and limited growth potential. Excess entry of non-viable firms will harm productivity directly by moving labour and capital from more productive employment to less productive self-employment. It also implies an indirect cost by making it more difficult for promising firms to find sufficient funding from private sources, contributing to slow growth among start-ups. The costs associated with imperfect information from investors' perspective will increase as the average quality of projects falls, lowering expected returns.

Second, policies should aim to reward entrepreneurial activities that create large positive externalities, which mainly are creating high-productive jobs (that generate externalities in terms of higher tax revenues) and providing R&D spillovers. This means that incentives for firm growth rather than entry should be

7. It should be noted that entry may also affect aggregate productivity indirectly by increasing exit rates among inefficient incumbent firms or force the latter to improve their productivity performance in order to survive. The positive contribution of these effects on productivity are likely to be larger if the quality of start-ups increases.

improved. Furthermore, R&D support should focus on maximising spillovers. These issues are explored in the coming pages.

Figure 18. **Entry rates and productivity growth**



1. Entry as a percentage of active enterprises.

Source: OECD Structural and Demographic Business Statistics (SDBS) Database; OECD, OECD STAN database and OECD calculations.

Government direct support has had little if any long-term impact on employment and productivity and should be reduced further

Public programmes to support start-ups and SMEs are widely used across the OECD. In 2008, almost 10% of Finnish firms received direct public support through grants, loans and guarantees, with total support measures amounting to close to 1% of GDP (Koski and Tuuli, 2010). The 2012 budget has imposed significant cuts to some grants and the institutional structure is under review. There are currently a large number of government agencies involved in funding business development, and the number of available instruments is large (Box 5).

Support for start-ups, entrepreneurship and small and medium-sized enterprises can be motivated if this mitigates negative externalities. The main motivations for government loans and guarantees to firms relate to mitigating imperfections in capital markets for small firms. There has traditionally been a concern, both in Finland and other OECD countries, that small firms have too little access to capital, due to uncertain prospects, insufficient collateral within such firms and an underdeveloped private capital market. By providing capital and reassuring private sector investors that the quality of the project is high, public support could bridge early funding problems and possibly crowd-in private capital. Furthermore, subsidies can also be motivated by the possible inability of firms to capture the full returns of their investments in R&D. In Finland, regional policy goals are also part of the rationale for support measures, while clean-technology support has become a more recent focus.

However, the effects of current subsidy schemes on firms' development seem to be rather disappointing, although evaluations typically focus on the employment effects of support measures rather than productivity. The poor results are likely to reflect problems in government agencies in identifying and funding the most relevant projects in an appropriate way, but also the significant improvements in access to private sector capital seen the last 20 years, providing better substitutes for government support (Figure 15).

It is therefore not surprising that recent studies have found little evidence of lasting effects from public financial support measures on employment and productivity. Koski and Pajarinen (2011), for

example, find that firms that receive subsidies tend to experience higher employment initially but that the effect vanishes after four years. Thus support seems to lead to faster short-term expansion without any measurable long-term effects on employment. Small innovative firms also rank “financial support provided by the public sector” as less important for operations than “availability of risk financing” and especially “a motivating company and capital taxation scheme” (Kotiranta *et al.*, 2009).

There is also evidence, both internationally and in Finland, that public sector VC is less useful for firms in terms of creating value-added than private VC (VICO project, 2011). While the need for public financial support has decreased with improving capital market sophistication, skill requirements for project appraisals have risen, at least when it comes to technologically advanced start-ups. Indeed, the presumption that government agencies should be better placed to evaluate business prospects of firms than private sector specialists could be questioned. To some extent the launch of the Startup Accelerator scheme (VIGO) in 2009 modelled on Israeli incubator schemes, where private sector venture capital expertise aids in choosing government funded projects, can be seen as an attempt to mimic private venture capital. It may be the case however that these scarce resources are better used in the private sector.

Support programmes may also crowd out private investment and create a group of firms that become dependent on support. Recent evidence for Finland suggests that firms which initially receive government support tend to continue to depend on such support both from their initial support organisation and other government schemes (Koski and Tuuli, 2010). This is especially true for large firms which are less likely to exit support systems (Koski and Pajarinen, 2011). Thus rather than being a “seal of quality” that crowds in private funding, public support can reduce reliance on private capital markets, possibly reflecting low quality of supported projects. The continued dependence on public support could also be due to better terms of finance or convenience effects for the firms and the supporting organisations. In general, there is a need to design support programmes in a way that evaluations can be made, for example, through randomization or geographically different implementation.

Spending should be cut further and institutions with overlapping responsibilities, or with activities that largely overlap with private markets, should be merged or discontinued. Altogether, five government organisations provide late-stage innovation and business support in competition with the private sector. As these organisations have expanded in terms of coverage of different firm development stages, overlaps are now significant (See Box 5). A recent survey among key stakeholders in the innovation system also points to significant overlaps in government support organisations (Kotiranta *et al.*, 2009). Especially in venture capital activities it is hard to see the need for three government actors: SITRA, FII and Finnvera. Running costs of business support are significant, with the Ministry of the Economy and Employment estimating that just the wage costs of support agencies amounted to 20% of the total subsidies provided in 2010, not counting wage costs in the regional Centres for Economic Development, Transport and the Environment (ELY centres). With better-functioning capital markets, the government’s supporting role should be focused on remaining externalities, which largely seem to stem from R&D spillovers and too low incentives for firms to grow and create high-productive jobs. As discussed later, these externalities are likely to be addressed more efficiently through the tax system.

The strong regional dimension in support measures may contribute to disappointing outcomes. On top of EU structural funds, both R&D support and “non-innovation” support is more gauged towards disadvantaged regions (Ottaviano *et al.*, 2009). This bias contributes to entry of less productive firms, as entrants in disadvantaged regions tend to have lower productivity. Although social and regional concerns in terms of employment are relevant, some evidence even suggests that innovation support has had a negative impact on productivity in disadvantaged regions in Finland, through leading to a more inefficient allocation of resources (Ottaviano *et al.*, 2009). Effectiveness of R&D activities is more sensitive to agglomeration benefits and localised knowledge spillovers than most other economic activities, and hence disadvantages in peripheral locations are likely to be large while spillovers are likely to be small. Better

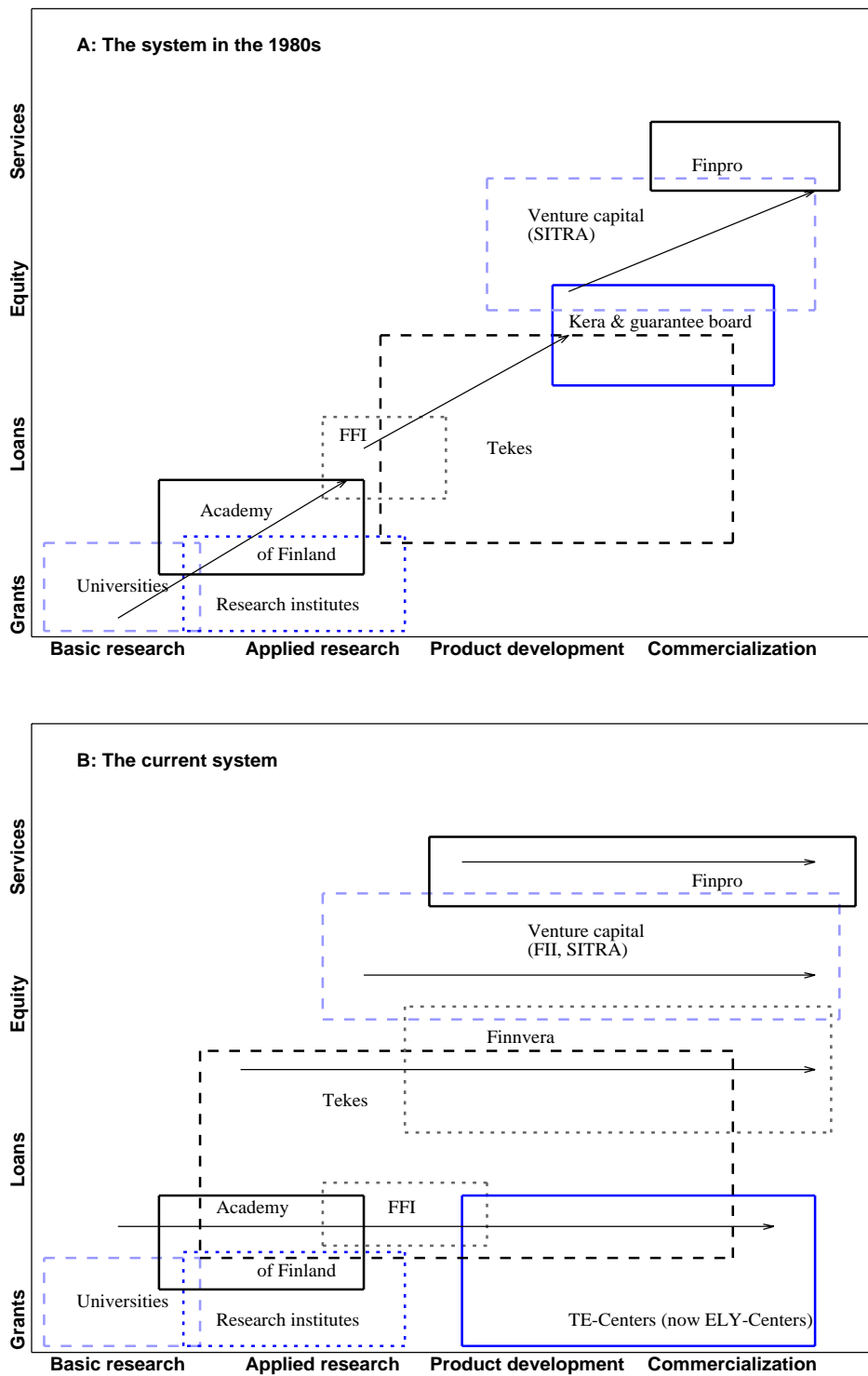
value-for-money in R&D support should be assured through actual uniformity in support criteria across Finland. Relevant regional employment concerns should be addressed through labour mobility, more local wage flexibility and sufficient labour market training.

Box 5. Government-funded finance companies and support schemes in Finland

Business and innovation support from the government is provided in different forms and through different organisations. Figure 19 covers some of the most important organisations and how they provide support in terms of the development stage of an innovation or product and in which form this support is provided. In general, two tendencies can be seen over time; the number of institutions has increase and institutions are becoming broader in terms of the stages that they cover. Hence, overlaps among organisations have increased since the 1980s. Most strikingly, expansion has been strongest in areas where capital market funding has become most readily available (commercialisation). Some of the most important government-owned institutions are (excluding pure research organizations like universities, research institutes and the Academy of Finland):

- The Finnish Funding Agency for Technology and Innovation (TEKES) funds R&D and innovation through grants and subsidised loans. Annual funding amounts to roughly €600 million and funding can be provided for R&D, innovation, expert services and internationalisation. 50-60% of funding is directed towards small and medium-sized enterprises and according to TEKES, project competition is guided by uniform principles across Finland.
- The Foundation for Finnish Inventions (FFI) screens and evaluates inventions and helps develop them into businesses. While FFI is a private foundation, it is mainly funded by the MEE.
- Finnvera provides financing for start-ups, growth, internationalisation of firms and credit guarantees for exports. Support is provided offering loans, domestic guarantees, venture capital investments, export credit guarantees and other services associated with the financing of exports. As a response to the financial crisis and credit crunch, the European Union temporarily weakened state aid rules and Finnvera provided countercyclical financing until end-2011. In 2010, new commitments amounted to €3.5 billion while total outstanding commitments were €11 billion.
- SITRA, the Finnish Innovation Fund funds applied research in different programme areas and provides financing for business support and venture capital funding. New investment amounted to €10 million in 2009 and total assets to €700 million, of which €100 million was venture capital investment.
- Finnish Industry Investment limited (FII) provide venture capital and private equity with focus on growth, internationalisation, spin-offs, major industrial investments, and sectoral and corporate restructurings. Total assets amounted to €680 million in 2011 of which more than 80% are invested in 87 private sector funds.
- FINPRO provides consulting services for exporting firms.
- ELY-centres (previously TE centres) are 15 regional bodies responsible for a wide range of policy areas including labour markets and business support. ELY-centres grants EU structural funds and provide business support for start-ups and for the internationalisation of innovation environments.

Figure 19. Innovation support organisations in Finland



Source: Georgiou *et al*, 2003.

Tax policies should support high productivity and growth

Tax incentives for self-employment and entry are significant, incentivising labour to shift from more productive employment to less productive self-employment. This adds to already existing incentives for self-employment from government support measures and a larger scope for tax evasion among self-employed than employees. The scope for underreporting of income and tax evasion is significant among the self-employed. Based on consumption patterns, Johansson (2005) estimates that self-employment incomes in Finland are underreported by 16-40%, equivalent to 1-3% of GDP. These estimates present an upper bound on the productivity loss from individuals becoming self-employed to exploit enhanced room for underreporting, with the actual effect likely to be significantly smaller.

The dual income tax system (DIT) in place in Finland since 1993 provides incentives for income shifting from earned income to capital income, which is realised through moving from employment into setting up a business. Thus incentives for choosing self-employment are related to the difference between marginal tax rates on labour relative to capital income, which is significant. Pirttilä and Selin (2011) show that the introduction of the dual income tax system in Finland in 1993 immediately led to significant income shifting among the self-employed and that this has contributed to rising income inequalities. While there are no direct estimates of the dynamic effects, the more lenient tax treatment of the small firms coincides with the increasing share of self-employed in Finland since 1993- which have tended to fall in other OECD countries – and the deterioration in productivity of entering firms seen from the mid-1990s (Figure 17, panel A). There is however no direct evidence that the DIT system is leading to excess entry of inefficient firms and therefore lower productivity growth. It should also be noted that the DIT system was introduced to reduce the distortions related to high marginal tax rates on capital income for the self-employed in the previous comprehensive tax system (Sørensen, 2005).

Distortions in corporate taxation may hamper productivity growth in Finland as closely held companies, and often sole proprietors, are taxed less than widely held companies. This hampers successful firms from growing, hindering them from realising scale economies. Inefficiencies here can be identified at two levels. First, non-incorporated sole proprietors may receive a more lenient tax treatment than incorporated firms, as they escape the two-tier taxation on corporate forms (Lindhe *et al.*, 2004). Second, closely held companies are favoured in relation to widely held corporations, due to the partial relief on dividend income for the former. As incorporation and later non-active owners are preconditions for firms' getting access to more capital and achieving stronger expansion, this will hold back entrepreneurial firms. These inefficiencies should be addressed, and if anything tax treatment should be biased in favour of incorporation and wide ownership to support growth to counteract the bias towards self-employment in the DIT system. The reduction in the maximum threshold on tax exemptions on dividends from closely held companies taking place in 2012 is a welcome first step.

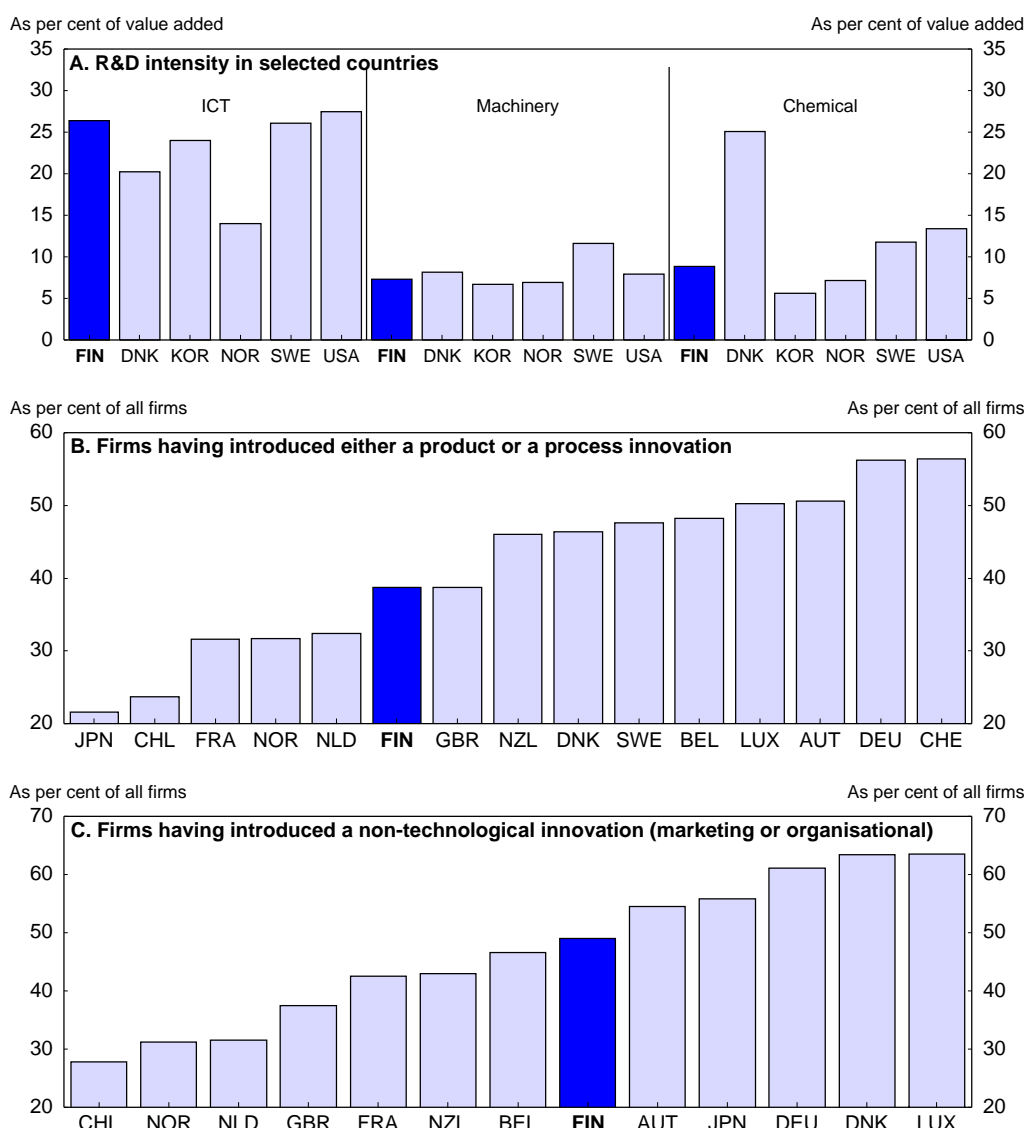
Lower corporate taxes would also support growth. Changes in taxation announced in the 2012 budget include lowering the corporate tax rate 1 percentage point (to 25%) and increasing the tax rate on capital income 2 percentage points and making it mildly progressive, will have a negligible impact on investment incentives. Further lowering of corporate taxes should therefore be pursued, with accompanying increases in *e.g.* property taxes.

R&D policies should be modernised and redirected to more general support for innovation

Finland's investment in R&D is among the highest in the OECD area. High private and public R&D spending brought the total close to 4% of GDP in 2010 and supply of researchers is high. Still output of R&D is less impressive, with the quality of universities being good but not extraordinary, while firm's output in terms of innovation is mediocre. Furthermore, R&D policies in Finland face additional challenges:

- While private R&D spending amounted to almost 3% of GDP in 2009, higher than in virtually all OECD countries, Finland's level of spending is to a large extent explained by the importance of ICT in production, which tends to be R&D intensive regardless of country (Figure 20, panel A). As described in Box 2, value added and profitability in the ICT sector has shrunk dramatically and R&D spending in the sector is being cut, raising questions about the future path of the sector and hence aggregate R&D.
- Similar to Korea but in contrast to some other high R&D countries, such as the United States and Sweden, R&D intensity (as a share of value added) is not particularly high in other industries in Finland (Figure 20, panel A). Less exceptional levels of R&D in other sectors suggest that returns to R&D may be lower than in other high R&D countries (Mathieu and van Pottelsbergh de la Potterie, 2010). Furthermore, intermediate outputs in terms of new innovations and products are lower than in several other OECD countries (Figure 20, panel B and C).
- While publicly funded R&D can play an important role for private sector R&D, government R&D spending only makes up roughly a fourth of the total in Finland (1.1% of GDP in 2009). A wider perspective on instruments is needed to improve the expected return of corporate R&D. Specifically, innovation and growth need to be seen in a wider context dealing with competition issues, entrepreneurship and labour market legislation. Access to a sufficiently large local market is often crucial, as was demonstrated when the mobile telephone market took off in Finland in the early 1990s. Market fragmentation is especially severe within traditional public sectors like health, social services and education, where provision is almost exclusively in the hands of small municipalities. This leaves weak incentives and returns for private sector innovation and R&D in these and adjacent sectors.
- Due to the strong catch-up in productivity relative to other OECD countries, a large share of the Finnish economy is now operating at or close to the technology frontier. Under such conditions, firms have to increasingly focus on inventing genuinely new products and technologies rather than imitating leaders. Apart from forcing firms to change their behaviour, this also creates new challenges for government support systems.

Figure 20. R&D and innovation



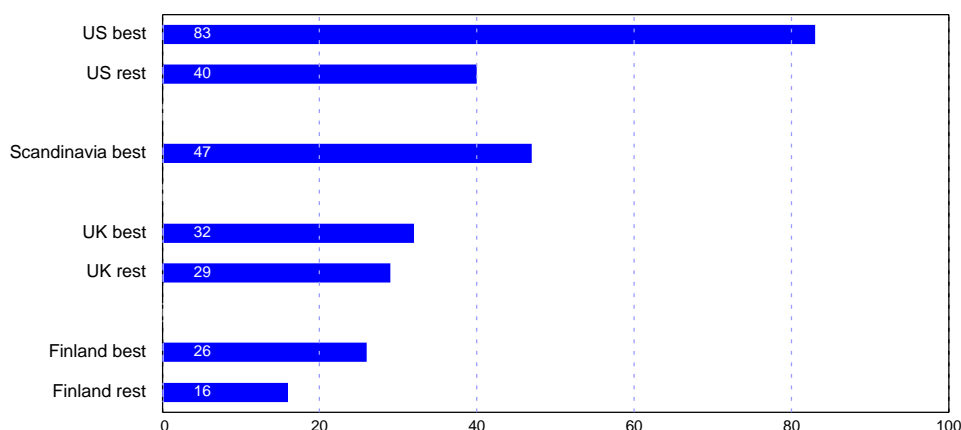
Source: OECD, STAN Database and OECD calculations.

Although government spending on R&D is high in an OECD perspective, evidence suggests that performance can be improved. Spending on R&D in higher education and the output of researchers is high in an international context. Adjusted for population size, Finnish universities rank higher than the European average, but below Nordic neighbours and other top performers in terms of quality (Aghion *et al.*, 2007).

As discussed in the previous *Survey* (OECD, 2010b), the productivity of the higher education system needs to be increased. Cumbersome entrance procedures and requirements that slow entrance to universities, and therefore delay entry into the labour force, should be streamlined. This delay is compounded by long tertiary study times, where only 45% of students complete their studies within the targeted duration (Prime Minister's Office, 2009). Anglo-Saxon countries, such as the United Kingdom and Australia have introduced tuition fees combined with student finance system with income-contingent loans, partly to address these problems. In Finland, acceptance for tuition fees seems low, and tightening

administrative rules on financing of studies may be a better way to deal with long study times in universities.

Figure 21. Size distribution of university departments



Source: Deschryvere 2009.

The quality of university research and teaching could also be improved through reaping larger economies of scale and more competition for resources. In an international and Nordic context, Finnish universities and departments are small, reflecting a strong focus on equality across regions and universities (MEE, 2009; Figure 21). The 2009 Universities Act envisages mergers, but it remains unclear whether enough scale economies can be reaped, especially in creating sufficiently large and specialised departments. Distributing research grants more competitively, while letting institutions specialise or close down, would provide some market mechanisms to achieve scale economies and competition, and thus higher efficiency.

Support for business R&D should be targeted at areas where the discrepancies between private and social returns are highest. Targeted support risks being captured by business and bureaucratic interests and tends to be administratively costly. Tax based measures have typically been effective in raising R&D spending and reward activities with high private returns, but entails deadweight costs (Bloom *et al.*, 2000). In Finland, policies have focused on direct R&D support measures, primarily provided through the Finnish Funding Agency for Technology and Innovation (TEKES) in terms of grants and loans (See Box 5). Direct support for business sector R&D amounts to roughly 0.1% of GDP, which is fairly low in an OECD perspective. The direct support model may have become less attractive over time however, as a large share of the economy is operating close to the global productivity frontier, where firm's innovations will be more focused on genuine innovations in terms of technologies and products, resulting in larger technological and market uncertainties (Sabel and Saxenian, 2008). Evaluating projects to provide direct support is more difficult and costly under those conditions, which may show in less successful outcomes in R&D support policies. While the R&D support provided to Nokia by TEKES during the 1990s seems to have been useful for the development of the ICT sector, TEKES' recent support for the climate and energy sectors seems to have had little if any impact on the sectors' performance in terms of value added (NAO, 2011).

The declining returns from direct support measures suggest that new paths should be considered. One conclusion could be that public resources should be concentrated to basic research in the higher education system. Alternatively, as suggested in the 2011 Government programme, the government could consider moving some resources to provide R&D subsidies through the tax system, rather than the current case-by-case approach. Such funding is becoming more popular among OECD countries, and *e.g.* in Norway, Canada and the United Kingdom such credits are more generous for smaller firms. Evaluations of the

Norwegian *SkatteFunn* system of tax credits point to a high impact on R&D volumes compared with other support measures and significant positive productivity effects (Cappelen *et al.*, 2008). The system has proved especially efficient in encouraging R&D among smaller firms.

The government should also consider whether current systems provide the best opportunities for promoting cooperation between the public and private sectors. Public procurement is one route that the government has used to promote private sector innovation. To address the imbalance between the focus of current R&D spending and likely future needs, the government introduced a new Innovation Strategy in 2008. This includes funnelling a larger share of public R&D spending towards non-technological areas such as the public sector and private services, with TEKES now funding more R&D in services than in the industry. Concerns have been raised that the top-down approach with Strategic Centres may be too accommodating to established enterprises and sectors and to shifts in government targets (MEE, 2009). These concerns are to some extent confirmed as the Strategic Centres of excellence for science, technology and innovation first set up since 2006 focused on mature sectors like Forestry, ICT and Metal industries. A bottom-up approach based on universities and firms could provide a more dynamic interaction.

Box 6. Recommendations for productivity enhancing reforms

Enhancing competition and deregulation

Stronger competition, especially in less internationally exposed service sectors, could boost growth. The government should therefore:

- Pursue more structural reforms within network industries and open up government dominated sectors to private provision, e.g. in health in order to increase productivity and provide stronger incentives for private sector R&D in those sectors.
- Follow up the 2011 Competition Act by ensuring that the competition authority has sufficient resources to fulfill its extended mandate.
- Loosen zoning and planning restrictions on retail development to encourage competition and increase store-level scale economies. Incumbent firms should not have a privileged role in the municipal planning process. Neither should consent from neighboring municipalities be needed. Concerns about the environmental impact of out-of centre developments should be addressed by price instruments, like petrol taxes.

Boosting entrepreneurship, innovation, R&D and growth

Government support for R&D, entrepreneurship and start-ups should focus on addressing externalities in terms of education, R&D spillovers and creating high productive jobs, largely leaving funding to a generally well-functioning capital market. Specifically the government should:

- Maintain a strong government support role in basic R&D and education. Academic performance should be improved by distributing research grants according to performance creating incentives for competition, specialisation and scale economies in university research.
- Streamline entry procedures and tighten administrative rules on study financing to shorten study time in universities.
- Shrink the number of business supporting institutions. Lower or terminate government support in areas (like VC) where markets nowadays provide equal or better services.
- Consider whether a R&D tax credit would provide higher flexibility, equity and efficiency. Regional equality dimensions should be avoided when distributing R&D support.
- Align capital taxation across organisational forms so that firms face sufficient incentives to expand. Widely held companies should not be discriminated against in relation to closely held companies or sole proprietors.

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