METODOLOGIAS DE ANTECIPAÇÃO DE NECESSIDADES DE COMPETÊNCIAS E DE CAPITAL HUMANO

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Ministério do Trabalho e da Solidariedade Social
Gabinete de Estratégia e Planeamento (GEP/MTSS)

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Lisboa, 2010

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1. INTRODUÇÃO

A iniciativa europeia *Novas Competências para Novos Empregos,* lançada pelo Conselho Europeu através da sua Resolução de 15 de Novembro de 2007[1], veio suscitar o aprofundamento de uma temática sempre actual – a antecipação de necessidades de competências e de capital humano – tendo em vista a preparação dos cidadãos para melhor se adaptarem a novos e melhores empregos, ajustando as suas competências às necessidades da sociedade e da economia e, por esta via, promover o crescimento e a coesão social na Europa.

Tratando-se de tema em aberto na União Europeia, acerca do qual várias comunidades de investigadores têm vindo a reflectir, designadamente sob a égide do CEDEFOP e da rede de competências que estabeleceu (*Skillsnet*), o Gabinete de Estratégia e Planeamento (GEP/MTSS) tomou a iniciativa de fomentar o debate sobre esta temática, para o que convidou um conjunto de investigadores e peritos internacionais a apresentar os seus estudos e experiências no domínio das metodologias de antecipação de necessidades de competências e de capital humano, assim como um conjunto de individualidades nacionais a debater estes mesmos estudos e experiências, à luz das inquietações europeias e, sobretudo, nacionais decorrentes da actual conjuntura económico-social de crise global.

Esta sessão de reflexão teve lugar em Lisboa, no passado dia 9 de Dezembro de 2008, nas instalações do Hotel Altis, tendo contado com a participação de peritos nacionais e internacionais reconhecidos nestas áreas, representantes técnicos e dirigentes da Administração Pública e, ainda, com o apoio do Centro de Estudos dos Povos e Culturas de Expressão Portuguesa (CEPCEP), da Universidade Católica Portuguesa, entidade com vasta experiência na dinamização de estudos prospectivos desta natureza.

[1] 2007/C 290/01.

2. ESTUDOS E EXPERIÊNCIAS – RELATOS DOS ORADORES E PONTOS DE DEBATE

A sessão foi presidida pela Directora-Geral do GEP, Dr.ª Cândida Soares, que a apresentou como o corolário de toda uma fase de recolha e organização de informação empreendida pelo GEP sobre metodologias de antecipação de necessidades de competências e de capital humano utilizadas em todo o mundo. Nesta medida, expôs a finalidade da sessão:

> *Encorajar o debate sobre as metodologias de antecipação de necessidades de competências e de capital humano cuja utilização seja mais apropriada em Portugal, de forma a torná-las práticas correntes, numa abordagem sistemática e integrada.*

O Prof. Dr. Roberto Carneiro deu início aos trabalhos fazendo uma breve introdução à temática, referindo a diferença entre «antes» – em que se considerava haver uma separação entre tempos de aprendizagem (idades da infância e juventude) e tempos de trabalho (idade adulta) – e «agora» – em que os tempos de aprendizagem e de trabalho se misturam. Referiu, igualmente, que os tempos actuais se caracterizam pela complexidade e por um novo nomadismo. Colocou ainda a questão fundamental aos oradores da sessão – como prospectivar necessidades de competências e de capital humano?

2.1. *Future Skills Needs in Europe*

Prof. Torsten Dunkel
Project Manager do CEDEFOP, UE

O Prof. Torsten Dunkel apresentou os estudos desenvolvidos pelo CEDEFOP em matéria de prospecção de necessidades de competências e de capital humano na Europa, focando inicialmente os objectivos e as metodologias que foram delineadas para os nortear, tendo depois passado a apresentar alguns resultados de estudos já realizados, assim como os estudos em preparação. Se, numa primeira fase, estes estudos abordam o lado da procura (necessidades de competências e de pessoas), numa segunda fase deverão abordar o lado da oferta (de competências e

de pessoas) e identificar pontos de contacto e possíveis desajustamentos. Numa fase posterior, haverá que melhorar os métodos e as bases de dados (designadamente, Contas Nacionais e Inquérito ao Emprego), bem como desenvolver pesquisa adicional através de uma abordagem comum europeia.

A respeito do documento do CEDEFOP *Future Skill Needs in Europe. Medium-term Forecast: Synthesis Report* (2008), foi dada especial relevância ao quadro metodológico utilizado, a saber uma combinação de quatro modelos de análise: módulo macroeconómico multi-sectorial (E3ME); módulo de expansão da procura de profissões (EDMOD); módulo de expansão da procura de qualificações (QMOD); e módulo da procura de reposição/substituição de profissões/qualificações («*replacement demand*» – RMOD). Foram, ainda, anunciados os *principais resultados* da pesquisa efectuada, a saber:

- Continuação da migração da estrutura de emprego em direcção ao sector dos serviços.
- Peso das mudanças demográficas na procura de substituição/ /reposição de profissionais.
- Perigo de polarização de empregos: muito qualificados e pouco qualificados.
- Aumento das qualificações requeridas mesmo para empregos de baixa complexidade.
- Semelhanças e diferenças nos diversos países (processo de convergência).

Estes resultados poderão ser utilizados na definição de políticas de emprego e de formação, designadamente através da adaptação da força de trabalho e suas competências a novas necessidades e a mudanças estruturais, bem como através da prevenção do desajustamento entre oferta e procura de profissionais e competências.

Finalmente, foi realçado que se trata de um processo em curso, cujas prioridades futuras passam pela continuação do diálogo (com peritos nacionais e parceiros sociais), pela ultrapassagem de problemas com a informação, pela afinação da metodologia, e por pesquisa complementar sobre a oferta de competências e análise mais detalhada das necessidades de competências a nível empresarial e sectorial.

Principais focos de debate:

- Diferença entre os conceitos de qualificações e de competências.
- Estrutura de qualificações utilizada no estudo e sua articulação com o Quadro Europeu das Qualificações.
- Utilização dos preços dos factores de produção, incluindo as remunerações, na análise macroeconómica.
- Relação entre procura de baixas qualificações e migração/mobilidade.
- Ajustamentos metodológicos que irão ser introduzidos.
- Existência de diferentes padrões regionais de especialização sectorial, o que influencia a identificação das necessidades de competências.
- Aumento dos níveis de qualificação mesmo em ocupações básicas – nalguns casos, de sobre-qualificação – decorrente do facto de, por um lado, se verificar uma mudança de padrão na estrutura de qualificações das ocupações básicas, que requerem qualificações mais altas do que anteriormente, bem como de, por outro lado, se registar uma maior disponibilidade de pessoas disponíveis no mercado de trabalho com altas qualificações.

2.2. *Understanding Employment Analysis and Forecasting*

Prof. Stephen S. Fuller
Director do Center for Regional Analysis, School of Public Policy, George Mason University, USA)

O Prof. Stephen Fuller apresentou em seguida *a relação existente entre a análise estatística do emprego e desemprego e as estimativas e previsões realizadas,* as quais estão associadas aos diferentes níveis de análise utilizados (nacional, regional e local, sectorial), que podem fornecer resultados discrepantes entre si.

Para estabelecer um quadro para a compreensão da dinâmica de emprego através da estimativa e da previsão, são analisados os padrões históricos de mudança de emprego nos Estados Unidos e como estes foram afectados pelos ciclos económicos. Neste âmbito, são analisadas as diferenças entre emprego a tempo inteiro e emprego a tempo parcial, bem como entre trabalhadores contratados e auto-emprego. São ainda considerados os diferentes padrões de desemprego e de crescimento do emprego a nível metropolitano, reflectindo as variações das respectivas combinações dos sectores de base. Além de alterações no número de postos de trabalho e de trabalhadores, as mudanças no emprego reflectem modificações na constituição dos postos de trabalho, com alguns sectores em aceleração e outros em contracção, em associação com mudanças nas qualificações dos trabalhadores e nas suas remunerações. São ainda considerados factores como a sazonalidade, os tempos de espera e de reavaliação.

A compreensão destes elementos fornece o contexto para a discussão de técnicas de estimativa e de previsão centradas em subunidades nacionais, tais como áreas metropolitanas e áreas menores dentro delas. Métodos estatísticos, econométricos e *step-down* são considerados, sendo identificados e discutidos os seus pontos fortes e fracos. São utilizados exemplos a partir de pesquisas efectuadas sobre a área metropolitana de Washington, DC, para ilustrar a discussão. Apesar das muitas dificuldades no desenvolvimento de bases de dados actuais e precisas sobre emprego, a análise do emprego continua a ser a variável-chave na maioria das avaliações económicas. Portanto, é importante que os investigadores que utilizem dados de emprego e métodos analíticos estejam cientes das suas insuficiências, bem como das suas potencialidades.

Principais focos de debate:

- Existência de muita flexibilidade na regulação da economia norte-americana, existindo um padrão de *elevada mobilidade no mercado de trabalho* do país, relacionado com o padrão de especialização de cada região: quer os trabalhadores com baixas qualificações, quer os com elevadas qualificações, quando ficam desempregados circulam dentro do País nas regiões cuja especialização sectorial corresponda às suas competências, procurando o «melhor emprego», eventualmente, com melhores condições financeiras.
- Os trabalhadores mais qualificados são os que mais mudam de emprego, enquanto os menos qualificados mudam menos.
- Mudanças ao nível da extensão da idade de reforma – os empregos estão a adaptar-se à existência de pessoas mais velhas a trabalhar, sendo que as empresas de serviços aproveitam o *know-how* dos mais velhos para efeitos de *coaching*/aconselhamento dos mais novos.

2.3. *Management in Tommorrowland: The Impact of the New Global Landscape on Organizations, Jobs and People*

Prof. Simon Dolan
Professor da ESADE[2] *e director de investigação do Intituto de Estudios Laborales (Barcelona)*

O Prof. Simon Dolan abordou o principal problema da *gestão* – as empresas necessitam de gestores, profissionais que precisam de desenvolver competências de gestão. Como se ensinam as *soft skills*? Afirmando a iminência de uma guerra sobre o talento, que vai estar disponível a nível

[2] Ver site: www.esade.edu/web/esp/

global, referiu que a sobrevivência das empresas irá depender muito da gestão do talento, a qual necessitará de uma atitude pró-activa.

No actual cenário global, as actividades de previsão a longo prazo ao nível nacional serão quase inúteis, embora se possam combinar modelos quantitativos e qualitativos dinâmicos. Foi neste contexto que apareceu o índice RCI *(recruitment confidence index),* primeiro no Reino Unido (1999) e depois um pouco por todo o lado, o qual visa conhecer as tendências de recrutamento das empresas no prazo de 6 meses, bem como as principais tendências de recrutamento do mercado global.

Em Espanha (2005), esta iniciativa foi designada de IPP – Índice de Perspectivas Profissionais – tendo já obtido a adesão de cerca de 8 % a 12 % em cada estudo. Portugal começou a implementar este índice no início de 2008, estando prevista a expansão do índice também para outros países.

O RCI (UK) visa medir as expectativas das acções ou movimentos futuros no âmbito do mercado de recrutamento. Actualmente, a iniciativa é desenvolvida pela empresa *Personnel Today*, e promove a divulgação de um conjunto de previsões sobre mudanças a ocorrer no prazo de 6 meses no âmbito das actividades das empresas de recrutamento. Cada relatório fornece a informação sobre o mercado de recrutamento global, recrutamento de gestores de topo, o grau de confiança do mercado, as dificuldades de recrutamento (por sector e de gestores de topo) e as expectativas relativas a temas críticos (como o crescimento dos salários). No que respeita aos estudos lançados em Espanha e Portugal, apresentou os resultados relativos ao IPP e ao IPR – Índice de Perspectivas de Reformas, fazendo a comparação dos resultados obtidos nos dois países, sendo que a metodologia irá ser desenvolvida de modo a obter resultados de 4 em 4 meses.

Principais focos de debate:

- Embora não se possam prever com toda a certeza quais as áreas de conhecimento que se irão desenvolver mais, as previsões poderão minimizar as disparidades entre a oferta e a procura de qualificações.
- Definição de *talento* – capacidade para dar soluções inovadoras no momento e na altura certa, sendo talentoso quem consegue encontrar soluções «fora da caixa».

2.4. *Overview of Canada's Labour Market Projections Models*

Prof. Mario Lapointe
Human Resources and Social Development[3] *(Canadá)*

O Prof. Mario Lapointe apresentou o *modelo de cenarização prospectiva* desenvolvido pelo Canadá, e que visa identificar (1) o nível e as fontes da procura e oferta de emprego, por nível de competências e por profissão, a nível nacional, (2) bem como desequilíbrios na procura – oferta de emprego por nível de competências e por profissão, (3) para 140 grupos de profissões e cinco níveis de competências, (4) num horizonte temporal de dez anos. A nível sub-nacional (províncias), são apenas realizadas projecções ao nível da procura de emprego.

Esta cenarização visa *informar* os decisores políticos canadianos sobre os assuntos relativos ao mercado de trabalho e ao capital humano, os jovens canadianos e suas famílias sobre possíveis vias educacionais, potenciais imigrantes para o Canadá, e empregadores interessados em conhecer as condições de recrutamento do mercado de trabalho.

A cenarização das profissões deixou de ser utilizada apenas como um instrumento de planeamento (por exemplo no âmbito dos sistemas de formação) para passar a ser utilizado igualmente como um instrumento de informação.

Procura-se responder a solicitações de natureza política, que se prendem com a previsão do número de empregos a ser criado/destruído, a identificação dos sectores e das profissões onde irão ser criados/destruídos empregos, a identificação dos níveis de habilitação que irão ser requeridos ou deixarão de ser solicitados.

Para este efeito, são desenvolvidas *projecções do mercado de trabalho* a dez anos, em cada dois anos, que são anualmente actualizados no que respeita à procura, e que utilizam:

- Os dados estatísticos da educação e do mercado de trabalho, designadamente: inquérito ao emprego (mensal); censos (quinquenal); inquérito nacional aos graduados (quinquenal); sistema de informação aos estudantes do pós-secundário (anual); estatísticas demográficas anuais.
- Sistemas de classificação sobre profissões e sectores de actividades (*National Occupational Classification, North American Industrial Classification System*).
- Modelos de cenarização e prospectiva, nomeadamente o *Canadian Occupational Projection System* (COPS).

[3] Ver site: www.hrsdc.gc.ca.

Seguidamente, foi apresentada a estrutura do modelo de cenarização que, partindo das projecções macroeconómicas e demográficas sobre o emprego e o mercado de trabalho, trabalha projecções sobre a procura de emprego (através da expansão da procura e da procura de substituição/reposição) e a oferta de emprego (através dos candidatos a emprego e, futuramente, da mobilidade interna), de forma a identificar futuros desequilíbrios no mercado de trabalho por nível de qualificação e por profissão. Para melhor contextualizar, foram apresentados alguns resultados da cenarização realizada em 2008.

Principais focos de debate:

- Trabalho de actualização de um modelo prospectivo, num contexto de permanente mudança – evolução no sentido do desenvolvimento, através da inclusão de novas variáveis, bem como de desenvolvimento do processo de recolha e tratamento da informação necessária para o alimentar, uma vez que um não funciona sem a outra.
- Os modelos de previsão não pretendem acertar, mas sim providenciar informação para ajudar/melhorar a tomada de decisões sejam elas por decisores públicos, por empregadores ou público em geral.

2.5. *The Global Auction: High Skills Low Wages?*

Prof. Hugh Lauder
University of Bath (UK)

O Prof. Hugh Lauder orientou a sua apresentação para a questão da natureza da *Economia do Conhecimento,* contrapondo um novo conceito *Capitalismo do Conhecimento,* com base nos resultados de um projecto de investigação desenvolvido através de entrevistas em empresas multinacionais na Coreia do Sul, na China, na Índia, em Singapura, na Alemanha, no Reino Unido e nos EUA, bem como da análise de dados dos licenciados do Reino Unido e dos EUA.

Este novo conceito foi trabalhado num contexto «Ganhador – Ganhador» (*win-win*) em que, tendo por base a evolução tecnológica e a orientação da economia pelo conhecimento, tem origem uma economia assente no capital humano, no âmbito da qual o investimento na educação das pessoas tem implicações positivas nos empregos e nos rendimentos a que têm acesso. As diferentes economias têm vantagens distintas: as economias europeias têm a vantagem da qualidade do capital humano (*brain*), enquanto as economias em desenvolvimento têm a vantagem do preço do capital humano (*body*). Neste contexto

globalizante, desenvolvem-se as economias «magneto», impulsionadas pelas empresas multinacionais, agora transformadas em transnacionais.

A título ilustrativo, o Prof. Lauder apresentou os resultados do estudo levado a cabo junto das multinacionais, que visava responder a um conjunto de questões relativas à forma como essas empresas entendem a temática das competências e da sua formação face às suas estratégias competitivas e como actuam: há uma convergência das estratégias de desenvolvimento de competências? Até que ponto usam os sistemas nacionais de educação e formação como fonte de vantagem comparativa?

No âmbito do estudo, foram abordados três sectores de actividade com expressão multinacional – automóvel, serviços financeiros e telecomunicações – espalhados por sete países, tendo sido realizadas 150 entrevistas a empresas e 50 entrevistas a decisores políticos.

Os resultados apontam para uma *convergência efectiva das estratégias de competências das empresas transnacionais,* que animam a sua internacionalização/desnacionalização através de redes globais de competências (*global skill webs*) e que se autoconstituem árbitros intelectuais. O valor das competências é criado através de redes de conhecimento e de relacionamento entre trabalhadores, fornecedores, empresas, universidades, etc., no âmbito da economia global. Daqui resulta uma força de trabalho de alta qualidade a um mais baixo preço e com maior flexibilidade – oriunda, basicamente, das «novas economias» (China, Índia e outros).

Segundo o Prof. Lauder, assiste-se a um «taylorismo digital», passando-se de um trabalho do conhecimento para a utilização do conhecimento no trabalho, designadamente através das novas tecnologias de informação e comunicação. São as tecnologias que orientam os processos de estandardização a nível global, mesmo ao nível do emprego e das competências.

Por outro lado, embora sejam produzidas cada vez mais e melhores competências, verifica-se uma segmentação da força de trabalho, pois o conhecimento por si só não é suficiente – é necessária uma gestão da imagem das pessoas com talento (por exemplo, associando uma marca de elite a um determinado diploma – escolas de elite). Verifica-se, assim, um esvaziamento do conhecimento com implicações na desvalorização do capital humano – há cada vez mais pessoas altamente qualificadas, mas só algumas (elite) acedem a determinados cargos (dirigentes, políticos, etc.), tendo rendimentos/benefícios diferenciados das restantes. Estas diferenças são observadas, por exemplo, entre homens e mulheres.

Principais focos de debate:

- Semelhança das estratégias de recursos humanos das empresas transnacionais e seu impacto nos sistemas educativos e formativos – exemplo da pressão feita para diminuir os tempos de formação no ensino superior (ter o mesmo nível de competências com menos tempo de formação).
- As PME, quando se internacionalizam, assumem as mesmas estratégias.
- Sucesso das políticas de emprego (UE) – o problema não se coloca para os talentosos, que sabem para onde ir procurar trabalho, o problema existe para os restantes.

2.6. Conclusões

Os trabalhos da sessão foram encerrados pela Dr.ª Maria Cândida Soares, que agradeceu a presença e a participação de todos os intervenientes e solicitou ao Prof. Roberto Carneiro a formulação de alguns comentários finais sobre a temática.

O Prof. Roberto Carneiro iniciou a sua intervenção com um pequeno apontamento sobre o Padre António Vieira na sua monumental *História do Futuro: Para se avaliar a esperança, há-se de medir o futuro.*

Falou em seguida sobre o colapso das projecções de longo prazo, que se baseavam no facto de as formações das pessoas constituírem processos iniciais longos, com 15 a 20 anos de aprendizagem na escola.

Actualmente, assiste-se a um novo paradigma – a aprendizagem ao longo da vida – uma vez que se verificou que as pessoas não aprendem só em meio escolar, mas também em meios informais e não formais, desenvolvendo competências diversificadas (como as tecnologias de informação e comunicação), que lhes permitem aceder a novos desafios, novas formas de organização, mobilidade. O problema consiste na sua mensuração.

Neste contexto em constante mutação, coloca-se a questão de saber se é possível antecipar necessidades de competências.

Na área da cenarização/previsão no âmbito das competências e do capital humano, face à imaterialidade das questões é necessário combinar a métrica tradicional com novas abordagens (qualitativas) para medir as novas realidades, salientando-se a importância das *social networks,* das *formas de aprendizagem* e das *soft skills,* como elementos chave no exercício da *antecipação.*

Existem assim dimensões-chave no «desenho» da antecipação de competências:

- *Dimensões de análise:* a escala a utilizar (país, sector, região, local) – as análises devem partir de uma base local/regional e começar a construir a partir desta realidade, que é «onde a economia funciona».
- Percepção do *padrão de especialização* económica de cada região/ /país.
- Relação existente entre a análise estatística do emprego e desemprego e as estimativas e previsões realizadas – questão associada aos níveis de análise utilizados (nacional, regional e local, sectorial), que podem ser discrepantes entre si.
- Relação entre os níveis de educação, as competências e as profissões, existindo paralelamente questões culturais que afectam a mobilidade.
- Consequências do envelhecimento da população, associado ao modelo social de cada país, no mercado de trabalho.

Finalmente, afirmou que o futuro não é apenas um, mas sim um feixe de «metarepresentações das pessoas», o que levanta a necessidade de uma perspectiva qualitativa capaz de perscrutar as imagens que habitam as mentes das pessoas.

3. ANTICIPATING NEW SKILLS FOR NEW JOBS IN EUROPE

Torsten Dunkel

3.1. Abstract

The issue of early identification of skill and competence needs is growing in importance. In a rapidly changing economic and social environment, policy-makers and practitioners need to be able to identify and respond promptly to new and changing skill and competence requirements. Such decisions depend on reliable forecasting and foresight information provided by research, which can take on a central role in shaping future-oriented education and training, *i.e.* acquisition of skills and competences needed by the labour market. The process of European integration and EU enlargement makes the provision and availability of information about trends in the development of skills and competences even more important. Relevant findings could support both the development of a European knowledge-based society and the achievement of various objectives set in European employment and lifelong learning strategies.

Identification and anticipation of skill needs is high on the European political agenda. The relaunched Lisbon agenda has stressed the need for Europe to place more emphasis on anticipating changing skill needs. Globalisation, technological change and demographic developments (including ageing and migration) are posing huge challenges to the whole of Europe, offering both risks to existing jobs, as well as many new opportunities. The need for regular forward looking assessments has been emphasised in the Employment Guidelines (European Commission, 2005 & 2007) and other several recent EU policy documents like the New Skills for New Jobs communication by the European Commission (European Commission, 2008a) which was largely based on Cedefop's skill needs forecast 2020. Next to addressing skill needs, ensuring a good match between the skills people have and skill requirements at work is instrumental for knowledge societies. Despite skill shortages in some economic sectors, evidence suggests substantial overeducation in Europe, which represents a waste of human resources.

This leads to the leitmotiv and the guiding question of this contribution: knowledge-based economies require new methodologies and innovative approaches to skills, competences and employment forecasting.

How and to what extent can we anticipate the way how labour markets – both supply and demand – could better accommodate new and rapidly evolving skills needs?

Such endeavours can provide insights on skill mismatch and contribute to policies targeted towards reducing skill mismatch and help to inform active labour market policies relating to training, migration and many other areas, as well as informing individuals about the developing situation. Of course it is not possible to predict the future precisely, but the need to make strategic plans and choices which can influence the future path taken by the economy and the labour market is widely accepted. These plans and choices need to be guided by robust labour market information based on regular, systematic and quantitative approaches to forecasting and scenario development. Skills are a key part of the infrastructure of the economy, and the choices made by both policy makers and individuals about investment in education and skills can help to determine the path the economy takes.

3.2. Structure of the Contribution

The first part deals with the theoretical background and with the political context of anticipating skill needs. It opens the discussion on factors affecting shifts in demand for high skilled and educated workers, and summarises main recent European policy developments related to the anticipation of skills. The second part introduces Cedefop's activities in the field of European forecasting. The third part sheds some light on methodology and data issues. The fourth part presents the key findings of the forecast. The fifth part discusses challenges and implications for policy, and finally, draws some conclusions.

3.3. Theoretical Background and Political Context

Changes in technology, work organisation, international trade and labour market institutions

The Skill-Biased Technological Change (SBTC) thesis explains that technological change influences the demand for skills and workers with different levels of education, especially the labour demand shift towards high skilled workers in Europe. The main idea is that new technologies such as information and communication technologies (ICT), that improve the effectiveness of the production process are «skill-biased» (Machin and van Reenen, 2007) and that higher skilled educated workers

as one input factor in the production process are better able to work with these new technologies than less educated workers. Thus technological change increases the demand for higher educated workers. At the same time, less educated workers become relatively less productive, less in demand and this reduces their wages or increases their likelihood of unemployment.

There may also however, be technological changes that affect all workers in the same manner or benefit the least-skilled and middle-skilled workers. The SBTC thesis is supported by the increase in non production employment taking place predominantly within industries as an apparent consequence of the application of ICT in many different sectors in which the labour input of routine cognitive and manual tasks are reduced and in which the input of non-routine tasks requiring higher skills are increased (Autor, Levy and Murnane, 2003).

Technological change also has an impact on the work organization to more flexible forms of work and «high performance work practices» which include decentralised decision taking, just-in-time, job rotation, teamwork and multitasking. These new requirements lead to higher skill needs (Ostermann, 2006). Analogous to SBTC this is termed Skill Biased Organisational Change (SBOC).

Enterprises that adopt ICT need workers that can get along in self managed teams and can complete a whole process that earlier was fragmented because of the lack of centralized databases. Moreover, non-cognitive skills like dealing with suppliers and customers or influencing team-mates and colleagues have become more important (Breshanan et al., 2002). Higher skilled workers can more easily cope with these challenges as they are able to communicate or can be trained for multitasking at lower costs than unskilled or low skilled workers.

However, technological development has not always led to an increase in the demand for high skilled labour. To some extent labour demand is a reflection of labour supply. Work needs to be organised in manner that best takes advantage of and complements the skills and education of the available work force. A well educated and highly skilled workforce will have the effect of encouraging and enabling the adoption of technologies and modification of work organisation that can increase productivity and hence reinforce the demand for high skills in successful companies and industries. Thus, upgrading of the education of the workforce may itself be a factor leading to the shift towards increased demand for high skills. At the same time were low skilled workers in good supply the type of technological and organisational changes needed could be different. A large supply of skilled workers with relatively low wages could lead firms to introduce a technology their workforce can cope with.

If labour markets are not perfect and employers have to invest to find the unique workers that can perfectly be matched with a specific job, they will find it easier and less risky to create jobs for workers that come from a larger group, in this case the high skilled. Intuitively, being member of the high skilled workforce improves the possibility to get employed and supply has created its own demand (Machin and Manning, 1997).

Amongst other explaining factors of shifts in skill demand are increasing flows of international trade and globalisation leading to increased demand for high skilled workers in Europe and reductions in demand for unskilled labour in developed countries. Recently, emerging countries like Brazil, Russia, India and China (BRIC) play a major role in the world economy. Within the next 40-50 years the GDPs of the BRIC countries are anticipated to exceed those of the largest European countries, the United States and Japan (OECD, 2007). However, trade and globalisation only partially explain the relative demand shifts towards high skilled labour in Europe. Skill upgrading is also taking place in developing and emerging countries.

Finally, labour market institutions are referred to as an explanatory factor for the relative shifts in labour demand. The corollary of increased wage differentials between the highly skilled and low skilled may have been affected by labour market institutions. It has been argued that relative wages of less skilled workers are likely to have fallen because institutions that kept up wages of the less skilled became less important (for US and UK labour markets see Machin 2004). However, whilst labour market institutions might have mitigated the trend towards wage inequalities in some countries by reducing the decline in relative wages of less skilled workers it is unclear how they might have accounted for the increase in labour demand and wages for the high skilled.

Recent european policy developments

In a context of rapid demographic ageing, economic developments and technological change, many Member States have engaged in reforms to improve the monitoring of labour market developments, anticipate future requirements and increase the labour market relevance of their employment and education policies. With the prospect of labour and skill shortages, forecasting can also be a way to inform labour migration policies (European Commission, 2008c).

Some countries have had experience with attempts at forecasting labour and skill needs for a long time while others have made it a priority more recently triggered by recent EU-level resolutions and initiatives

and national programmes for the implementation of the Lisbon strategy have development of such systems. In several countries the identification of skill needs priority has been incorporated into legislation and national development strategies. There is a clear trend across Europe towards a holistic approach in identification of skill needs. Various methods are being combined so as to deliver robust and reliable information on the kind of skills required and the changes of job contents in different occupations. This is the case in Germany, France, the Netherlands, Austria, United Kingdom, Sweden, while the Czech Republic, Estonia, Italy and Poland are on the way to develop such approaches. Developing more sophisticated and complex approaches have encouraged sharing information (often through ICT), cooperation and networking between different institutions and experts at sectoral, regional and national level. Consequently, awareness of different research activities and methods increased.[4]

Anticipating occupational skill needs is a priority in the Maastricht and Helsinki Communiqués (European Commission, 2004; 2006), in the European Council's integrated guidelines for employment for 2005-08 (European Commission, 2005, guidelines 19, 20 and 24), in the Regulation on the European Social Fund, and in the Social partner's framework of actions for the lifelong learning development of competencies and qualifications (ETUC *et al.,* 2002). The need to improve mobility in the European labour market, to increase the skill level of the population and to prevent skill mismatches makes information about the future development of skills and competences even more important. The relaunched Lisbon agenda emphasises human capital and related investments in education and training as important policy levers to foster growth, employment and competitiveness, together with innovation, research and development.

In the framework of the social dimension of the Lisbon strategy the European Council identified the future of European labour markets as one of the crucial drivers of social cohesion and welfare in Europe. In November 2007, the Education Council adopted a resolution on «New Skills for New Jobs» which stressed the need to raise the overall level of skills, anticipate skills needs and skills gaps emerging in the European labour markets and to improve the matching of knowledge, skills and competences with the needs of society and economy (Council of Europe, 2007). This resolution, which politically mandated the European Commission in this matter, aims at strengthening the identification of

[4] A mapping of systems of anticipation in Europe is provided in a recent Cedefop working paper (Cedefop, 2008d).

new types of jobs and skill needs at the European level, making use of existing initiatives, in order to develop regular foresight of medium-term skills needs and to identify short term skills gaps. Such a coordinated approach based on existing structures should better respond to the objectives of several of the integrated guidelines (IG) for growth and jobs of the Lisbon Strategy: IG 20 on «*improve matching of labour market needs*» as well as IG 7 on «*R&D resources*» and IG 23 «i*nvestment in human capital*» and IG 24 on «*adapt education and training systems in response to new competence requirements.*» In December 2007 the EPSCO Council adopted conclusions on the 10 years of the European Employment Strategy, «*Member States and the Commission should give priority to the implementation of the New Skills for New Jobs initiative*» as one of the five key areas the future of the European Employment Strategy[5]. The Spring 2008 European Council confirmed that investing in people and modernising labour markets remains one of the four core priority areas within the Growth and Jobs Strategy. The Heads of Government also «*invite the Commission to present a comprehensive assessment of the future skills requirements in Europe up to 2020, taking account of the impacts of technological change and ageing populations and to propose steps to anticipate future needs. Given the important role economic migration can play in respect of the labour market and skills shortages, cooperation in the field of legal migration should also be increased*». In June 2008, the EPSCO Council adopted specific Conclusions on «*anticipating and matching labour market needs - A Jobs and Skills Initiative*» which provided further details on how the EU should further work on this issue.

Forward-planning mechanisms focusing on jobs and skills, the identification and avoidance of skill mismatch, gaps and shortages and responding to future skill and competence needs have been equally defined as a priority area in the Bordeaux Communiqué (European Commission, 2008d).

A comprehensive assessment at European level up to 2020 should build on existing strengths and capacities. Various initiatives and instruments to anticipate labour market trends and the necessary skills to respond to current and future needs have already been launched at European level.

As a follow-up, the European Commission has released the policy priorities in its Communication of 16 December 2008 *New skills for new jobs: better matching and anticipating labour market needs*, which is closely linked to the package of measures for Growth and Jobs and which complements the European economic recovery plan (European

[5] The four others are: flexicurity, active inclusion; active ageing and the external dimension.

Commission, 2008b). It proposed a series of actions to match skills with vacancies, to organise skills assessments on a permanent basis, to pool the efforts of Member States and other international organisations, and to develop better information on future needs.

The new skills for new jobs agenda aims to improve the monitoring of short-term trends and to develop tools for better matching of skills and job vacancies on the European labour market, including better information on needs in Europe in the medium and long-term, with regularly updated projections of future labour market trends and analysis of skills needs by sector. Moreover, the Commission will help Member States and regions and all actors involved in the upgrading and matching of skills by mobilising existing Community policies and funds, especially the European Social Fund (Council of the EU, 2006).

3.4. Towards European Forecasting

The European centre for the development of vocational training (Cedefop) launched in 2001-2002 a project to review national practices for the early identification of skill needs and to support the development of a cross-national capacity for skill forecasting. In 2004, the Cedefop established *Skillsnet*[6] – international network on early identification of skill needs – as a platform for dialogue together with experts and stakeholders to share quantitative and qualitative information on skill needs and supply analysis at European and international level and for elaborating and discussing research methods. It is worthwhile mentioning that *Skillsnet* is a network of individual experts, not institutions. Cedefop has also organised the scientific and technical infrastructure for regular European level forecasts of skill supply and demand.

The Cedefop strategy of skills needs analyses consists in informing actors and filling existing information gaps on future labour market needs for their decision-making, and in supporting evidence-based policy-making in lifelong learning, employment and social policy to better respond to global challenges.

Through *Skillsnet*, the Cedefop has been organising a series of methodological workshops taking stock and paving the way for comparative analyses on national practices (see Cedefop 2007a and 2007b) and for developing European-wide forecasts of occupational skill needs with the horizon 2015 and 2020 (see Cedefop 2008a, b&c).

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[6] See more of Cedefop's *Skillsnet* activities at: http://www.cedefop.europa.eu/etv/Projects_Networks/skillsnet/default.asp

Since 2008 Cedefop's activities in this field have gained enhanced impetus also following the above-mentioned European Commission's initiative «New skills for new jobs» which was introduced within the renewed social agenda (European Commission, 2008a) and which called for further steps to anticipate future needs at European level. Cedefop, supported by experts of its network *Skillsnet*, plays an active role in this process by supporting the European Commission and Member States in this endeavour from the very beginning.

Work has been done on selected sectors, e.g. trends and skill needs in the tourism sector (Cedefop, 2005), identification of skill needs in nanotechnologies (Cedefop, 2006), trends and skill needs in innovative agri-food and forestry-wood chains, future skill needs in the health care sector (Cedefop, 2009b) as well as future skill needs for the green economy (Cedefop, 2009d). Some new activities and initiatives on early identification of skill needs have been carried out at European level. Cedefop has developed a first Europe-wide forecast of skill needs and will present a complementary forecast of skill supply to identify potential labour-market imbalances in the course of 2009. This is accompanied by a broader assessment of different types of skill mismatch. Another recent Cedefop initiative explores the feasibility to use employers' surveys as a tool for identification of skill needs in Europe to help reveal qualitative changes in demand for skills, competences and qualifications. Finalisation is expected in late 2009. Cedefop will also continue its review of national systems and methodologies backing forecasting activities, both within and beyond the EU. Supplementary, also at the qualitative level of analysis a comprehensive sectoral studies of emerging competences and economic activities in the EU covering 16 sectors sensitive to restructuring and skill needs launched by the Directorate General for Employment are expected to be finalised in 2009 too.

So far, forecasting work at European level has been voluntary and is merely intended to complement, rather than replace, national activities. Cedefop will be carrying out regular and consistent pan-European projections. Both the skill needs and supply would become part of a regular exercise with new forecasts being produced every two years, starting in 2010.

3.5. Methodology and Data Issues

The definition of «skills» in «skill needs forecasting» is not uniform in European countries. The most common definition refers to «occupational skills» and «educational attainment», but several countries use the term «qualifications» instead, with the concept of «skills» used in a more generic manner, including social and personal skills (see Cedefop 2007a & b).

The most frequently used approaches for forecasting skills can be grouped as employer skill surveys (combination of qualitative and quantitative), primarily quantitative models (formal, nation-wide, model-based projections), sectoral studies (case studies, combination of qualitative and quantitative) and primarily qualitative methods (focus groups and Delphi-style methods). Each method has its strengths and weaknesses. With progress in computerisation and the availability of statistics, quantitative modelling has become more widely used, in complement to other sources of information (see Wilson & Lindley, 2007).

Developing European forecasting it becomes obvious that forecasting techniques vary widely across European countries (for a review of national and European practices see Cedefop 2007a&b and Cedefop 2008d):

- Many countries combine quantitative methods (a widespread approach) with qualitative approaches, such as expert evaluations, qualitative comparison with sectoral studies, enterprise surveys, in-depth interviews, etc.
- Most quantitative methodologies advocate a several-step model: starting from macro-modelling of economic, labour market and sectoral developments, the models then focus on demand for occupations and/or skill needs in the labour market.
- Most countries use national statistics and national systems of classification, which may limit comparison. Data from the European labour force survey and the European system of national accounts are also used extensively.
- Although not to the same level of detail, the majority of countries also take into account the supply side. However, not all countries consider the adequation between supply and demand and some study supply and demand independently. Information on shortage and/or surplus of occupations/skills is therefore not available for all European countries.

The purpose and use of forecasting activities have also changed over time depending on the national context. While these methods were originally developed as a way to plan manpower and the capacity of the educational system at a central level in the post-war period, the recourse to central planning instruments has diminished since the 1970s (see Psacharopolous, 1991, 2005). Manpower planning assisted by more or less computerised – mostly econometric – models as a major and only way of forecasting labour needs has become a matter of the past. At present there are two main functions of labour-market needs forecasting by occupation and qualification: a policy function where forecasting serves as a point of reference, and an information function where the

available forecast data are used, among others, by guidance and counselling services. This requires fairly detailed and robust data, well processed for the end user. Labour-market information becomes a public good going beyond serving a restricted group of experts, decision-makers and social partners. The prevailing question for future oriented research into skill needs is not: «How many people in this profession will be required in 5 to 10 years?» but: »Which professions and what kind of new qualifications and skills will be needed?« and: «What qualities of the workforce will be in demand?» It is important to keep in mind the limits that projections are uncertain but developing anticipative and proactive approaches to change is always relevant. Forecasting activities are now conceived in a less mechanistic manner and used as a supporting tool for decision-making in an open, uncertain and changing environment.

So, summarising what can forecasts provide? They can better prepare for forthcoming challenges and future skill requirements as well as warn about future labour market failures and skill shortages by providing a systematic analysis of the implications of continuation of past trends and patterns of behaviour, alternative scenarios based on alternative assumptions as well as a basis for intelligent and informed debate and further research.

In turn, what can forecasts not provide? They cannot provide precise predictions that can be used for detailed manpower planning (it is not a «crystal ball») nor qualitative information on skills and competences.

To clarify, the Cedefop study presented here is a medium-term forecast of occupational skill needs (not of detailed personal competences). The objectives are to establish consistent Europe-wide skills projections using comparable data using a new methodological framework and to initiate systematic dialogue and discussion.

To develop the skill needs forecast, a modular approach (Figure 1) was used comprising four main modules:

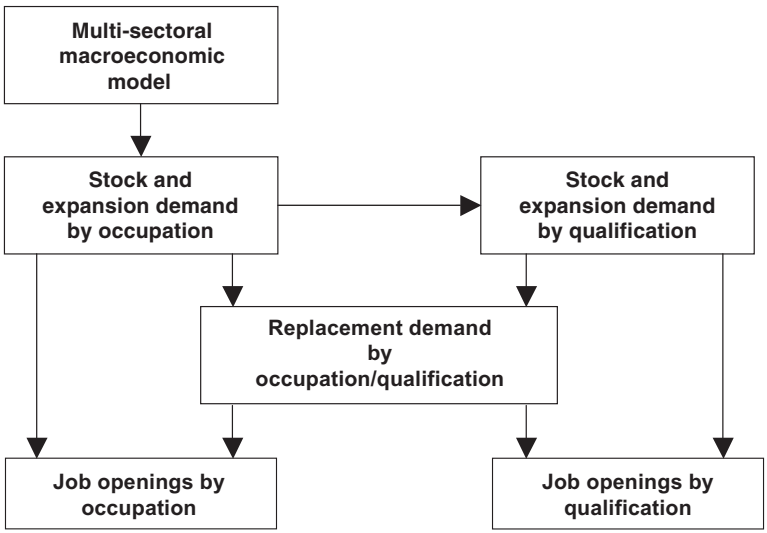
- Module 1: a set of multi-sectoral macroeconomic forecasts, based on the preferred macroeconomic model (E3ME)[7].
- Module 2: an occupational expansion demand model, based on LFS data.
- Module 3: a qualifications expansion demand module, based on similar data sources.
- Module 4: a replacement demand module.

The advantages of a modular approach are that it facilitates the independent development and improvement of the different parts of the

[7] E3ME: Energy-environment-economy (E3) model of Europe. More details on the E3ME model see http://www.camecon.com/suite_economic_models/e3me.htm

forecasting system. In combination the modules provide a general framework for producing quantitative projections of changing skill needs on a regular basis. Together the database and modules constitute the framework. The framework has been designed so as to facilitate further development and customisation. In particular, it allows for the refinement of the modelling approaches used for projecting occupational, qualification structures and replacement demands. It also allows for the refinement or replacement of data for particular countries or sectors where there are concerns about data quality and robustness. The framework is flexible in so far as updated data of employment trends in individual countries can be built in to future assessments in an efficient and transparent manner. In combination the modules represent a general framework, within which it is relatively easy to plug in alternative assumptions and parameters. The results are brought together in a set of country workbooks. These include a detailed and consistent set of historical data and a benchmark projection. Sectoral employment is modelled in a sectoral employment function of: gross output; labour costs; average hours worked; energy prices and technical progress (mostly defined by country and sector) specified in short-term dynamics and move towards long-term equilibrium; It is modelled independently for each country with key employment elasticities (27 country average).[8]

Figure 1 The modular approach to skills forecasting (Cedefop 2008a)



[8] Fore more technical and methodological details see Cedefop, 2009a.

The teamwork of the forecasting exercise was carried out cooperatively by the Warwick Institute for Employment Research (IER), Cambridge Econometrics (CE) and the Dutch Research Centre for Education and the Labour Market of Maastricht University (ROA) under the supervision of the Cedefop and in continuous discussion and exchange with the other members of the *Skillsnet* network. It builds on a detailed multisectoral macroeconomic model covering the EU Member States, plus Norway and Switzerland, and uses key EU data on occupations, qualifications and employment structures.

The forecast is based on data from Eurostat sources, adopting common methods and models. A key issue for the forecast is use of the best data to measure employment structures in Europe using a common framework. Historically, most countries have invested considerable resources in developing data for their national accounts. Estimates of employment on this basis are consistent with other key economic indicators such as output and productivity.

More recently, however, greater emphasis has been placed on estimates of employment based on the European labour force survey (LFS). Their advantage is that they are broadly consistent across countries and provide a measure of employment structure by skills (for example, occupation and qualification).

The numbers presented by sector, as used in the multi-sectoral macroeconomic model, are based on Eurostat national accounts, rather than LFS-based estimates. There are some significant discrepancies between these two sources which remain unresolved. These reflect sampling problems and other differences arising from the different methods used to collect the different datasets. Although there some data problems and questions outstanding, many of the trends identified are quite robust and not sensitive to the detailed data problems nor to the detailed specifications for models used to explain changing patterns of skill demands with industries. This suggests that such projections can provide valuable and robust information to a broad range of users, from individuals making career choices through to policy makers operating at the highest strategic level.

The medium-term forecast provides macroeconomic projections and aggregate results covering the EU Member States (except Bulgaria and Romania), Norway and Switzerland, including data on future employment developments by broad economic sectors (NACE), broad occupations (ISCO) and broad level of qualification (ISCED) as well as alternative scenarios (baseline, optimistic and pessimistic) to encapsulate different likely paths of economic and structural developments. Which of these scenarios will become more likely, *e.g.* if the pessimistic scenario becomes the baseline – in particular in the context of the current financial

crisis and the expected economic downgrading of skills of existing jobs in the next few years and possible negatively sustainable «ratchet effects» of the employment structure as had been the case in past recessions – cannot yet be answered.

3.6. Future Employment Trends in Sectors, Occupations and Qualifications

While many Member States face particular problems there are many common features. Globalisation and technological change are expected to continue to have significant impacts on sectoral employment structure and the demands for different types of skills. The continuing shift towards services and the knowledge economy, the catching up process for many countries (shifting patterns of activity and people), implications for occupations and qualifications, including a general increase in the demand for skills with implications for continued investments in skills, education and training are highlighted. At the same time there are indications of polarisation of jobs, with significant growth in employment in high skilled as well as in some less skilled job clusters with implications for issues of exclusion and job quality.

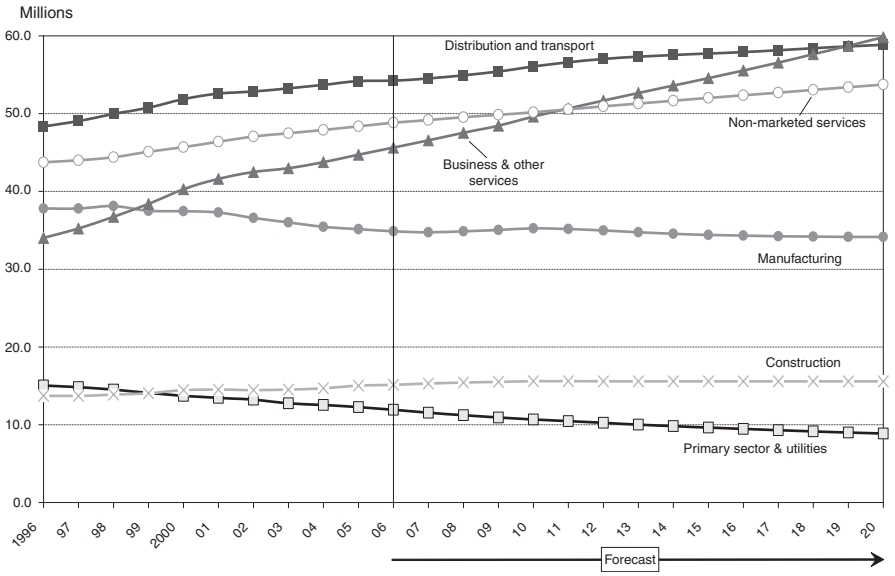
Europe has experienced considerable structural change over the past decades resulting in continuing shifts away from the primary sector (mainly agriculture) and traditional manufacturing towards services and knowledge-intensive jobs. The results of the forecast of occupational skill needs for 2006-20 suggests this structural change will remain a key feature in the coming decade (Cedefop, 2008c).

A caveat has to be made here: the severity of the current financial crisis adds an exceptional degree of unpredictability about the future of the world's economy – yet in order to put Europe on the road to recovery it is essential to enhance human capital and employability by upgrading skills. The possible impact of the crisis is not yet reflected in the forecast. However, as soon as data are available, scenarios have to be calculated whether this crisis changes the long-term trends substantially.

Figure 2 shows the past and future employment trends by broad sector for EU-25, Norway and Switzerland. Although employment in many new EU Member States still relies to a great extent on agriculture and manufacturing, there are clear signs that this is changing rapidly. In part this is an internal process, specific to each country. It reflects shifting patterns of activity and people across borders, as capital and labour adjust to changing political and economic situations. In some countries changes are in the opposite direction, as activities in manufacturing have transferred eastwards and southwards within Europe. Overall, the

forecast suggests that these patterns of change will continue in the immediate future, being more evolutionary than revolutionary.

Figure 2 Past and likely future employment trends by broad sector, EU-25, Norway and Switzerland (Cedefop, 2008c)

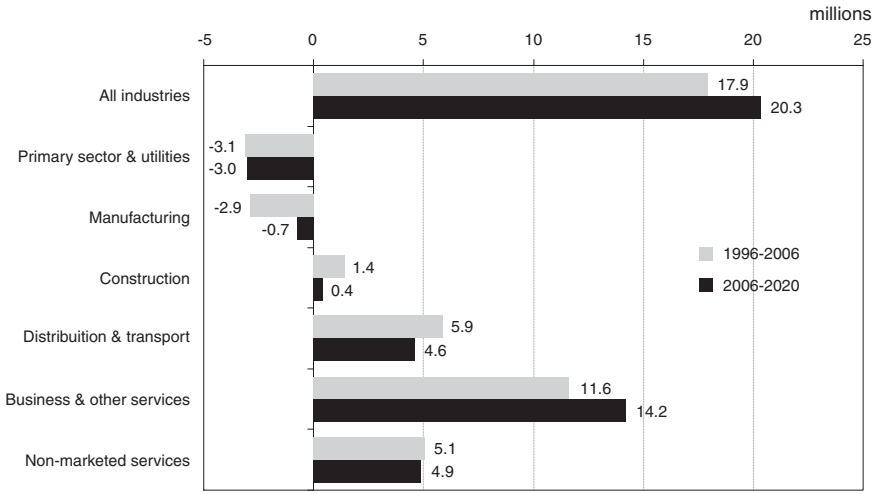


Substantial change is in prospect. Over 20.3 million additional jobs (net increase) are expected to be created between 2006 and 2020 in the EU-25 plus Norway and Switzerland. This is despite the loss of well over 3 million jobs in the primary sector and almost 0.8 million in manufacturing.

The construction sector has experienced positive employment trends in the past decade but tends to stagnate with less than half a million new jobs being created between 2006 and 2020. Distribution, transport, hotels and catering together are projected to see employment grow by more than 4.5 million over the next decade, while non-marketed services[9] are expected to increase by slightly more (4.9 million). Business and other services have the best prospects, with more than 14 million additional jobs being created between 2006 and 2020 (Figure 3).

[9] More detailed structure of aggregation of NACE broad sectors is provided in Annex A.

Figure 3 Employment trends by broad sectors, EU, Norway and Switzerland 1996-2020 (net change in millions). NB: EU without Bulgaria and Romania (Cedefop, 2008c)



Projected sectoral changes will have significant implications for occupational skills needed in the future. These will be reinforced by changes in the way work is organised and jobs are performed within sectors. High and medium skilled occupations are on the rise. Currently, almost 40 % of people are employed in higher level jobs such as management, professional work of one kind or another or technical jobs. Expansion of highly and medium skilled occupations is expected to continue over the next decade. Hence, the demand for highly and medium-level skilled workers is also likely to grow. An increase is also projected for some jobs requiring no or lower levels of skills such as elementary occupations.

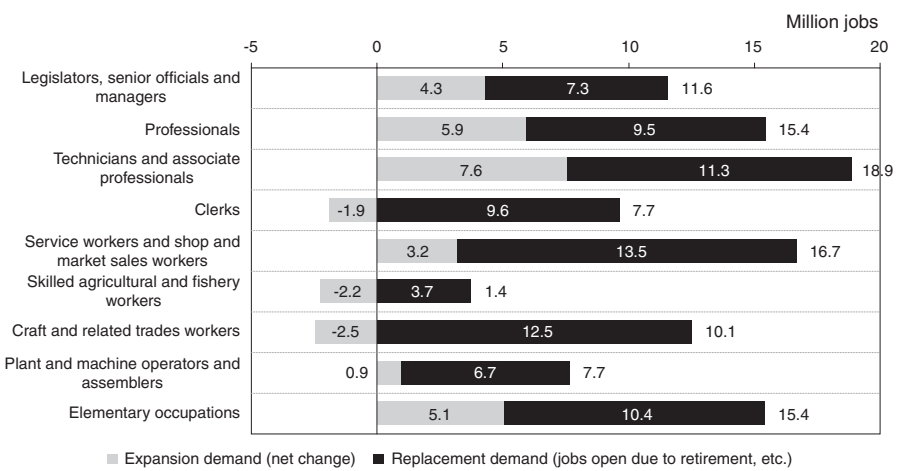
Despite a significant decrease in employment, the primary sector (with a total of almost 8.7 million jobs) and manufacturing (more than 33 million jobs) will remain in 2020 important areas of employment and crucial components of the economy. However, skill requirements for jobs in these and the other sectors will change.

In addition to the 20.3 million new jobs created between 2006 and 2020, another 85 million jobs (four times more) will be available to replace workers who retire or leave the labour market for other reasons. The total number of job openings therefore will be 105.3 million in the EU-25 plus Norway and Switzerland between 2006 and 2020. In 2020, the total number of jobs in the EU-25 will be 223.6 million. Based on demographic developments, the Eurostat baseline scenario estimates that the working age population (15-64 years) for the EU-25 will decline from 308.6 million in

2006 to 302.5 million in 2020. Although the working age population will fall by around 6 million between 2006 and 2020 more than 20 million more new jobs will be created. Thus, Europe may experience a major workforce shortage in the status quo policy scenario. These figures imply that Europe will need an employment rate of almost 74 % to satisfy labour market demand. The current Lisbon strategy target is 70 %. If Europe meets this target by 2020, there will be a shortage of almost 12 million people in the workforce, due to the different occupational structures and potential skill gaps[10].

In 2006, almost 77 million of the 204 million employed people in EU-25, Norway and Switzerland performed high-skilled non-manual jobs such as management, professional work or technical support of those activities. Demand in these occupations is expected to increase further. This is also true for elementary occupations. However, even in areas where employment is expected to fall there will still be significant numbers of job openings, thus creating a need to provide adequate education and training. This is reflected in estimates of replacement demand by occupation (Figure 4). While the projection suggests job losses for a number of occupational categories, in particular for clerks and some skilled manual occupations such as agricultural skilled workers, and craft and related trades workers in all cases these losses are more than offset by the estimated need to replace most of those retiring or leaving the labour market for other reasons. Of course, the nature of those jobs and their skills requirements is changing.

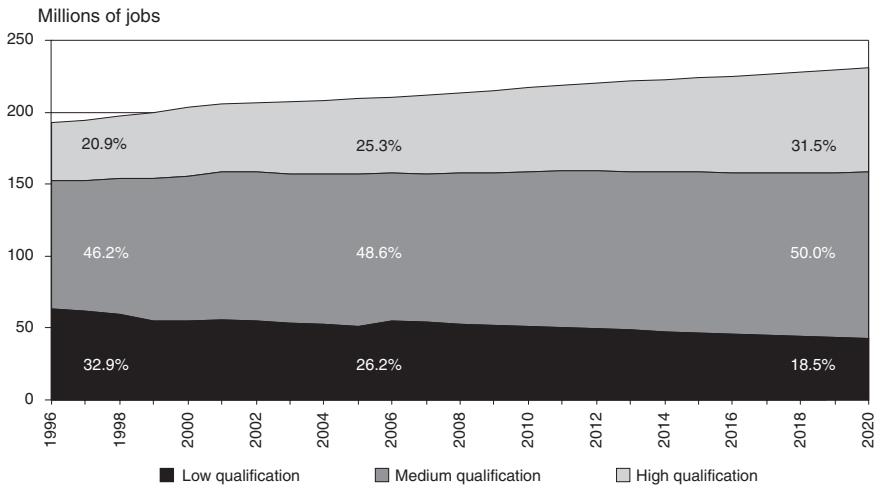
Figure 4 Demand by broad occupational groups, EU, Norway and Switzerland, 2006-2020 (change in millions). NB: EU without Bulgaria and Romania. Occupations according to ISCO major groups (see Annex B) (Cedefop, 2008c)



[10] Eurostat online database, Population projection, baseline variant – 1 January population by sex and single year of age (15-64) for EU-25, 2020, date of extraction: 5 December 2008.

This has implications for qualifications. In 2020, 31.5 % of jobs will need high qualifications, and 50 % medium qualifications. The demand for low qualifications will fall from a third in 1996 to 18.5 % in 2020 (Figure 5).

Figure 5 Implications for qualifications, broad level, EU, Norway and Switzerland, 1996-2020 (millions and %). NB: EU without Bulgaria and Romania (Cedefop, 2008c)



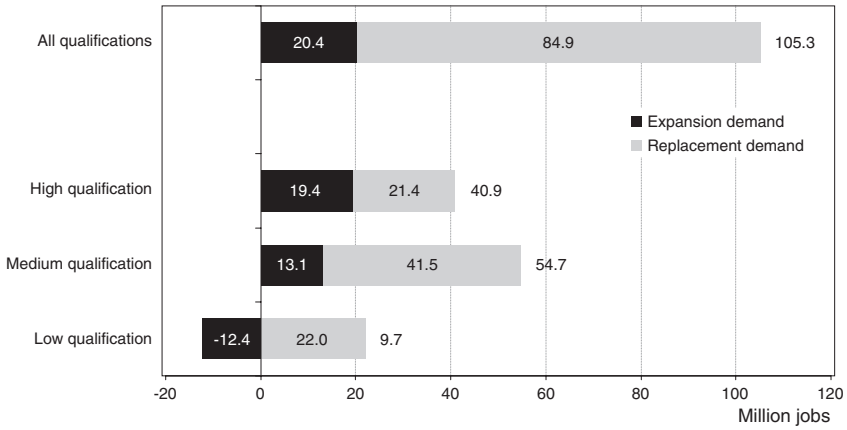
Qualification requirements[11] of most jobs will experience a dramatic increase. The expansion demand, *i.e.* the total net increase of employment, comprises in Europe between 2006 and 2020 around 20 million additional jobs at the highest qualification level and, furthermore, 13 million jobs at medium level, which are mostly vocational qualifications. On the contrary, the number of jobs for those with low qualifications will fall by more than 12 million (Figure 6).

In addition to new jobs created, over the period 2006-20 around 85 million jobs will need to be replaced because of jobholders leaving the labour market for retirement or other reasons. This replacement demand will accelerate due to demographic change and will involve all qualifications. However, almost half of all replacements (almost 42 million) are expected to require medium-level qualifications, which traditionally include vocational qualifications, while another 21 million replacements are expected to be necessary to replace those leaving with high qualifications.

[11] The level of formal qualification indicated by educational attainment was aggregated according to ISCED. Low: at most lower secondary (ISCED 0-2); medium: upper secondary (ISCED 3-4); high: tertiary (ISCED 5-6).

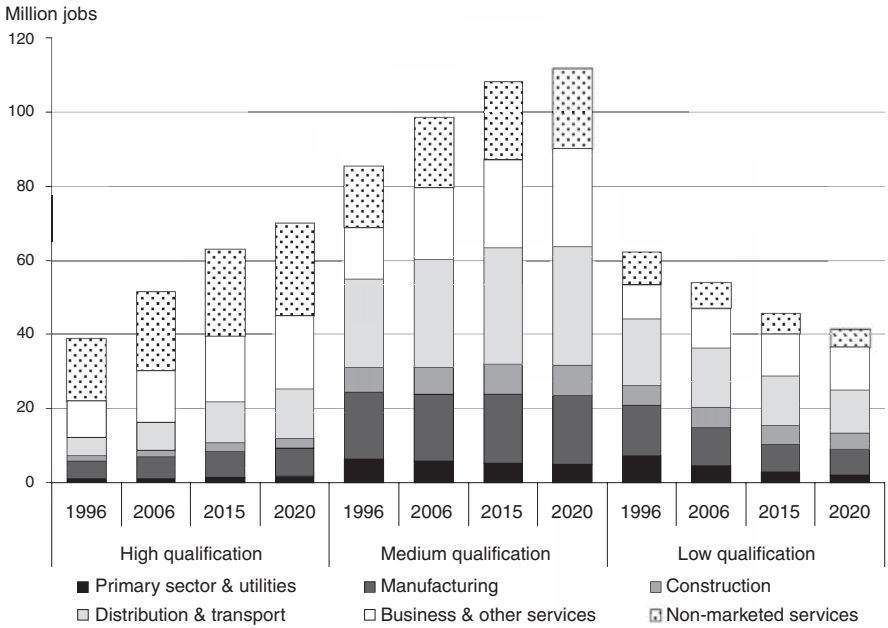
Total job openings – expansion and replacement demands taken together – will amount to around 55 million for medium qualifications – 52 % of the total 105 million job openings –, requiring in particular vocational qualifications. Another 41 million job openings are expected to require higher qualifications. As many of the leavers with low qualifications will not be replaced, total job openings for this group will amount to less than 10 million.

Figure 6 Expansion and replacement demand by level of qualifications, EU, Norway and Switzerland, 2006-2020 (million jobs). NB: EU without Bulgaria and Romania (Cedefop, 2008c)



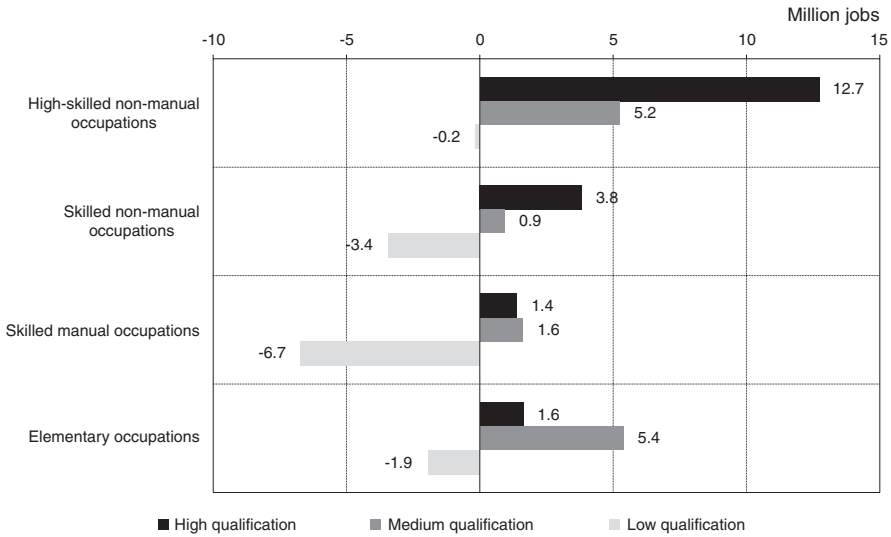
Cedefop's forecast has shown that high-level qualifications will be mostly required in the service sector, while medium qualifications will be highly represented in all sectors – increasingly also in the service sector. The number of jobs with low qualification requirements will be decreasing rather evenly across all sectors with the exception of some service sectors (Figure 7).

Figure 7 Employment trends by level of qualification and broad sectors, EU, Norway and Switzerland, 1996-2020 (million jobs). NB: EU without Bulgaria and Romania (Cedefop, 2008c)



Similar developments are expected to occur as regarding qualifications required in occupational fields. Here, however, it is noteworthy that also in elementary occupations formal qualification requirements are expected to increase (Figure 8). Further analysis is needed about the underlying reasons, *e.g.,* whether this is really due to rising skill requirements in these «simple» jobs, or whether it reflects a certain degree of «overqualification». Across sectors, transversal and generic skills will be increasingly valued on the labour market: problem-solving and analytical skills, self-management and communication skills, the ability to work in a team, linguistic skills and digital competences.

Figure 8 Total requirement (in millions), 2006-2020, by broad occupational groups and level of qualification, EU, Norway and Switzerland (million jobs). NB: EU without Bulgaria and Romania. Aggregation by major broad groups: high-skilled non manual occupations: ISCO 1-3; skilled non-manual occupations: ISCO 4-5; Skilled manual occupations: ISCO 6-8; elementary occupations ISCO 9 (Cedefop, 2008c)



3.7. Challenges and Implications for Policy

Labour market imbalances – skill mismatch – job polarisation?

As a working definition of a labour market imbalance a skill gap can be defined as an adjustment problem in the transition from a short term equilibrium to a long-term equilibrium after an increase in demand for (or fall in supply of) a certain skill. Examples of causes of (structural) shifts in skill demand are trends such as skill biased technical change, outsourcing and deindustrialisation, whereas shifts in skill supply can be caused by demographic trends such as ageing of the population and shifts in international migration patterns.

A typical characteristic of matching skills and jobs is that it takes time to educate or train people for job requirements of the labour market. Therefore, it is likely that additional workers with the demanded skills are not available in the short run after an unexpected increase in skill demand, so the short run supply is inelastic. As long as wages can be flexibly adjusted in an upward direction, an increase in demand (or lower supply) for a certain skill will drive wages up and the market will reach a new (short-term) equilibrium in which there is no quantitative

skill gap in the sense of a mismatch between demand and supply. There is no reason to assume that wages will be upwardly rigid as employers will always be able to pay higher wages if they want to. The higher wages in the short-run will induce people to enrol in the demanded types of education or move from other industries and the market will eventually reach the long-term equilibrium, in which wages are lower and supply of the skill is larger than in the short-term equilibrium.

It can be inferred that total welfare is higher in the long-term equilibrium compared to the short-term equilibrium. Hence, a smooth adjustment from the short term to the long term equilibrium will increase welfare. There may be a role for the government in facilitating a smooth adjustment process. This can be done by reducing or eliminating possible rigidities in the education system, the labour market or barriers to international movements of people or goods that prevent a smooth adjustment to the long-term equilibrium.

Uncertainty about future skill prospects, in combination with the inherent time element involved in acquiring skills through training or education, causes a difference between short-term and long-term equilibrium supply of skills after shifts in demand or supply. Education and training policies that succeed in reducing this uncertainty and in increasing the adjustability of the education and training systems to shifts in skill demands or supplies can increase welfare. International trade agreements are most effective to reduce rigidities in international movements of goods, whereas labour market policies (or changes in labour market institutions) are most effective to address rigidities in the labour market. Thus, each rigidity has its own most effective policy field.

Sectoral changes will have significant implications for the occupational skills needed in the future. These will be reinforced by changes in how work is organised and how jobs are performed within sectors. As the findings of the forecast show, almost 40 % of people are employed in higher-level jobs such as management, professional work, or technical jobs. An increase is projected in these higher-level jobs, but also for some jobs in «elementary» occupations. In contrast, there would be fewer jobs for skilled agricultural workers, clerks and craft workers. Changing sector and occupational structures may lead to some job polarisation (that is to say job growth at the higher and lower levels with demand for jobs in the medium-level occupations falling somewhat). New technologies often cannot replace «non-routine» work typically done by low-skilled workers. «Non-routine» tasks also cover activities like truck driving or bibliography searches, services typically delivered by the low-skilled. «Routine tasks» involving repetitive and predictable work, however, have usually been replaced by automation and computerisation. These tasks include calculation work or repetitive costumer services that have in the past been undertaken by middle-skilled

workers. New technologies, especially ICT, not only increase the productivity of high-skilled workers but also eliminate work traditionally done by intermediate level occupations. Therefore, technological change and organisational change can partly explain the job polarisation phenomenon.

A number of studies thus confirm the job polarisation hypothesis for some European countries, *e.g.* the increasing demand for non-routine tasks at the lower and higher rungs of the jobs ladder (Manning *et al.,* 2009). In the UK for example, there has been a growth in high and low-wage jobs where it has been difficult to replace human capital by machines or computers over the last few decades (Goos/Manning, 2007). Non-routine manual tasks done by hairdressers or kitchen porters are as much in demand as non-routine cognitive and interactive tasks performed by care assistants or software engineers. Routine-task jobs, normally found in the middle of the wage distribution, have however decreased. Data from Germany also show that since the end of the 1970s occupations requiring routine manual or clerical skills have declined considerably whereas jobs needing interactive and non-routine skills have experienced the highest growth rates (Dustman *et al.,* 2007; Spitz-Oener, 2006). In France the «Trades in 2015» report emphasised that job polarisation is strongly associated with the expansion of the service sectors (CAS and DARES, 2007). This means that job increases, for both the low- and high-skilled, are mainly to be found in these sectors. The routine-task jobs of the middle-skilled that have been eliminated by the adoption of new technologies have predominantly been in the manufacturing sector.

While polarisation exists in some countries it is not a uniform phenomenon across Europe, as employment change has also involved upgrading and growth in the middle occupations in some countries (see Eurofound, 2008).

Research on skill mismatch shows that for the majority of workers in Europe, some imbalance between the skills they possess and the skills demanded in the workplace exists (Brynin/Longhi, 2009). It is important to recognise that not all skill imbalances represent real problems. Overeducation occurring early in the career, if it does not persist, may be seen as a natural part of the matching process which is remedied by mobility to better matching jobs. For other groups on the labour market, however, there are more serious consequences. The combination of rapid change in technology and workplace organisation and insufficient updating of skills for ageing low-skilled workers contributes to skills obsolescence, putting these workers at risk of job loss and social exclusion. High skilled migrants may find themselves trapped in situations where their skills are not fully utilised. Skill mismatch not only has detrimental effects on job satisfaction and motivation, but also implies that societies are wasting valuable human resources. More research on these issues can provide policy makers with valuable insights in shaping and implementing

innovative policies and measures aimed at preventing or addressing skill mismatch problems.

A recurrent concern of policy-makers in the fields of education and employment is the perceived mismatch between workers' education and skill levels, and actual job requirements in the labour market. Globalisation, technological change, an ageing population, and wider societal changes have all served to increase uncertainty about the future and contribute to a sense of insecurity about remaining competitive. Achieving higher qualifications and developing skills becomes a life assurance.

Policy makers, social partners and society at large are increasingly concerned with climate change and sustainable development. Adaptation and mitigation of climate change has remained top priority – also in times of the financial crisis. It brings new challenges for educational systems and labour market requirements. Shortages of skilled workers in this area are apparent in a number of key sectors including energy, construction, manufacturing and transport. The challenge for training systems is not so much to identify new professions in this field but rather to redefine existing job profiles across numerous – if not all – sectors and occupations of the economy, and the skills required, for example, for increasing energy efficiency, renewable energy implementation, reduction of carbondioxid emissions and protection of biodiversity. Which generic and specific skills are new and emerging in «green jobs»? How to develop and make education and training systems responsive to continuously changing requirements in this field? These are some of the questions in the context of education and training policies needed to cope with climate change and sustainable development.

Given the trends towards increasing skill requirements in all sectors and occupations, there are concerns about potential mismatches between labour force's education and skill levels on the one hand, and job requirements in the labour market on the other. Workers are increasingly more likely to perform different tasks and jobs during their working lives. Therefore, they need to be supported to cope with these transitions by a series of measures, including continuing training and guidance. Flexicurity defined as a political strategy to enhance, at the same time, flexibility of labour markets, work organisation and labour relations, and security – employment security and social security can also contribute to this end.

At present, some regulatory barriers that currently exist in realising a single European labour market, such as insufficient comparability and recognition of qualifications and restrictions on the portability of pensions and social benefits. This does not allow an efficient matching of labour market needs and hampers effective solutions to resolve skill gaps problems. Removing these obstacles will complement Member States efforts to facilitate the better use of skills and contribute to alleviate and prevent skills mismatches.

3.8. Conclusions

The *New Skills for New Jobs* initiative primarily aims at improving the availability and the quality of information on present and future occupational demand and the corresponding skill requirements, in order to enhance the quality of job matching. Despite the usual caveats associated with occupational projections, such exercises constitute an indispensable tool to better inform policy-makers and achieve a better matching between demand and supply of skills.

The findings presented represent the most comprehensive and consistent set of skill projections ever produced for Europe. Cedefop's forecast brings important insights and added value to the limited knowledge about the likely future development of European labour markets. However, it also raises several questions and uncertainties about specific developments in demand for occupations and qualifications. Is demand changing in nature? Do «elementary» occupations still correspond to «simple and routine tasks»? How does supply change affect demand and what could be the economic consequences of this interaction? Which specific skills and competences are needed in the future? These and other questions can only be answered, if further research and analysis on the early identification of skill needs are carried out. Quantitative and qualitative methods of forecasting and research on the interaction between supply and demand seem crucial to understanding job polarisation, skill mismatch, and the causes of skill depreciation.

Concluding, education, training and labour market policies will face enormous challenges to cope with structural change, and occupational and sectoral mobility needs. It is rather important to continue observing the ongoing evolutions and to remain flexible in responding on emerging trends. This includes adapting workforces and skills to new requirements by retraining and continuing training – in particular of adults and people at risk of unemployment and those in precarious sectors and occupations. Within this context, implementation of lifelong learning strategies and policies to reconcile flexibility and security take on a new dimension. To enhance human capital and employability upgrading skills will be essential also in the time when severity of the financial crisis adds an exceptional degree of unpredictability about the future of the world economy. After the crisis the jobs might be different than before, and the demand targeted to specific skills. The future is open after all.

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3.10. ANNEX A: SECTORS – AGGREGATION OF 41 – INDUSTRY TO 6 – INDUSTRY

6 – INDUSTRY [NACE]		41 – INDUSTRY [NACE]	
1	Primary sector and utilities [01-14, 40, 41]	1	Agriculture, etc.[01-05]
		2	Coal [10]
		3	Oil and gas, etc.[11, 12]
		4	Other mining [13, 14]
		22	Electricity [40.1, 40.3]
		23	Gas supply [40.2]
		24	Water supply [41]
2	Manufacturing [15-37]	5	Food, drink and tobacco [15, 16]
		6	Textiles, clothing and leather [17-19]
		7	Wood and paper [20, 21]
		8	Printing and publishing [22]
		9	Manufactured fuels [23]
		10	Pharmaceuticals [24.4]
		11	Chemicals nes [24(ex24.4)]
		12	Rubber and plastics [25]
		13	Non-metallic mineral products [26]
		14	Basic metals [27]
		15	Metal goods [28]
		16	Mechanical engineering [29]
		17	Electronics [30, 32]
		18	Electrical engineering and instruments [31, 33]
		19	Motor vehicles [34]
		20	Other transport equipment [35]
		21	Manufacturing nes [36, 37]
3	Construction [45]	25	Construction [45]
4	Distribution and transport [50-64]	26	Distribution [50, 51]
		27	Retailing [52]
		28	Hotels and catering [55]
		29	Land transport, etc.[60, 63]
		30	Water transport [61]
		31	Air transport [62]
		32	Communications [64]
5	Business and other services [65-74, 90-99]	33	Banking and finance [65, 67]
		34	Insurance [66]
		35	Computing services [72]
		36	Professional services [70, 71, 73, 74.1-74.4]
		37	Other Business services [74.5-74.8]
		41	Miscellaneous services [90-93,95,99]
6	Non-marketed services [75, 80, 85]	38	Public administration and defence [75]
		39	Education [80]
		40	Health and social work [85]

ANNEX B: OCCUPATIONS

ISCO	
MAJOR GROUP 1: LEGISLATORS, SENIOR OFFICIALS AND MANAGERS	
11	Legislators and senior officials
12	Corporate managers
13	Managers of small enterprises
MAJOR GROUP 2: PROFESSIONALS	
21	Physical, mathematical and engineering science professionals
22	Life science and health professionals
23	Teaching professionals
24	Other professionals
MAJOR GROUP 3: TECHNICIANS AND ASSOCIATE PROFESSIONALS	
31	Physical and engineering science associate professionals
32	Life science and health associate professionals
33	Teaching associate professionals
34	Other associate professionals
MAJOR GROUP 4: CLERKS	
41	Office clerks
42	Customer services clerks
MAJOR GROUP 5: SERVICES WORKERS AND SHOP AND MARKET SALES WORKERS	
51	Personal and protective services workers
52	Models, salespersons and demonstrators
MAJOR GROUP 6: SKILLED AGRICULTURAL AND FISHERS WORKERS	
61	Skilled agricultural and fishery workers
MAJOR GROUP 7: CRAFT AND RELATED TRADES WORKERS	
71	Extraction and building trades workers
72	Metal, machinery and related trades workers
73	Precision, handicraft, craft printing and related trades workers
74	Other craft and related trades workers
MAJOR GROUP 8: PLANT AND MACHINE OPERATORS AND ASSEMBLERS	
81	Stationary plant and related operators
82	Machine operators and assemblers
83	Drivers and mobile plant operators
MAJOR GROUP 9: ELEMENTARY OCCUPATIONS	
91	Sales and services elementary occupations
92	Agricultural, fishery and related labourers
93	Labourers in mining, construction, manufacturing and transport
MAJOR GROUP 0: ARMED FORCES	

3.11. Biographical Sketch

Prof. Torsten Dunkel is project manager for the early identification of skill needs in the Area Research and Policy Analysis at Cedefop, the European Agency to promote the development of vocational education and training (VET) in the European Union based in Thessaloniki, Greece.

He is an economist by training. His research fields include the links between education/training and the labour market and economy, in particular on the early identification of skill needs, the forecast of skill supply and demand, and on skill needs in enterprises.

He also worked on the relations of HE, CVET and IVET, credit systems for education, competence development as well as mobility barriers and knowledge transfer between university and industry, the implications of the Bologna and Copenhagen processes for European education, and interchangeability between vocational and university education in Europe.

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4. UNDERSTANDING EMPLOYMENT ANALYSIS AND FORECASTING

Stephen Fuller

4.1. Abstract

This presentation explores employment analysis and forecasting. The objective of this presentation is to clarify the major questions involving employment data, analysis, and estimating and forecasting. To establish a framework for understanding the dynamics of employment estimating and forecasting, this paper examines historic patterns of employment change in the United States and how these have been affected by the business cycle.

This discussion differentiates between full-time, regular employment and part-time and contract workers and self-employment. It also considers unemployment patterns and differential job growth at the metropolitan level reflecting variations in their respective mixes of core industries.

In addition to changes in the numbers of jobs and workers, employment change reflects a shift in the composition of jobs with some sectors accelerating while others are contracting with associated changes in worker qualifications and earnings. Issues of seasonality, time delay, and re-benchmarking are considered.

This understanding provides the context for a discussion of estimating and forecasting techniques focusing on sub-national units, such as metropolitan areas and smaller areas within them. Statistical, econometric and step-down methods are considered and their strengths and weaknesses identified and discussed.

Examples are used from research on the Washington, DC metropolitan area to illustrate the discussion. In spite of the many pitfalls in developing current and accurate employment databases, employment analysis remains the key variable in most economic assessments. Therefore, it is important that researchers using employment data and analytical methods be cognizant of their shortcomings as well as their strengths.

4.2. Introduction

Understanding employment data, data analysis, estimating and forecasting is critical to sound economic policy formulation, labor force needs

assessment, and planning and programming for business investment and government-directed economic development efforts. Jobs are fundamental to just about every aspect of the economy – its current and future performance and viability.

The problem is that employment data are often unreliable; they lag the economic conditions that they are used to analyze, they are subject to a wide range of external effects, such as seasonality, and they are frequently misunderstood and misused. This is generally the case in the political environment and the media commonly misuse employment data without knowing the difference. At least this has been our experience in the United States where our employment data are reasonably good and timely.

As economic analysts, we are frequently required to estimate current employment conditions and project trends with these analyses focusing on the number of new jobs, the changing distribution of jobs across sectors, and the changing mix of occupations, educational requirements, levels of wages and salaries, and geographic distributions. I will address as many of these topics as time permits in this presentation.

To focus the discussion, this paper is divided into two parts. The first section will address employment data and the interpretation of employment trends and analyses. Examples will be drawn from both US national and Washington, DC metropolitan area employment analyses. This background will set up the discussion of employment estimating and forecasting methods. This discussion will focus on sub-national economies – metropolitan regions and sub-areas within metropolitan regions. The sharing of US and Portuguese methods and experiences regarding labor force and employment analyses will provide important insights that will advance both the practical and theoretical foundations of this important topic.

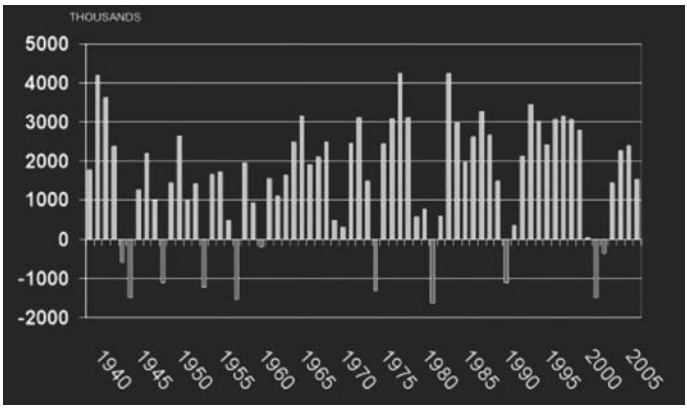
4.3. Employment Data, Trends and Analyses

Employment trends are commonly used to describe and even measure the course of the business cycle. This has taken on renewed interest this past year as the US economy and the economies of most countries around the globe have slowed down and begun to contract. The slowing of job growth and actual decline in the number of jobs that the economy can support has become of primary focus of economic analysis. On December 5, 2008, the US Bureau of Labor Statistics (US Department of Commerce) released its November payroll employment estimate and reported that since October, the US has lost 533 000 jobs and unemployment had risen from 6.5 % to 6.7 %. While it is true that this level of job loss was large, in fact much larger than the 350 000 that was expected, but what does it really mean?

To answer this question, it is helpful to have some reference points as well as to understand the underlying dynamics of the employment base. First, it is essential to understand that job decline or growth lags the economy. No business or government agency lays off workers in advance of declining sales or do they hire workers in advance of an increase in business activity. Additionally, there are interim strategies that can dampen the employment effects of an economic slowdown. These include: reducing the hours of full-time workers, substituting part-time workers for full-time workers, employing contract workers, out-sourcing work to other businesses, working employees longer hours (instead of hiring new workers), furloughing workers, job-sharing, or substituting technology for workers. As labor is the greatest variable cost for most businesses, they are forced to seek efficiencies in the deployment of their labor resources during the down cycle and this redeployment increases their competitiveness during the recovery. The business model going into an economic downturn must be different than the one coming out. The alternative is going out of business.

Economic cycles are not a new phenomenon. In the US there have been 10 recessions since World War II and now there is an eleventh. The lessons from these recessions and their affects on employment and the labor force provide essential understanding for navigating the current cycle. First, it is important to remember that employment lags the business cycle and not all types of jobs follow the same hiring pattern. This pattern can be seen in the following chart.

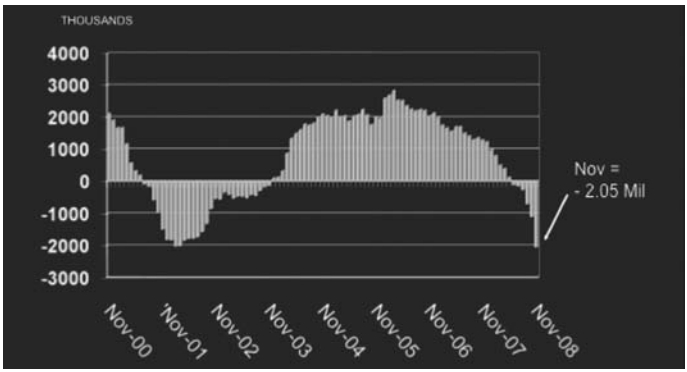
Figure 9 Annual change in jobs – US 1940-2007



In the US there are two types of monthly employment surveys: (1) the payroll survey that asks employers how many full-time, regular employees

they have (these are workers for whom the employers withhold income tax payments) and (2) the household survey that asks residents how many adult workers in the household were employed last week or how many were not working but seeking work (unemployed workers). These two surveys report a different mix of workers. The payroll survey captures the regular work force representing the more formal economy. The household survey includes part-time and contract workers and self-employed workers that are not included in the payroll survey. It might also include undocumented workers. As a result of its more inclusive scope, the household survey captures workers in both the formal and informal economies.

Figure 10 Annual change in payroll jobs – US



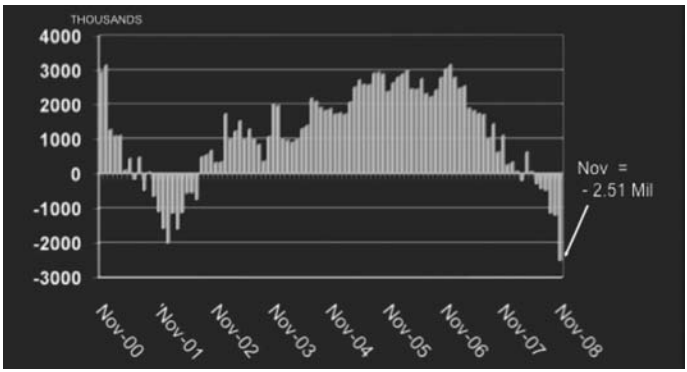
Source: BLS Establishment Survey.

What is important about these different types of worker is that they are affected differently during the business cycle. For the full-time, regular worker, they tend to hold on to their jobs longer after the onset of an economic slowdown than the part-time and contract workers but they also experience a longer period of unemployment; the full-time workers are rehired well after the recovery is in motion. Starting in July 2001 – the 2001 recession began in March and ended in November – payroll employment continued to decline for 29 consecutive months and did not turn positive until December of 2003. This pattern of job change for for payroll employment is shown in the chart above.

In contrast, the household survey that includes both full and part-time workers as well as self-employed workers (these less formal jobs account for approximately 30 % of all jobs in the US) turned negative in June 2001 but registered losses for only eleven months spanning a 12-month period, turning positive in September of 2002 more than

a year in advance of the resumption of payroll job growth. This pattern of job change for this broader measure of workers is shown in the chart below.

Figure 11 Annual change in employed – US

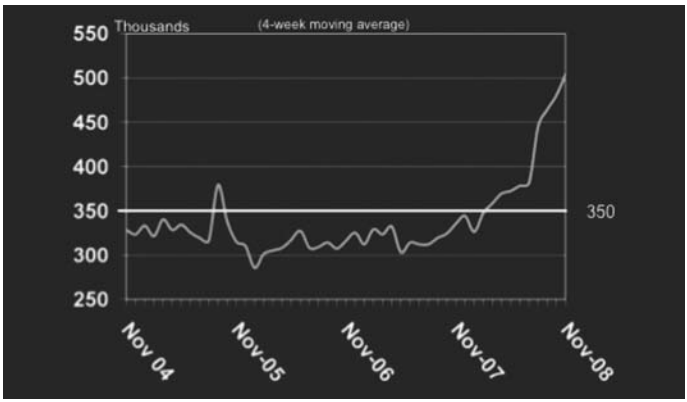


Source: BLS Household Survey.

Why is this employment pattern important? As many business and government decision-makers equate payroll job growth with the business cycle, missing the turning point in the cycle by more than a year could have serious consequences and result in the misallocation of government funds and distort business investment decisions.

There are two primary measures of unemployment in the United States: (1) initial claims for unemployment insurance and (2) the unemployment rate. The number of initial claims is issued weekly and represents the actual number of new claimants. It is not a cumulative number. Even in good times new claims run in the 300 000 to 350 000 range but it is when new claims exceed the norm, numbers higher than 350 000, that it becomes indicative of accelerating layoffs or declining demand for labor. When the number of new claims accelerates rapidly and pushes on to current levels exceeding 500 000, it is a clear sign that the economy is in contraction. As these data are issued weekly with only a one-week lag, they are the most sensitive indicator of labor force change during the business cycle. As soon as lay offs begin to slow and the number of new claims recedes falling below 500 000 and then dropping below 450 000, it will provide a clear signal that the economy's decline is approach or has reached bottom. As this measure counts lay offs and not new hires, it provides a pure measure of the impact of the economy's current performance on the demand for labor. These trends for initial unemployment claims is shown on the chart below.

Figure 12 Initial unemployment claims

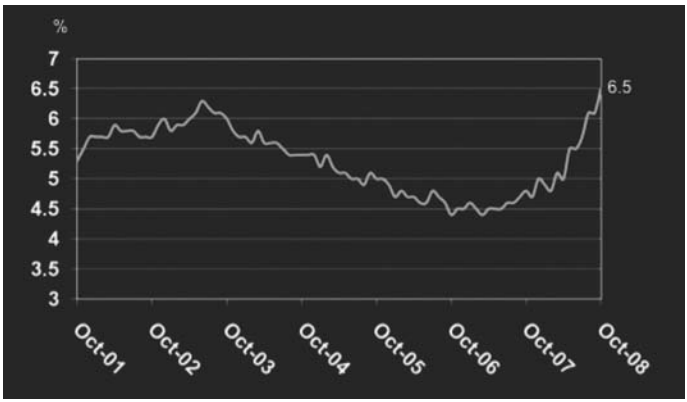


The unemployment rate is an often misused number. This is because it is misunderstood. In the US, the total labor force is the sum of persons with jobs (full- or part-time) and persons not working but actively seeking work. The unemployment rate is calculated by dividing the number of persons who are not working but are actively seeking work by the total labor force. So, if a previously employed worker becomes unemployed but decides not to actively seek a new job (perhaps because the labor market is so poor it is not worth the effort) that worker is not included in the unemployment rate. Similarly, if a person who had dropped out of the labor force (unemployed but not seeking work) decides to seek employment because the labor market has improved, that person is now counted as unemployed because they are seeking work (until they find a job) but their addition to the number of unemployed persons may be misinterpreted as coming from the working population rather from the idle.

Knowing the source of the unemployed worker has important implications for public policy. The worker re-entering the work force because of improving market conditions in contrast to the worker being laid off from a job because the deteriorating economy are two very different events and suggest very different policy responses.

Unemployment lags the business cycle by one and one-half to two years as is apparent in the following chart. While the end of the recession of 2001 was officially dated November 2001, the unemployment rate in the US did not peak until mid-2003.

Figure 13 US unemployment rate

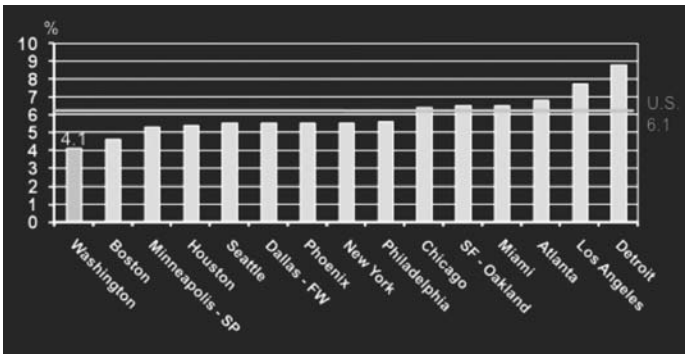


Source: BLS Seasonally Adjusted.

The unemployment rate also reflects the cumulative number of unemployed persons. In the US, the unemployment rate has just increased to 6.7 % (12.5.08). It is expected to increase throughout 2009 and into 2010 reaching 8.5 % or possibly higher and it is not projected to decline back to its currently level until 2012. Unemployment in this cycle is projected to peak in mid-2010, a year following the beginning of the recovery and remain well above full-employment levels (5 %) over the next five years because the jobs from which many workers were laid off will no longer exist and the workers will in effect have become structurally unemployed; that is, they will not have the necessary job skills and educational levels to easily find work in the «new» economy emerging from the recession.

Unemployment varies widely across regions and metropolitan areas in the United States reflecting the different structural bases of local and area economies. Job growth (and decline) also varies widely based on the structure of the local economies and how cyclically sensitive the core industries (dominant sectors) are to national and global cyclical forces. Economies reflecting a strong dependence on manufacturing and on income-sensitive industries such as tourism will experience greater swings in their economies (and job bases) over the business cycle than economies that specialize on knowledge-based and technologically intensive business activities. The better educated the work force the more easily it is to adapt to changing economic conditions. In the US, workers with only a high-school education or less are 10 times more likely to be unemployed than workers with a 4-year college education or advanced professional degree. These variations are seen among the largest 15 metropolitan areas in the US in the chart below.

Figure 14 15 largest job market ranked by unemployment rate, October 2008

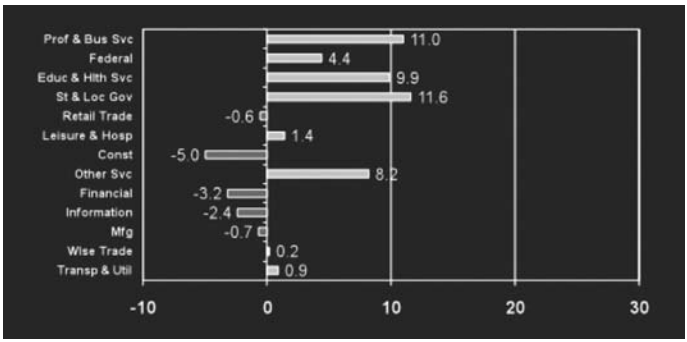


Source: BLS, GMU Center for Regional Analysis.
Data not seasonally adjusted.

This changing structure of the workforce is a constant process but it accelerates during the contraction and expansion phases of the business cycle. This is typically seen at the local level with a shift in jobs from goods-producing sectors to services-producing sectors and within the services-producing sectors with jobs shifting away from those that are consumer oriented towards sectors that serve broad geographies (regional, national, global) and are focused on supporting business and government and innovation that focuses on new business opportunities.

This shift is seen in the Washington metropolitan area economy as presented in the chart below. During the last 12 months (October 2007-October 2008) while the economy was generating a net gain of 35 800 net new jobs, sectors that were growing actually added almost 48 000 net new jobs while sectors that were contracting (construction, financial services including real estate brokers, retail, information/ media, and manufacturing) lost approximately 12 000 jobs. The net result of 35 800 jobs masked the economy's shift to higher-value added work with higher salaries (the jobs gained paid more on average than the jobs lost) and higher job skills requirements.

Figure 15 October 2007 – October 2008, job change by sector MSA (000s)
(Ranked by size of sector)
Total = 35 800

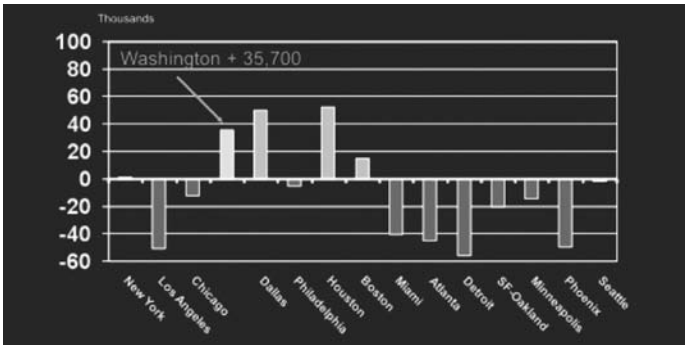


Employment Estimating and Forecasting

The objective of the preceding discussion was to address some of the more important errors and misconceptions encountered in employment analyses. This background provides the basis for my observations on employment estimating and forecasting methods. Rather than concentrate on abstract theoretical and formulaic methods, my approach will be conceptual and descriptive. And, it will focus on sub-national economies as local economic analysis, and especially labor market studies, reflect a range of differences and challenges than are presented at the national level.

Just to be clear at the outset, estimating is not the same as forecasting. Estimating is the procedure by which sample data are extended to the population as well as the process of advancing historic data to the current period. As employment data are developed from sample surveys, factoring these samples to the total is a normal procedure. Additionally, as employment data are always released one or more months after the current month, advancing these recent counts to the present is not uncommon. Forecasting involves extending the current estimates into the future.

Figure 16 15 largest job markets job change October 2007 – October 2008
(Ranked by total jobs)



Estimating Employment for Small Areas

Estimating the population from a sample is a well documented and established statistical process. Nevertheless, the monthly employment estimates released by the US Bureau of Labor Statistics are re-benchmarked at the beginning of the new year to reflect cumulative errors in the estimating procedures. These errors reflect the long-term trending of the estimates based on the previous year. This trending is necessary to reflect the natural growth of the labor force resulting from population changes over time and changes in labor force participation rates. This natural trend can be countered by the cyclical trend over the course of a year.

In the year of slowing economic activity following a year of expansion, the trend line will be higher than in an expansion year following a year of slower job growth. The result is that on the down cycle, the estimates will be too large and need to be revised lower while in an up year when job growth is accelerating over the year, the estimates will be low and need to be revised higher. The basis for making these annual revisions, called re-benchmarking, is a larger survey sample in December of each year that re-sets the baseline for the next year's estimates as well as provides the year-end baseline estimate for the past year. Connecting these December survey numbers over the previous year enables the intervening monthly estimates to be revised downward or upward depending on the newly estimated growth trend.

Other errors can be introduced into the small area employment data estimates. These often result from using a factor to accelerate the sample to the population that does not reflect the unique labor force or economic performance characteristics of the local area. This is a continuing

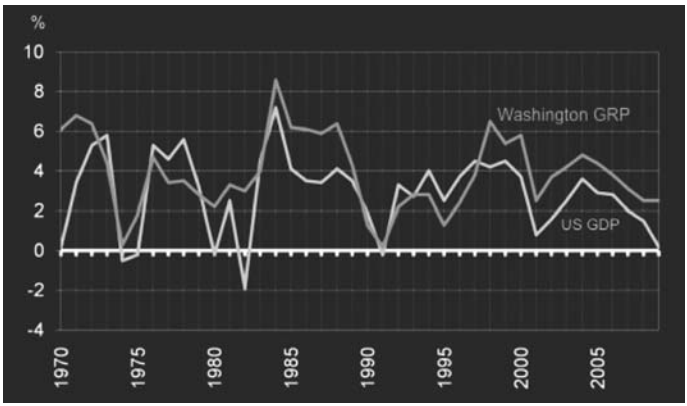
problem in the Washington, DC metropolitan area as it consists of three sub-state portions. When employment is estimated for the metropolitan area as an integrated region a different estimate is produced than when employment is estimated individually for each of its sub-state portions and added together.

The area's labor force participation rate, which is the highest in the US for women and different sectoral structures and demographic characteristics affect the estimating procedure. When the employment estimates for the sub-state portions are stepped down from the respective state-level data for Virginia and Maryland they yield different results from the estimate developed specifically for the metropolitan area. This is because the metropolitan labor force characteristics are quite different from those elsewhere in their states.

Similarly, these estimates are directly affected by the cyclicality of the local economy and this may be significantly different than state or national economies. Cultural and demographic variations will also impact the employment estimates. These demographic differences may be reflected in different mobility patterns within the labor market – willingness to accept different types of employment and to change commuting patterns. Also, these demographic differences may affect the worker's acceptance of part-time work in place of full-time work or their entrepreneurial capacity.

The variation in economic performance patterns over time between the United States and the Washington metropolitan area illustrate the importance of local knowledge about the economy in the preparation of employment estimates (also for forecasts). This performance comparison dating from 1970 is shown on the chart below. The Washington metropolitan area almost can be considered to be counter-cyclical compared to the US economy with its business cycles responding to a different set of dynamics. Understanding the underlying conditions that impact the regional economy's performance and how these might vary relative to the national economy is essential in developing current estimates for the economy's performance or building a reliable forecasting model.

Figure 17 US GDP and Washington GPR



Employment estimates must be consistent with the economic performance of the local area. Job growth in general terms cannot exceed the area's economic growth. It can be slower, of course, if workers are increasing their productivity, although such changes in productivity or in sectoral re-balancing usually occur over a longer timeframe and should not be a major factor in short-term employment estimates.

An approach that is simple and produces validate results (within the range of acceptable error) involves stepping the local area estimates down from their immediately larger surrounding area. In the Washington metropolitan area there is often the need to make county-level estimates for the current period as these data lag at the current period by six to nine months. In this case, the historical monthly data base at the local area (county) and sub-regional area (Northern Virginia) date back to 1985 covering two full business cycles with the sub-regional data base only lagging the current month by 6 weeks while the local employment data base lags by up to nine months. By examining the month-by-month relationship between the constituent local areas (counties and cities) and the total area and tracking these monthly patterns over time, current estimates for the local areas can be developed that reflect seasonal as well as developmental differences that may have evolved over the business cycle.

For example, if Fairfax County with 924 000 jobs accounts for 60 % of its region's job base and this percentage varies according to a predictable pattern over the course the year reflecting seasonal variation in the local economy as well as variation with the business cycle (its employment base is less cyclically sensitive), stepping the current employment estimate down from the regional to the county level is

straight forward. These monthly estimates can be revised each time official estimates are released (although these will never be more current than 6 months old). And, as official estimates are released their relationship to the larger region can be tested and revised to reflect new trends and differences that may be emerging in the current cycle.

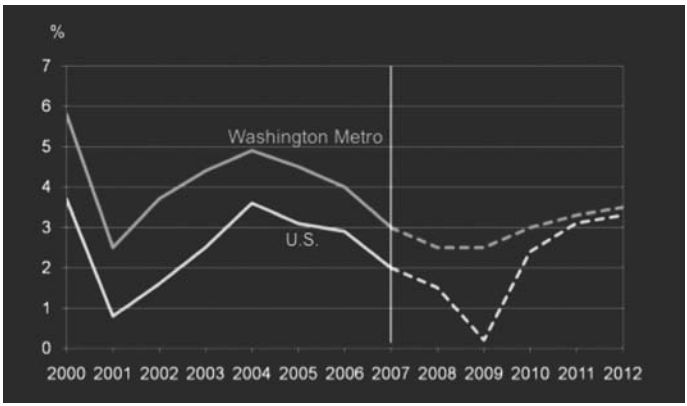
This type of estimating can be done by hand, or employ Excel on a laptop, or use a more complex mathematical algorithm. Regardless of the methodology used to provide an employment estimate that is useful for decision-making it much be tested against known events and circumstances that could result in a significant variation in the current employment situation from one estimated purely statistically. Such an event could be the collapse of an entire sub-sector with immediate and large-scale job losses. The bankruptcy of several major Wall Street bank in New York City with collateral impacts between March and October of this year has resulted in the region's job growth declining from a plus 80,000 annually in March to zero net gain in October. This is a magnitude of local job change that could not have been anticipated and estimated mathematically.

Forecasting Employment for Small Areas

Forecasting employment should reflect the expected structural evolution and performance of the economy. Therefore, understanding the global, national, regional and local dynamics that will likely shape the respective economies going forward is the appropriate starting point for any forecast. Knowing where these economies are in their respect business cyclical is important as job change lags the economy's recovery as well as its slowdown.

Also, knowing whether the employment forecast is to be inclusive of all jobs or only full time, regular workers is important as their job growth patterns have been shown to be different. Rural areas and areas dependent on goods-producing sectors generate or lose jobs at a rate quite different than the services-producing sectors. An economy that is dependent on consumption spending (Los Vegas) in contrast to spending on supporting services (a government center, professional services center, a knowledge center) will have very different potentials for employment growth.

Figure 18 GDP/GRP 2000-2011



In order to forecast the future pattern of employment growth in the Washington metropolitan area economy and to be able to distinguish employment growth by the region's sub-state portions (central city, northern suburbs and southern suburbs) as well as by major sector, we rely on a simple econometric model for the regional economy that consists of 38 sectors with three sub-regional divisions. This model reflects the current structure of the Washington area economy (as of 2007) and has a database dating back to 1985. As there was a major redefinition of industrial sectors in 2001 by the U.S. government, the model is driven largely by the inter-regional trends and sectoral shifts that have occurred in the current business cycle.

The Washington, DC metropolitan area econometric model is driven by sectoral projections developed for the U.S. economy. This could be considered a weakness of this approach but no locally specific sector-level projections exist. By using national sectoral projections, areas with a mix of sectors favoring faster growth will out-perform the national economy and regions with a mix of sectors favoring slower growing or declining sectors (*e.g.,* Detroit, Michigan) will under-perform the national economy over the forecast period. The same would be true of a mix of sectors locally that are more or less cyclically sensitive. The forecast for a local economy that is technological advanced would likely under-state future growth using this approach.

The Washington model is also adjusted to reflect performance variations having short-term significance either because of the economy's direct dependence (federal procurement spending that has been found to have correlation of .95 with job growth) or the availability of independently projectable trends (residential construction activity and hos-

pitality spending). As the model is designed for annual projections and allows for annual adjustment of variables over the course of the forecast within the context of the established equations (this permits the impacts of major state policy changes to be captured; *e.g.,* a change in the tax code or major infrastructure project), the sub-state forecasts can be fine tuned to reflect known events or expected shifts in growth patterns.

Table 1 Job growth in the Washington MSA, 2007-2013, (jobs in thousands)

Year	WMSA (1)	DC (2)	SubMD (3)	NoVA (4)
2007*	28.5	7.2	5.8	15.5
2008	25.6	6.6	6.5	12.5
2009	23.7	5.5	6.0	12.2
2010	36.5	6.0	10.7	19.8
2011	42.4	6.4	12.5	23.5
2012	48.1	7.0	14.3	26.8
2013	54.0	6.5	16.4	31.1

Source: GMU Center for Regional Analysis; average annual job growth Over 1990-2007 period is 45 000 jobs. (1) Washington metropolitan Region; (2) District of Columbia, (3) Suburban Maryland (5 counties); (3) Northern Virginia (nine counties, six independent cities).
* actual job growth, US Bureau of Labor Statistics.

This process has enabled the most recent forecasts, shown in Tables 1 and 2, to reflect the consequences of the national economic recession and its expected recovery and subsequent expansion over the five-year forecast period while accommodating the Washington, DC region's less cyclically sensitive economic structure, its concentration of knowledge-based, technologically intensive jobs, and its less impacted and more quickly recovering housing market. This approach has also enabled the differential performances of these economic conditions to be reflected in the sub-state employment projections over the 2008-2013 period.

Local area economies are subject to local, regional, national and global forces and therefore any forecast of their future performance is vulnerable to unexpected changes. By re-running the model annually, it can be adjusted to many of these uncertainties. With the finalization of 2008 data and employment revisions in March of 2009, the forecast can be updated and extended by one year. As new sectoral growth projections become available reflecting the depth and consequences of the current national recession, the local forecasts can be revised to reflect how these national changes may have affected the local economy over the coming year or over the five-year forecast period.

Table 2 Job growth in the Washington MSA by sector, 2008-2013 (jobs in thousands)

Sector	WMSA	DC	SubMD	NoVA
Construction	-2.7	-0.4	-1.0	-1.3
Manufacturing	-0.6	-0.2	-0.3	-0.1
Wholesale Trade	5.1	0.6	2.0	2.5
Retail Trade	7.2	0.9	2.5	3.8
Transp/Utilities	0.0	-0.6	-0.7	1.3
Information	-5.2	-0.6	-2.1	-2.5
FIRE	3.0	0.8	-0.9	3.1
Professional/BS	109.0	18.9	30.4	59.7
Health/Edu	29.7	5.5	10.4	13.8
Hospitality	18.4	3.7	5.6	9.1
Other Services	25.2	5.6	5.8	13.8
All Government	41.2	3.8	14.7	22.7
Totals	230.3	38.0	66.4	125.9

Source: GMU Center for Regional Analysis. See table 1 for notes.

The lesson here is that employment forecasts at the local area level are elastic and subject to external impacts. Knowing how the local economy responds to these external forces, how sensitive it is to changes in the national and global economies, understanding its stabilizing or counter forces, and being able to intercede in the model's mathematical operation to insert new information is essential if the results are to be useful in local decision-making by businesses and government. As most business and government decision-making has a short-term framework spanning one and at most two years, keeping the employment estimates current and the employment forecasts up-to-date reflecting the latest parameters will help assure that the results are of maximum benefit to their users.

4.4. Conclusion

The availability of reliable information on the economy's current and near-term performance is critical to good decision-making. Employment growth trends and changes in the mix of jobs are among the most commonly used economic data. Understanding these data and working to improve their currency and usefulness through appropriate estimating and forecasting methods is essential to formulating informed economic policy to guide future private and public sector investment and for meeting the economy's requirements for the labor resources required to support future growth.

4.5. Biographical Sketch

Professor Fuller joined the faculty at George Mason University in 1994 as Professor of Public Policy and Regional Development. He served as Director of the Ph.D. Program in Public Policy from July 1998 to June 2000 and from July 2001 to July 2002. He also serves is Director of the Center for Regional Analysis. In September 2001, the GMU Board of Visitors appointed him University Professor and in July 2002 he was named to the Dwight Schar Faculty Chair. Prior to joining the George Mason University faculty, he served on the faculty at George Washington University for twenty-five years, including nine as Chairman of the Department of Urban Planning and Real Estate Development and one as Director of Doctoral Programs for the School of Business and Public Management.

Prof. Fuller received a B.A. in Economics from Rutgers University (1962) and his Doctorate in Regional Planning and Economic Development (1969) from Cornell University. He has authored more than 500 articles, papers, and reports in the field of urban and regional economic development including monthly reports on the Washington metropolitan area (since 2/91) and Fairfax County economies (since 6/97).

His research focuses on the changing structure of metropolitan area economies and measuring their current and near-term performance. He developed a monthly series of indicators that track the current and near-term performance of the Washington's area economy in 1990. He also developed leading and coincident indices for Fairfax County in 1997. These monthly reports are available on the Center for Regional Analysis website (www.cra-gmu.org). His research includes studies on the impacts of federal spending, the hospitality industry, international business and the building industry on the Washington area economy. His international assignments include Kazakhstan, Georgia, Hungary and China as well as on-going projects in Portugal.

In August 2006, Governor Kaine appointed Dr. Fuller to the Governor's Advisory Board of Economists. He had previously served on this Board under Governors Warner, Allen and Wilder. In 2003, he was a member of the Governor Warner's Tax Reform Working Group. He also is a member of the CFO Advisory Group of the District of Columbia. Additionally, he serves on the Board of Directors of the Global Environment and Technology Foundation and Tompkins Builders Inc. He has been economic advisor to Fairfax County, VA since 1995 and has been appointed by the Board of Supervisors to serve on the Board of Directors of the Fairfax County Convention and Visitors Authority. In 2007, he was appointed by Cardinal Bank as its Chief Economist.

In 1996, he was honored by the Economic Club of Washington as Educator of the Year and in 1997 was selected for the Richard T. Ely

Distinguished Educator Award by Lambda Alpha International, an honorary society of land economists. He served as President of the Washington Chapter of Lambda Alpha from 1998 to 2000 and is a member of the Urban Land Institute's Washington District Council. In 2001, he was selected by NAIOP as a Distinguished Fellow, an appointment that extends through 2008.

5. IPP PORTUGAL: O ÍNDICE-CHAVE PARA A GESTÃO DO CAPITAL HUMANO

Bernardo Teixeira Diniz

5.1. Introdução

No actual ambiente empresarial, a capacidade de resposta que apresentamos perante os nossos clientes é, muitas vezes, a chave da nossa sobrevivência. A envolvente muda com muita rapidez e temos que nos ajustar continuamente às novas necessidades dos negócios. Também na área de RH, cada vez mais, torna-se determinante ter a capacidade e velocidade de resposta adequadas perante as necessidades de incorporação, retenção e gestão do talento dos profissionais.

Esta capacidade de resposta implica colocar a pessoa certa no lugar certo, com os conhecimentos necessários para desenvolver os planos de negócio da empresa. Para a área de RH, este objectivo consome uma grande quantidade de recursos em processos de selecção e captação de talento, quer ao nível interno e externo da organização. Além disso, todos estamos conscientes das implicações inerentes à gestão dos processos de selecção interna e externa: custos directos e indirectos, aspectos motivacionais e de compromisso, a percepção da carreira profissional e, inclusive, a própria imagem e «marca» da empresa.

Estes são aspectos que se devem ter em conta. Neste contexto, considera-se de grande interesse poder dispor de informação chave, que permita tomar decisões adequadas, com relação à captação e desenvolvimento de talento, assim como da organização e gestão dos RH.

O Índice de Perspectivas Profissionais (IPP) vem colmatar uma lacuna que existia no mercado português, estando já consolidado em outros países, como Inglaterra, Espanha, Grécia e brevemente em França.

O objectivo consiste em recolher informação de uma amostra alargada de empresas, sobre a sua percepção da actividade de recrutamento interno e externo ao nível de quadros superiores e profissionais com formação superior.

Esta informação será tratada e apresentada sob a forma de um índice semestral, de modo a permitir averiguar:

– Quais as expectativas de contratação profissional para os próximos meses.

– Quais as principais dificuldades sentidas pelas empresas.
– Que competências se encontram por colmatar nas actuais vagas e que problemas estas geram.
– Quais as áreas de talento mais valorizadas.
– Quais as competências críticas que mais contribuem para a competitividade das organizações.

O Índice de Perspectivas Profissionais (IPP) permitirá antecipar tendências chave, reflectir sobre a eficácia dos actuais modelos de RH, chamar a atenção para aspectos considerados estratégicos, tais como: rotação, retenção do talento, tipo de liderança dos profissionais, assim como as formas mais eficazes de realizar uma planificação adequada dos RH.

5.2. Problema Identificado

O problema da empregabilidade e do desenvolvimento das empresas passa também pelo necessário alinhamento entre as capacidades e conhecimentos que o mercado necessita e aquelas que estão disponíveis em cada momento.

5.3. Ganhos Sociais

Fornecer às empresas, universidades e respectivos alunos, um retrato daquilo que o mercado em cada momento procura, dotando-os de uma ferramenta inestimável de gestão e previsão da situação actual sobre necessidades de competências.

5.4. Dinâmica de Funcionamento em Portugal

Em Portugal, por decisão de diversas organizações inquiridas, os resultados consolidados serão publicados duas vezes por ano, num relatório que detalhará as previsões do semestre seguinte e cujo resumo executivo será públicado em primeira mão e em exclusivo pelo Jornal Expresso.

5.5. Vantagem para os Participantes

O mais imediato verifica-se através do apoio directo às DRH dos diversos tipos de organizações participantes, nos processos associados à selecção de pessoas e respectivo cumprimento dos planeamentos estratégicos traçados, assim como para os candidatos que procuram emprego, nesta

fase, ao nível de quadros superiores. O relatório completo para *benchmarking* é enviado gratuitamente em formato pdf, somente às organizações que participarem activamente no IPP Portugal, respondendo estas ao *survey* semestralmente. Além disso, as organizações participantes serão posteriormente convidadas em exclusivo a participar nos eventos promovidos pelo IPP PORTUGAL, com vista a debater os resultados obtidos, ao mesmo tempo que um *Hot Topic* (tema quente de momento) será desenvolvido, de acordo com as necessidades do mercado e analisado em termos de relevância.

5.6. Confidencialidade dos Dados

Todas as respostas são tratadas com absoluta confidencialidade, de acordo com a Lei de Protecção de Dados e com a total garantia ESADE sobre todo o processo de manipulação dos mesmos, assim como o resguardo da informação disponibilizada por cada empresa, a qual, somente a equipa do Instituto de Estudos Laborais tem acesso em Barcelona. Todos os resultados publicados, apresentam somente informação agregada, como poderá ser verificado nos dois relatórios publicados em Portugal referentes a 2008.

5.7. Países em Projecto

O IEL ESADE encontra-se em negociações com entidades académicas e potenciais patrocinadores na Bélgica, Holanda, Suiça, Alemanha, Lituânia, Canadá, China, Rússia, Índia, Brasil, Argentina e Angola. Todos eles estarão lançados até ao final de 2010. Grécia iniciou o seu processo no 2.º semestre de 2008 e França lançará com a HEC Business School e o Jornal Le Fígaro o IPP France no 2.º semestre de 2009.

5.8. Qual o Ponto Crítico do Projecto

Para tornarmos o índice verdadeiramente significativo necessitamos contar com a colaboração de um grande número de empresas dos diversos sectores da actividade económica, na resposta aos questionários que constituem a base de recolha da informação, que depois de tratada, dá origem ao IPP. Em cada edição necessitaremos associar no mínimo 200 organizações a nível nacional, incluindo uma quantidade significativa das empresas que constituem o PSI 20, para que a amostra seja representativa da realidade nacional e dos sectores económicos mais relevantes.

Para tal constituímos o Gabinete de Apoio IPP IEL/ESADE para a operacionalização deste projecto em Portugal, tendo como missão exclusiva a constituição e manutenção de uma amostra válida e representativa da realidade económica-empresarial portuguesa, assim como a adequabilidade, a cada momento, do *survey* às necessidades das organizações portuguesas.

5.9. Quem Deverá Responder ao Questionário

O responsável estratégico pelos Recursos Humanos da empresa ou os elementos do departamento de RH. Sempre que possível, mas não obrigatório, será importante obter *feedback* do líder da organização.

Na 1.ª edição de 2008 (19.5 a 14.7), registamos 326 participações, nas quais foram identificadas 300 diferentes organizações, das quais oito do PSI-20, 9 do PSI-Geral e 80 da Lista EXAME 500. Em termos de n.º de trabalhadores, 44 % tinham menos de 100 pessoas, 34 % tinham entre 100 e 499, 9 % tinham entre 500 e 99, 9 % tinham entre 100 e 3000 e 4 % tinham mais de 3000 empregados.

Na 2.ª edição 2008, a que chamámos Edição Especial *Hot Topics* IPP Portugal 2008, (19.11 a 31.12), registamos 256 participações, nas quais foram identificadas 250 diferentes organizações, das quais seis do PSI-20, 16 do PSI-Geral, 126 da Lista EXAME 500. Em termos de n.º de trabalhadores, 35 % tinham menos de 100 pessoas, 34 % tinham entre 100 e 499, 12 % tinham entre 500 e 99, 13 % tinham entre 100 e 3000 e 7 % tinham mais de 3000 empregados.

Por último e já em 2009 (19.3 a 14.4), a 2.ª iteração do IPP/IPR Portugal registou 340 participações, nas quais foram identificadas 320 diferentes organizações, das quais oito do PSI-20, nove do PSI-Geral e 74 da Lista EXAME 500. Em termos de n.º de trabalhadores, 46 % tinham menos de 100 pessoas, 30 % tinham entre 100 e 499, 10 % tinham entre 500 e 99, 6 % tinham entre 100 e 3000 e 8 % tinham mais de 3000 empregados.

5.10. Entidades que Apoiam a Acção do IPP Portugal

Depois de termos mapeado os *stakeholders* do IPP Portugal, temos vindo a envolver pouco a pouco todos os representantes dessas partes interessadas, com os quais constituímos um *Think Tank* de forma a promover uma atitude construtiva e de melhoria contínua em torno do Índice de Perspectivas Profissionais (IPP) de Portugal. Através deste grupo de trabalho, conseguimos aferir até que ponto as análises prospectivas vão ao

encontro das expectativas e necessidades dos grupos de interesse mapeados, contando com pessoas, bastante conhecedores, a cada momento, das carências, dificuldades e expectativas reais da sociedade portuguesa em geral, tais como: Prof. Dr. Joaquim Azevedo (UCP), Dr. Mário Costa (Select/Vedior), Eng.º Henrique Neto (AIP-CE), Eng.º José António Barros (AEP), Dr. Armindo Monteiro (ANJE), Dr. Jorge Marques (APG), entre muitos outros.

Na 3.ª edição do IPP Portugal ESADE – Select Vedior – Expresso com a colaboração académica da Universidade Católica Portuguesa, encerrada no passado dia 14 de Abril, tivemos a honra de contar, para além das quatro organizações fundadoras, com o apoio institucional da AEP, AIP-CE, APG e ANJE no envolvimento dos seus associados nesta importante iniciativa, além da acção da associação de antigos alunos da EGE Atlantic Business School e do Chapter Portugal do ESADE ALUMNI, o que seguramente acrescentará bastante valor aos resultados que serão obtidos nesta iteração, garantindo, cada vez mais, um adequado nível de representatividade ao nível nacional. A todos o meu sincero e pessoal obrigado, pois sem a ajuda de todos este projecto nunca se teria materializado de forma sustentada em Portugal.

5.11. Principais Resultados Obtidos em 2008

O Índice de Perspectivas Profissionais (IPP) calcula-se sobre uma base de 100, ou seja, valores superiores a 100 mostram uma tendência para o crescimento, enquanto que valores inferiores a 100 reflectem uma retracção da oferta. Simultaneamente, valores perto de 100 mostram estabilidade ou reduzida variação.

No primeiro semestre de 2008, verificámos que eram mais as empresas a procurar profissionais dos que as que não o faziam. 50 % dos inquiridos estavam optimistas em relação ao futuro do negócio, mas só 40 % esperavam um aumento da procura de produtos e serviços. Quase 84 % das organizações previam ter alguma dificuldade para contratar quadros superiores ao nível directivo e profissional nos seis meses seguintes. Cerca de 74 % esperavam que as dificuldades de recrutamento persistissem e 10 % previam o seu aumento. Curiosamente, estes resultados vieram a confirmar-se com a apresentação em Janeiro 2009 pelo INE, dos resultados consolidados do último trimestre de 2008, os quais, se bem se recorda, geraram bastante polémica, por indicarem que o nível de desemprego não tinha crescido estrondosamente como todas as pessoas e entidades vaticinavam nessa altura.

Ao nível do Índice de Perspectivas de Reforma: Na maioria das empresas o perfil do reformado é normal, ou seja, os colaboradores

reformam-se nos prazos e na idade determinados por lei. Em 31 % das empresas haveria reformas entre uma a dez pessoas nos seis meses seguintes, em 62 % não haveria reformas e em 4 % haveria mais de 20 reformas. A área de produção seria a mais afectada pelas reformas, seguindo-se a financeira, as vendas e a logística.

Depois da primeira iteração do Índice de Perspectivas Profissionais (IPP) e Índice de Perspectivas de Reformas (IPR) realizada em Portugal no final do primeiro semestre de 2008, lançámos de forma complementar antes de terminar o ano transacto, uma edição especial contendo oito temas chave *(hot topics)* que complementaram as nove edições do mesmo índice em Espanha entre 2005 e 2008. Assumidos como críticos pelos inúmeros directores de Recursos Humanos das diferentes organizações nacionais presentes nos debates realizados no Porto e Lisboa com a Universidade Católica Portuguesa, os temas escolhidos foram: Gestão de talento, Desenvolvimento profissional, Conciliação trabalho-família, Valores e Cultura, Bem-estar e Efectividade, Absentismo, Fraude nas organizações e, por último, Confiança. Os resultados foram divulgados no Caderno de Economia do Expresso e posteriormente bastante discutidos nos eventos soberbamente organizados pelo Gabinete de Apoio ao IPP Portugal e pela Universidade Católica Portuguesa.

5.12. Contratar para Combater a Crise

É importante hoje em dia renovar a força de trabalho. É premente continuar a contratar mas de uma forma muito mais direccionada. Com a contratação de jovens as empresas só têm a ganhar porque com estes vem muita da inovação que as entidades empregadoras necessitam para sobreviverem. O ideal, seria conciliar a experiência técnica adquirida ao longo de anos de trabalho por parte dos profissionais mais velhos com a capacidade de inovar e de ver as coisas com outros olhos dos jovens que entram no mercado de trabalho. Os jovens têm a grande vantagem de não terem nada a perder e de quererem mostrar as suas capacidades, daí se atribuir a estes a capacidade de inovar. Não quero com isto dizer que os mais velhos não tenham essas capacidades mas não as demonstram porque, devido à experiência adquirida, não querem ousar e arriscar. Iremos assistir brevemente a uma «guerra por talentos». Ou seja, se até agora as empresas iam contratar pessoas válidas em áreas específicas que estavam disponíveis no mercado de trabalho, daqui para a frente essa procura será ainda mais feroz e será feita mesmo a empresas concorrentes e de uma forma mais agressiva e a procura incidirá sobre os profissionais que aliem *soft skills* com o *know-how* técnico. Assistiremos a uma mudança de eficiência para eficácia.

5.13. *Soft Skills* Mais Procurados Num Profissional

Através das iterações efectuadas em Espanha e Portugal, chegamos à conclusão que procuram principalmente *soft skills,* sendo as mais votadas: Capacidade de Relacionamento; Sentido Ético; Saber Comunicar e Inteligência Emocional.

5.14. Principais Resultados Obtidos em 2009

O Índice de Contratação do IPP (IdC) para toda a empresa é de 90, mostrando uma clara diminuição da actividade de contratação. Devemos destacar que na última iteração do IPP Portugal (previsão do 2.º semestre de 2008), o IdC foi de 111, o qual mostra que a actividade de contratação, nessa altura, ainda tendia a subir.

De igual forma, o IdC para os quadros superiores e profissionais com formação superior, apresenta o mesmo padrão, com um valor de 81, mas mais acentuado (na edição 2008 era 109) (ver Figura 20).

Este é o 1.º semestre em que o índice mostra valores claramente inferiores a 100, ou seja, espera-se uma claríssima diminuição da actividade de contratação. A mudança de direcção no índice pode ser atribuída à crise. As empresas tendem a diminuir a actividade de contratação, para além de muitas terem mesmo decidido congelar os processos de contratação até que se sinta a renovação da confiança ao nível da progressão positiva do mercado.

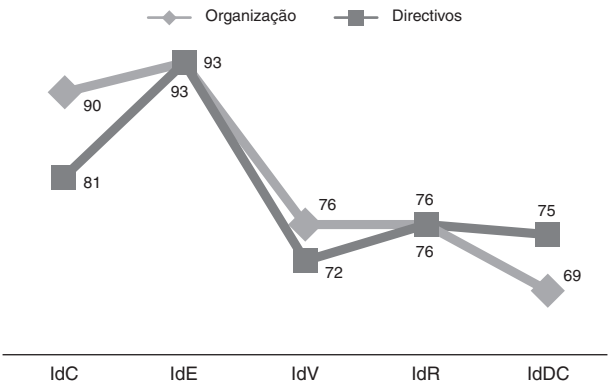
Na mesma linha, o índice de variação do n.º de empregados (IdE), apresenta nesta edição, em ambos os casos, um valor igual a 93, ou seja, a nível de toda a organização e ao nível dos quadros superiores (ver Figura 20). As empresas portuguesas indicam uma diminuição do n.º de empregados durante os próximos seis meses. Dados económicos ao nível regional e mundial, apresentam esta mesma tendência. As empresas não têm muitas opções face às circunstancias económicas, o que leva a decisões como reduzir a dimensão das empresas como medida de recuperação e/ou como medida de prevenção.

Como consequência deste tipo de acção e do congelamento de novas contratações, os níveis de rotação também diminuem de forma drástica, como se pode observar no relatório agora editado. O Índice de Rotação (IdR) é de 76 em ambos os níveis analisados, o que significa que a rotação atingirá níveis notavelmente baixos.

Por último e provavelmente também como consequência em simultâneo do baixo nível de rotação, da diminuição dos quadros de pessoal e do congelamento de contratações, o mercado laboral apresentará menores dificuldades para contratar as pessoas que procura, tal como é bem

visível no Índice de Dificuldades de Contratação (IdDC), que seguindo a tendência dos quatro indicadores anteriormente apresentados, mostra valores inferiores a 100, ou seja, 75 para os quadros superiores e 69 para toda a organização (ver Figura 19).

Figura 19 Índices de perspectivas profissionais (IPP)



Visando fazer face às situações impostas pela crise, as empresas sentem-se obrigadas a proceder a reengenharias dos processos e a adoptar medidas que permitam reduzir o número de pessoas na organização. Estas acções podem ser eficazes a curto prazo, no sentido restrito da redução de custos. Apesar disso, é evidente que esta redução do n.º de pessoas pode ser, a longo prazo, extremamente desfavorável, pois como o foco está centrado no benefício financeiro instantâneo, a probabilidade da perda de talento é bastante elevada, sendo esta somente sentida na fase de retoma do mercado.

Sobre as perspectivas de reformas, um terço das empresas portuguesas prevê a existência de reformas na sua organização (ver Figura 20). Em cerca de 24 % dos casos, é expectável que se gerem uma a dez reformas durante os próximos seis meses, sendo estas provenientes maioritariamente de médias e grandes empresas (com mais de 100 empregados) (ver Figura 21). Por outro lado, 90 % das organizações de pequena dimensão não irão verificar a entrada de nenhum dos seus colaboradores na fase de reforma, acompanhadas neste cenário somente por menos de metade das organizações de grande dimensão. Por outro lado, as áreas mais afectadas pelas reformas que se irão produzir são a produção (18 % dos casos) e recursos humanos (9 % dos casos).

Figura 20 Previsão de reformas

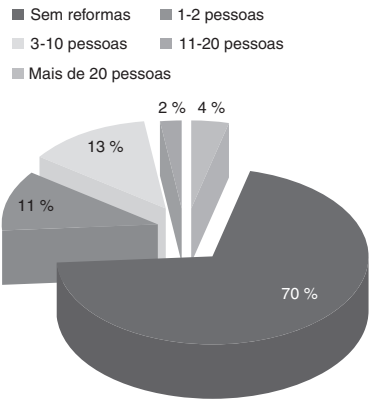
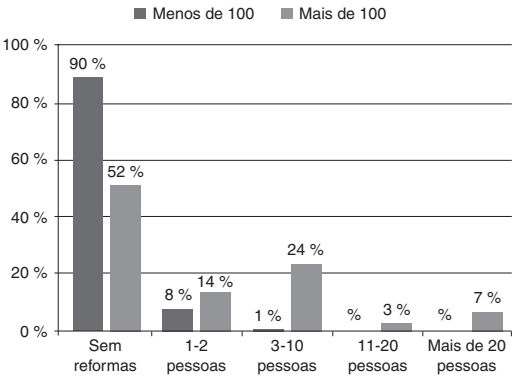


Figura 21 Previsão segundo a dimensão da organização



Mais interessante é o facto de quase 20 % das reformas serem antecipadas (ver Figura 22). Do mesmo modo somente cerca de 30 % das empresas portuguesas prevêem substituir os colaboradores que se irão reformar (ver Figura 23). Provavelmente estes resultados são mais um indicador das medidas que as empresas procuram para solucionar instantaneamente os efeitos da crise económica e como consequência da previsão da diminuição da procura de produtos e serviços que as mesmas esperam. É possível que a política de não contratação de novas pessoas para as vagas produzidas, dê origem a uma medida eficaz para a redução de custos sem necessidade de recorrer à já popular (ou melhor dizendo impopular…), política de redução de pessoas nas empresas. Apesar disso, será importante planificar a redistribuição de tarefas e funções para cobrir a posição acéfala. Neste sentido, as organizações devem procurar fórmulas que permitam um balanço entre esta nova distribuição e a motivação do factor humano.

Figura 22 Tipo de reformas

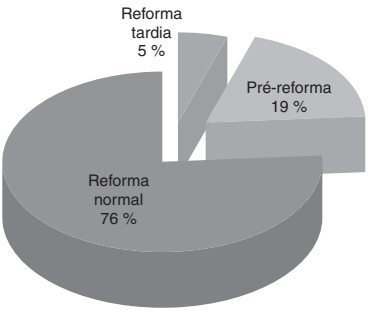
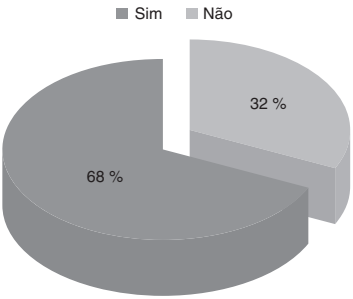


Figura 23 Previsão de substituição dos reformados



Previsão sobre a procura e nível de confiança empresarial

A previsão sobre a procura de produtos e serviços irá de mão dada com as expectativas de negócio, o que será o mesmo que dizermos confiança empresarial. Os resultados apresentados neste relatório, mostram que a procura de produtos e serviços tende a baixar. Somente 29 % das empresas prevê o crescimento da procura em comparação com 41 % das organizações que o esperavam no semestre passado. Mesmo assim, 29 % das organizações espera uma diminuição da procura, em contraste com os 15 % do semestre passado (ver Figura 24). Se bem que o conjunto de organizações portuguesas participantes espera em geral uma diminuição, ou na melhor hipótese a manutenção da procura, as organizações com menos de 100 empregados, mostram estar mais optimistas, de onde se observa que do total de empresas que parecem ser optimistas ou muito optimistas, 57 % são organizações com menos de 100 empregados e 43 % são empresas com mais de 100 empregados (ver Figura 25).

Mesmo assim, as expectativas de negócio, em linha com a procura de produtos e serviços, mostram uma tendência geral reduzida. Cerca de 30 % das empresas mostram estar pessimistas, contra os 19 % verificados no semestre passado. As empresas pequenas mostram maior optimismo e confiança no futuro da organização. No total das empresas optimistas, 58 % destas são de pequena dimensão. Evidentemente as previsões sobre a procura de serviços/produtos e confiança empresarial, encontram-se reflectidas em dados macroeconómicos tais como o PIB. Segundo dados do INE, os países europeus mostram um decréscimo do PIB em geral. Em Portugal este valor caiu cerca de 3,7 % no primeiro trimestre de 2009, quando comparado com o período homólogo de 2008, sofrendo uma contracção de 1,5 % frente ao último trimestre de 2008.

As perspectivas para os próximos seis meses de momento mostram uma tendência menos optimista. Neste contexto, a planificação estratégica revela ser um elemento chave para a definição de como aumentar a procura de produtos e serviços. Várias fórmulas são aplicadas pelas empresas tais como a inovação, diversificação, alianças estratégicas que permitam aumentar a gama de produtos e serviços que permitam um crescimento sustentável no tempo.

Figura 24 Previsão da procura e confiança empresarial

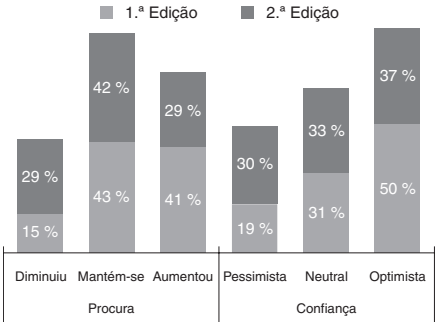
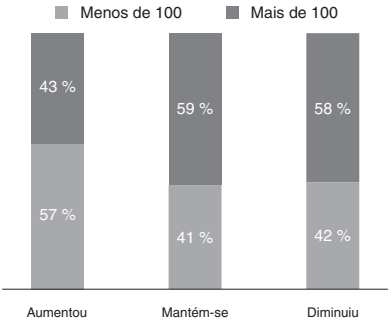


Figura 25 Previsão da procura por dimensão organizacional



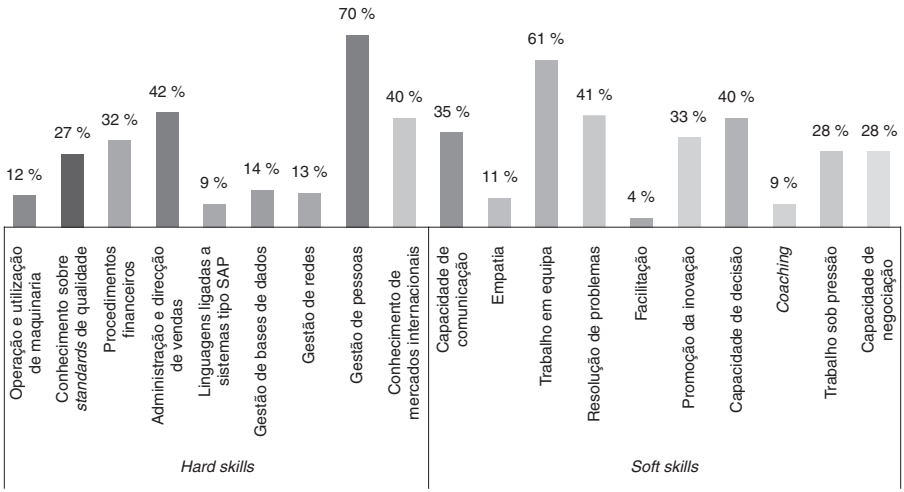
Novas tendências: *new skills for new jobs*

As novas tecnologias em conjugação com a globalização estão a mudar e dinamizar os modelos de negócio, assim como a forma de trabalhar. Em simultâneo, os postos de trabalho mudam e as capacidades requeridas para estes postos de trabalho estão em total evolução. O tema quente desta edição fala dos chamados *NEW SKILLS FOR NEW JOBS.* Claramente que as empresas portuguesas prevêem uma mudança e certa obsolescência de alguns dos postos de trabalho. A incorporação de novos postos de trabalho requererá novas habilidades técnicas *(hard skills)* e competências de tipo *soft.*

Na selecção efectuada sobre habilidades técnicas e competências consideradas críticas pelas organizações portuguesas participantes nesta iteração, pudemos verificar que no futuro se irão requisitar habilidades técnicas relacionadas com a gestão de pessoas (70 %), conhecimentos em administração e direcção de vendas (42 %) e conhecimento dos mercados internacionais (40 %). Mesmo assim, as competências consideradas *soft* assumirão uma importância vital, principalmente no âmbito do: trabalho em equipa (61 %), resolução de problemas (41 %), capacidade de decisão (40 %) e capacidade de comunicação (35 %) (ver Figura 26).

Em resumo, as empresas portuguesas procuram competências relacionadas com a globalização tais como o conhecimento de mercados internacionais e a gestão de pessoas ou o trabalho em equipa (aspectos interculturais).

Figura 26 Novas competências e habilidades consideradas críticas



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5.16. Resumo Biográfico

Engenheiro Químico pela FCT-UNL é desde 2007 representante do Instituto de Estúdios Laborales da ESADE Buiness School de Barcelona em Portugal e coordenador a nível nacional da iniciativa IPP Portugal ESADE – Select/Vedior – Expresso. É também responsável pela expansão deste projecto para a consolidação comparativa entre as oportunidades identificadas ao nível do emprego nos mercados de Portugal, Espanha, Brasil e Angola. Além das suas diversas actividades de I&D em vários âmbitos da gestão profissional, é *managing partner* do Spirit Consulting Group SL, fundado em 2005, tendo sido responsável pela introdução em Portugal e no Brasil da temática *Managing by Values* e das novas

visões sobre a Gestão da Mudança Cultural das Organizações, integrando o MBV com a filosofia do *Strategy Focused Organization* de Kaplan e Norton. pela sua elevada *expertise* prática na operacionalização de estratégias de negócio sustentáveis através do Balanced Scorecard.

6. OVERVIEW OF CANADA'S LABOUR MARKET PROJECTIONS MODELS

Mario Lapointe[12]

6.1. Context

At the end of the 1970s, high and varied rates of unemployment existed across Canada. In addition to this regional disparity, there existed strong excess demand for certain occupations/skills along with strong excess supply for other occupations/skills. Evidence of increasing regional imbalances were compounded by growing expectations of technological change and globalization setting the stage for major shifts in the labour requirements of individual industries and thus for specific occupations and skills.

Overlaying these challenges was the recognition of the need to absorb into productive employment rapidly growing segments of the labour force, in particular women and aboriginals. These concerns were being addressed in the context of an uncertain environment marked by a low rate of growth in the world economy and by the slow growth of government revenues which intensified the need for cost effective government policies.

The April 1980 Speech from the Throne recognized that new economic policies would be required to provide jobs, spur growth, improve regional balances and provide for an equitable distribution of economic opportunity. The Canadian Parliament was asked to establish a Special Committee on Employment Opportunities for the 1980s. The Government established two task forces within the (then) Department of Employment and Immigration. One task force was to examine the unemployment insurance program while the other would assess other federal policies which influence the operation of labour markets. It was felt that the reports of the two task forces would be the first step in a redesign of government policies to meet the labour market needs of the 1980s.

[12] The views expressed in this paper are the author' and do not necessarily reflect the opinions of Human Resources and Skills Development Canada or of the Canadian government.

The Task Force on Labour Market Development was established in July 1980 within the (then) Department of Employment and Immigration. The goal of the Task Force was «*…to review trends likely to affect Canadian labour markets in the 1980s and to consider the implications for the direction of federal government policies and programs affecting the operation of those markets.*»[13]

In July 1981, the Task Force on Labour Market Development released its final report. It was concluded that a key role of labour market policy is to ensure that the labour market functions freely and that one of the major ways for governments to achieve this is to ensure adequate information about current and future labour market conditions. The Task Force felt that the need for better labour market intelligence was urgent and recommended the creation of an intelligence network to draw on the knowledge and capabilities of business, labour and provincial governments.

The Task Force set down a set of criteria to enable the system of labour market intelligence to meet the coming challenges:

- The labour market intelligence system must supplement adequate information on the current state of the labour market by providing a medium-term outlook and a long-term outlook for strategic corporate planning, career decisions and training programs.
- The time horizon must be consistent with user needs ranging from current information for placement and hiring purposes to medium to long-term information for guiding post-secondary schooling decisions.
- The system should be set up so that both short and long-term needs can be updated to include the impact of a changing environment.
- A range of estimates should be provided.
- Information should be disaggregated in a meaningful manner (skill, occupation and industry) and it should be subdivided geographically.

Following the Task Force recommendations, a labour market intelligence service (called the Canadian Occupational Projection System – COPS) was created in April 1982. Canada has thus been involved extensively in the area of labour market projection for over 25 years.

[13] Employment and Immigration Canada, Labour Market Developments in the 1980s: A Report of the Task Force on Labour Market Development, 1981, p. iii.

6.2. Purposes of Labour Market Projections

The Canadian Occupational Projection System (COPS) is currently operated by Human Resources and Skills Development Canada (HRSDC). Each year, HRSDC uses COPS models to produce a detailed 10-year labour market projection at the national level. The focus is on the level and sources of labour demand and supply.[14] It is done over a 10-year horizon for 140 occupational groupings and 5 broad skill levels. Skill levels are clusters of occupations that have the similar requirements in terms of educational attainment.

The information derived from such projections serves several complementary purposes. First, it assists medium-term policy planning in the labour market area by providing information about the medium-term trends in the following key domains: demography, macroeconomics, the labour force, industrial and occupational employment and in the major sources of labour demand and labour supply.

The forecast of demand takes into account not just where the economy is growing and the types of jobs that will be created but also the age structure of the workforce and retirement trends in order to see how many jobs will be opened up by the need to replace existing workers. The projection of labour supply takes into account new job seekers such as school leavers and recent immigrants as well as people re-entering the labour market. The inclusion of the supply side distinguishes Canada's models from occupational projection models used in other countries. For instance, the U.S. Bureau of Labor Statistics' models look only at the demand side.

By looking at prospective changes in both the demand and supply sides of the labour market, COPS determines whether imbalances could emerge among broad skill levels (i.e. groupings of occupations that usually require the same level of education). It also acts as an early warning system by identifying the occupations where the current and projected states of supply and demand suggest that imbalances could develop or persist over time.

This information also represents a useful tool for policy issue verification and policy analysis. For example, the forecasting models can be used to estimate the impact on labour force growth of increases in immigration or to gauge the capacity of the education system in Canada to meet projected labour demand.

[14] Labour market projections are also done at the provincial level but on the labour demand side only.

Other policy questions are also addressed:

- How many new jobs are expected to be created over the next decade?
- In which industries and occupations will these new jobs emerge?
- How many existing jobs will open up due to retirements?
- What kind of education will be required to fill the job openings?
- Will labour supply be sufficient to meet labour demand?
- What occupations will face significant labour shortage or labour surplus?

These results are published every two years in a report entitled *Looking Ahead: A 10-Year Outlook for the Canadian Labour Market.*[15] The report fills an important gap, as no other publication provides a comprehensive picture of the Canadian labour market. Many public and private organizations in Canada produce reviews of economic conditions and develop short-and medium-term forecasts. However, very few of them focus their reviews and forecasts on the labour market, and none undertakes a detailed outlook by industry, skill level and occupation.

Finally, the information on occupational imbalances can be used in labour market information (LMI) products, such as *Job Futures*,[16] targeted at assisting Canadians in their education and career decisions.

6.3. Canada's Labour Market Projections: The Process

Key ingredients are needed to undertake these labour market projections such as data, classification systems, projection models and partnership and vetting.

The first ingredient is to have reliable data. All the data comes from Statistics Canada, the central statistical agency in Canada. Three primary streams of data are used:

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[15] HRSDC, *Looking Ahead: A 10-Year Outlook for the Canadian Labour Market*. The latest publicly available version can be found at the following address:

http://www.hrsdc.gc.ca/eng/publications_resources/research/categories/labour_market _ e/sp_615_10_06/sp _615_10_06e.pdf

[16] Job Futures aims to provide Canadians with up-to-date labour market information to help them in their career and learning choices. To do that, Job Futures provides information on the current and future labour market outcomes (employment and earnings) for a large number of occupations and post-secondary fields of study. It presents qualitative labour market prospects, based in part on COPS' projections of supply and demand imbalances for the next five years.For more information on this labour market information product, go to http://www.jobfutures.ca.

– Demographic data to undertake population projections.
– Labour market data using the Census and Labour Force Survey for most of the labour demand and supply models.
– Education data for the school leavers model.

The second ingredient is the classification systems. The North American Industrial Classification System (NAICS) is used to derive the 33 industrial groupings. The National Occupational Classification (NOC) is used for the occupations. Canada's projections are based on 140 occupational groupings.[17]

The following sections explain more thoroughly how the projection models are structured to determine imbalances by broad skill level as well as by occupation. Boxes of key results are included to highlight some key results from the major components of the COPS system. The results illustrate how the model outputs could be used for medium-term policy planning and analysis.

6.4. Imbalances by Broad Skill Level

To assess imbalances by broad skill level, we first look at the current situation. Broad skill levels correspond to five groupings of occupations that usually require the same level of education (university, college, high school or on-the-job training) as well as management occupations. Unfortunately, when we look backwards, to the historical record, there is no way to identify clearly, in employment data, the distinction between labour demand and labour supply. So, a direct measure of the gap or imbalance between the two in recent years cannot be obtained. However, if there were significant imbalances between demand and supply by skill level, one would expect to see differences in behaviour of unemployment rates and earnings growth between the skill levels.

Labour market indicators in Canada suggest that labour supply has increased in line with labour demand across most broad skill levels. Both the unemployment rate and real wage for each skill level (relative to the average of the other skill levels) have been fairly flat over the last 10 years.

[17] The National Occupational Classification (NOC) organizes over 30,000 job titles into 520 occupational groups, identified as unit groups, with a 4-digit code. The unit groups are assembled groups into 140 minor groups, with a 3-digit code (those are the ones used in our projections). The NOC can be found at the following address: http://www5.hrsdc.gc.ca/NOC-CNP/docs/Matrix_Poster_English.pdf.

Figure 27 Relative Unemployment rates by skills level, 1990-2007

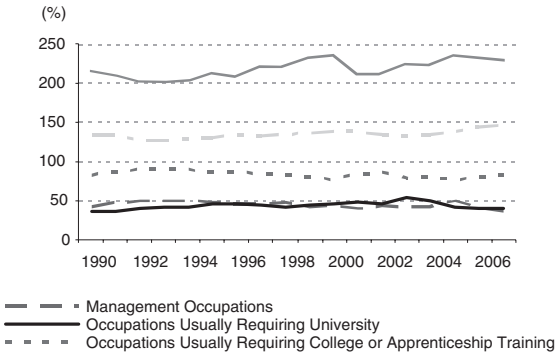
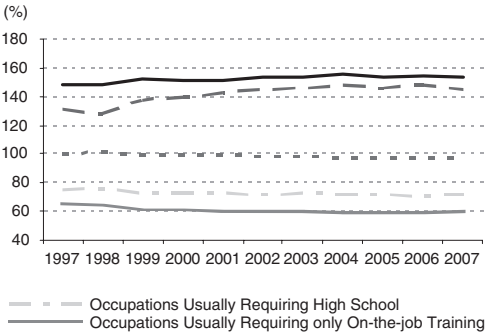


Figure 28 Relative wages by skill level, 1997-2007

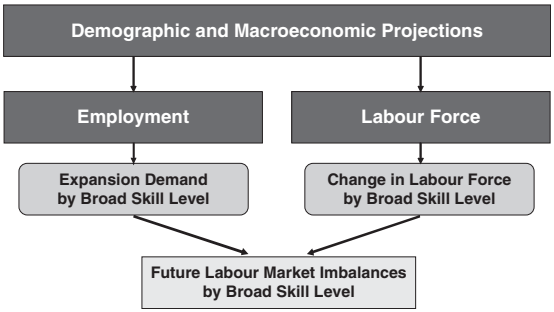


Source: Statistics Canada, Labour Force Survey and Human Resources and Skills Development Canada, Policy Research Directorate Calculations.

What these indicators suggest is that there was no significant imbalance, in recent years, between labour demand and supply by skill level. In particular, these indicators suggest that the strong rise in demand within high-skilled occupations has been largely met by a rising supply of qualified workers.

The aim of the modelling system is to determine whether the labour force will evolve in such a way as to be able to fill the new positions created over the coming ten years. This will allow for the identification of potential imbalances between broad skill levels over the projection period. To assess future labour market imbalances by broad skill level, expansion demand is compared to changes in the labour force. Four models are covered: demographic, macroeconomic, expansion demand and the labour force.

Figure 29 Determination of imbalances by broad skill level



Demography

The first block – demography – has important ramifications. It influences the macroeconomic projections as well as the labour force and its components (i.e. people joining the labour force such as school leavers and immigrants as well as those withdrawing such as retirees).

The demographic scenario provides a projection of population by discrete age, separately for men and women, for every single year. It is based on a set of assumptions on fertility rates, life expectancy, immigration and emigration. For example, it is assumed that the projected fertility rate, which has hovered around 1.6 children per woman in Canada in recent years, will remain below the average number of births per woman necessary to assure the long-term replacement of the population. Moreover, a higher standard of living and advances in medicine should continue to increase life expectancy, but at a slower rate than previously seen. Finally, annual immigration is expected to come in at 0.75 % of the Canadian population, comparable to what has been observed in recent years.

Demography: Key results

- Demographic developments will dominate Canada's labour market over the next decade.
- Population growth is expected to slow down as a result of ongoing low fertility rates.
- The projected increase in the number of immigrants will not be enough to compensate for a lower natural increase (births minus deaths).
- The proportion of youths aged 15-24 in the total population will drop but the number of youths will remain constant. Unlike the case with youths, the share of older persons in the population and their absolute number will continue their rapid increase.

Macroeconomy

The macroeconomic outlook is used to derive projections of employment by industry.

First, a view of overall economic growth is formed, based on a survey of forecasters. This involves looking at the external environment (developments in the U.S. and its outlook is key), the domestic environment (GDP and its components, labour market variables, prices, interest rates, and so on) and the industrial outlook (major projects, provincial and federal budgets, etc.). Second, a macroeconomic model (from the Conference Board of Canada) is used to provide a detailed set of final demand categories. Third, an input/output matrix translates the final demand categories into industrial output. Finally, employment for 33 industries is projected by combining the GDP outlook by industry with long-term productivity assumptions.

Macroeconomy: Key results

- Slower population growth and the effects of population ageing will restrain the economy's capacity to expand over the next few decades.
- This slowdown in population growth is expected to reduce output growth for most industries, while changes in the age structure of the population will modify the industrial structure by favouring service-providing industries, particularly in the health sector.

Employment (expansion demand)

Expansion demand corresponds to the job creation generated by economic growth. It can be referred as «required employment» – that is, the number of people needed to reach a certain level of production, given a specific level of productivity. By occupation, expansion demand is mainly affected by two factors:

– how the industries employing people in particular occupations evolve. For example, job creation among carpenters, masons and plumbers depends on the outlook of the construction industry. This is known as the industrial effect.
– how a particular occupation is affected by structural factors. For example, the development of office automation (computers, email, voice messaging systems, etc.) has affected employment in clerical and administrative occupations. This is known as the occupational effect.

To derive the occupational effect, historical occupational shares by industry are first calculated. The occupational shares are computed as the occupational employment in an industry divided by the total employment in that industry.

Hence, the summation of all occupational shares must be equal to 1 for each industry. A projection of these shares is then performed using simple functional forms, namely trends and an output gap measure.

The employment projection by occupation and industry is obtained by multiplying the projected employment by industry times the projected occupational shares for each industry. The employment projection by occupation and industry can then be summed up across all industries to produce the total employment projection for each occupation. Expansion demand by occupation corresponds to the changes in employment by occupation.

Expansion demand: Key results

- Over the next ten years, approximately three-quarters of the new non-student jobs created are expected to be in occupations usually requiring postsecondary education (university or college) or in management.
- This proportion is higher than the ratio recorded over the past 20 years – when 7 out of 10 jobs created were in high-skilled occupations.
- Job creation will continue to remain firm for high-skilled occupations, driven mainly by health-related occupations, while the recent economic slowdown and the weak performance of the manufacturing sector will negatively impact employment growth in low-skilled occupations. Low-skilled occupations always tend to show the most significant declines during economic slowdowns.

Labour force

Projecting the labour force by skill level is a challenge as there is a need to factor in population ageing, the generational differences in labour market attachment, the rising educational attainment of the population and the occupational distribution of the labour force.

In order to predict future participation rate trends among gender and age groups, a proper understanding of how these rates have evolved over time is essential. To that end, individuals born in the same generation are grouped together and changes in the participation rate are derived by discrete age for these generations. The generations analysed are Depression babies (those born between 1930 and 1939), World War II babies (those born between 1940 and 1946), baby boom (1947-66) divided into three sub-periods, baby bust (1967-79) and part of the

baby boom echo (1980-92). The following charts show the participation rates of these various generations.

Figure 30 Participation rate among woman, average by age by generation, 1976-2007

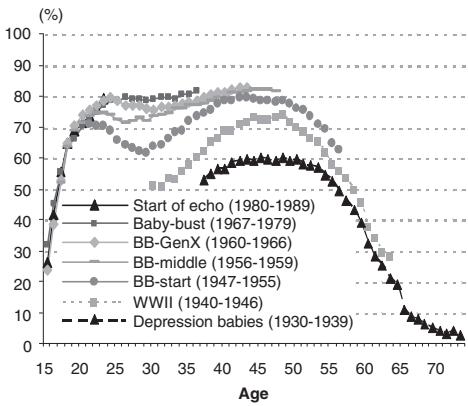
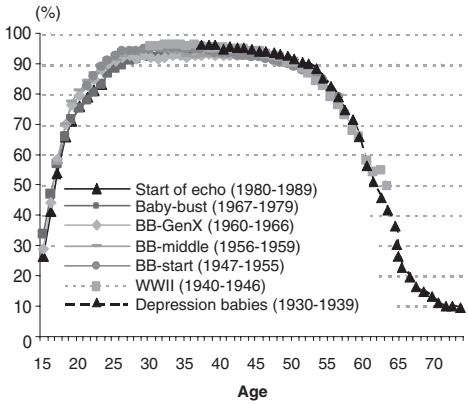


Figure 31 Participation rate among men, average by age by generation, 1976-2007



Source: (1976-2007) Statistics Canada, Labour Force Survey and Human Resources and Skills Development Canada, calculations by Policy Research Directorate.

We can see that for each generation, labour force participation rates increase with age, level off and then start to decline near age 50. We can also see that women have lower participation rates than men, and that they withdraw from the labour market earlier. Also, the participation rate of the most recent female cohorts exceeds that of the previous cohorts. For example, the participation rate among women born during

the Second World War (between 1940 and 1946) was about 50 % at age 30. For 30-year-old females from the front end of the baby boom (born between 1947 and 1955), it was nearly 65 %. The participation rate, among 30-year-old women of the baby bust generation (1967--1979), now stands at 80 %.

This increase in women's participation rate over time can be attributed to a societal shift in attitudes toward women in the workforce. It also reflects the higher percentage of women with a postsecondary education and more ambitious occupational aspirations, a trend experienced in most industrialized countries. For men, intergenerational differences in labour force participation rates are far less evident. The participation rate of younger generations like the baby bust (1967-1979) is lower than that of preceding generations, since more young people are pursuing postsecondary education. At the other end of the spectrum, we are seeing an upturn in the participation rate of men late in their career.

This rising labour market attachment is, however, fading away. The Canadian Department of Finance[18] projects that this positive female birth cohort effect will be exhausted once women born in the early 1950s pass age 65, around 2015. In the meantime, gains in the participation rate for older women of the recent generations will continue.

Labour force forecasts need to also take into account the steady increase in levels of education. We assume that the youth of tomorrow will be as educated as the youth of today, and that, although the educational attainment of the Canadian population will continue to advance, the rate at which it does so will diminish. The baby-boomers were much more educated than their parents. The children of the baby-boomers are also more educated than their parents, but by a narrower margin.

The final step is to convert the labour force into skill level so as to be able to compare it with expansion demand by skill level.

Although it is expected that labour force growth will be stronger for those with a postsecondary education, this does not mean that all of these graduates will seek work in occupations that generally require a university degree, a college diploma or in management occupations. Indeed, there is no perfect correlation between a worker's education and eventual occupation. One thing we have noted is that in occupations typically requiring only on-the-job training, about 30 % of workers

[18] James S., T. Sargent, R. Barnett, C. Lavoie, «The Canadian Labour Force Participation Rate Revisited: Cohort and Wealth Effects Take Hold», Canadian Department of Finance, Working paper 2007-01.

have a postsecondary education. In occupations requiring high school, this ratio is higher, with nearly half of workers having a postsecondary education. Conversely, there is also a significant proportion of less educated workers in highly skilled occupations. For example, nearly 40 % of workers in occupations that generally require a college education or apprenticeship training have a high school diploma or less.

One way to make this conversion is to review the historical labour market experience of individuals with given levels of education. The proportion of the labour force with a given level of education within the 5 skill levels has remained fairly constant over the last 20 years. This is somewhat interesting, given the pronounced business cycles and the major structural changes in the economy and the labour force that occurred during that period.

For example, about 50 % of the labour force with a university degree are found in occupations usually requiring university education, about 20 % in occupations usually requiring college education and about 13 % in management occupations. The remaining 17 % of the labour force is found in lower-skilled occupations. We thus use these distributions to project the labour force by skill level.

Labour force: Key results

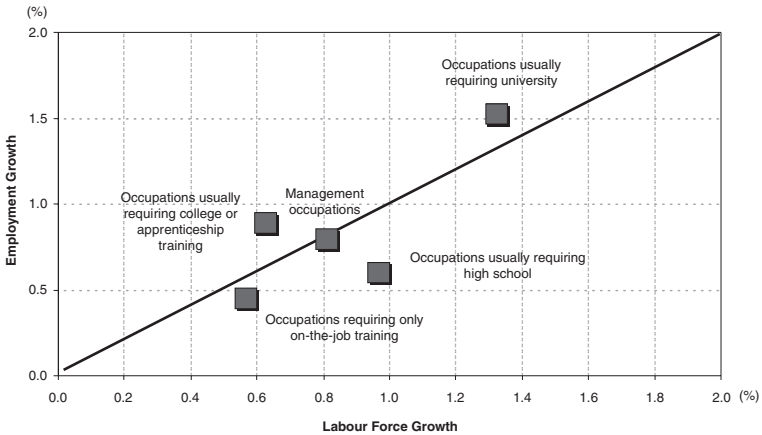
- The rate of growth of the labour force is expected to slow. This will be caused by weaker growth of the source population and the decline in the overall labour force participation rate after a decade of strong gains.
- Older persons will account for a larger proportion of the Canadian population, and this category of individuals has the lowest average participation rates. The resultant shift in the makeup of the labour force will translate into a decline in the overall participation rate, despite an expected increase in the participation rate among all gender and age groups.
- The overall level of educational attainment, which has risen considerably in recent decades, will continue its upward trend over the next ten years but at a slower pace.

Determination of imbalances by broad skill level

Now that we have both the expansion demand and labour force changes by broad skill level, we can compare them. In the chart, average annual growth rates in the labour force and employment are plotted around a 45°line to provide some insight into the future balance among broad skill levels. Overall, the points fall close to the 45° line, which implies that the growth in broad skills usually required by employers and in the

qualified labour available should be roughly in balance over the next 10 years.

Figure 32 Annual growth of the non-student labour force and employment by broad skill level, 2008-2017



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

Imbalances by Broad Skill Level: Key results

- Labour market indicators point to a current balance between expansion demand and changes in the labour force by broad skill level.
- The projection models show that this balance is expected to remain over the next 10 years.
- Policy implication: there seems to be an appropriate balance between labour demand and supply when one looks at it from an educational perspective (i.e. level of educational attainment not fields of study).

6.5. Imbalances by Occupation

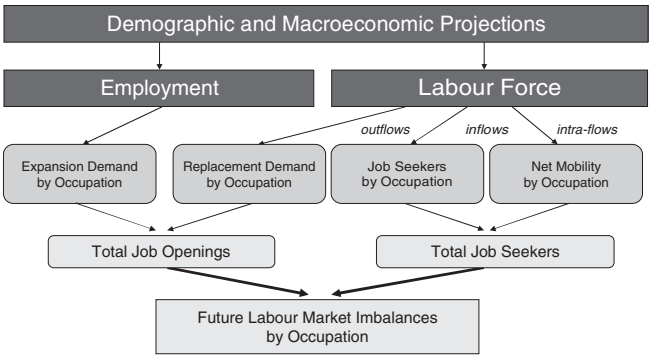
Let's turn now to how future imbalances by occupation are determined. The analysis by occupation is about the non-student labour market. It is the jobs that students will hold after leaving the school system that are of interest, not the temporary jobs that they have while doing their studies.

To assess future labour market imbalances by occupation, a more detailed, although conceptually similar, approach is used. The use of more detailed models allow to project likely trends over the medium

term in the level and sources of labour demand and labour supply by occupation – a key objective. Some policy issues such as the labour market performance of immigrants or school leavers can also be addressed.

This schematic below shows how imbalances by occupation are determined.

Figure 33 Determination of imbalances by occupation



Source: Human Resources and Skills Development Canada, Policy Research Directorate, 2008 Reference Scenario.

Here, the movements of the labour force are shared out into three components: the inflows, the outflows and the intra-flows:

- The «inflows» are job seekers entering the labour force for the first time such as school leavers and recent immigrants, as well as people re-entering the labour force. Projections for each occupation are done separately for these three types of job seekers.
- The «outflows» are people leaving the labour force for reasons such as retirements, deaths (also referred to as «in-service mortality») and emigration. It is assumed that these job openings need to be filled. This corresponds to replacement demand. Separate projections by occupation are done for each of these reasons: retirements, deaths and emigration.
- The «intra-flows» are individuals currently in the labour force that move into occupations outside their current skill level [note that the occupational mobility within the same skill level has not yet been modelled]. The projected «intra-flows» are based on historical trends and do not represent adjustments to respond to projected demand/supply imbalances.

Once this is done, replacement demand (the «outflows») is combined with expansion demand to come up with the total number of job openings. Job seekers (the «inflows») are combined with net mobility (the «intra-flows») to come up with the total number of job seekers. Future imbalances by occupation are assessed by comparing the number of job openings to the number of job seekers over the next 10 years.

6.5.1. Job Openings

Job openings are comprised of two primary components: expansion and replacement demand. The first one, the creation of new jobs as a result of economic growth, has already been covered. Accordingly, the following sections first review the key component of replacement demand, i.e. retirements, followed by deaths and emigration.

Retirement

The retirement model captures the number of jobs that open up because of older workers permanently leaving the labour market. A multitude of definitions and estimation methods exist by which one could measure retirement. The most appropriate definition for occupational projection purposes is that of a «complete and permanent withdrawal from the labour market». However, there is no comprehensive dataset in Canada capable of providing reliable detailed information using this definition.

A comprehensive review of existing Canadian data sources revealed that the Longitudinal Administrative Databank (LAD) is the most appropriate one for estimating historical permanent retirement flows. The LAD was chosen primarily for its large representative sample of older workers and its longitudinal nature, two critical characteristics for developing an aggregate time series of retirement flows. Survival analysis has revealed that tax filers over the age of 50 who have been away from paid work for 3 years or more are very unlikely to return to the labour market. Hence, this benchmark was established as a standard for measuring retirements. But, because the LAD does not contain any occupational detail, a separate model is used to compute the occupational composition of retirements.

Three primary components govern the evolution of retirements. Population is the most important of these, while labour market attachment (as measured by the employment rate) and retirement behaviour (measured by the probability of retirement) constitute the other necessary

components. The methodology described below estimates these three components in order to arrive at an estimate of headline retirements.

- Employment projections by single age and gender are produced by combining the demographic projection with employment rate projections. Data on population by single age and gender are obtained from the demographic projection while employment rate projections propagate cohort-based changes in the share of the population which is employed. They are constrained to the aggregate unemployment rate and to the age and gender specific labour force participation rate projections.
- Annual retirement probabilities are obtained using the LAD, with those aged 50 and over separating from a job and remaining non-employed for at least three consecutive years being classified as retired. These LAD-based probabilities are computed as the number of retirements over the number of employed persons by single age and gender. This estimate is then projected forward using key behavioural drivers. Recent research has identified 5 primary drivers which significantly affect the retirement decisions of workers. These are the unemployment rate (as a proxy for cyclical factors), household net wealth holdings, the crowding effects of excess labour supply, implicit subsidies for retirement embedded in defined benefit pension plans, and birth-cohort or «generational» effects. The end result is an estimate of trends in the probability of retirement by single age and gender over the coming decade.

A projection of retirement is then obtained by multiplying the projected age-and gender specific retirement probabilities to the projected age-and gender-specific employment levels.

Retirement levels by occupation are obtained using the Labour Force Survey. Annual occupational retirements from the LFS are estimated as the number of employed workers approaching the LFS median retirement age. The estimate captures potential retirements rather than a clear cut projection of actual retirements. This is done by ageing the LFS employment profile of an occupation forward and calculating the average annual number of employed workers within five years of that occupation's median retirement age (which is assumed to remain constant over the projection period). The end result is occupational projections which are then normalized to ensure that they sum up to the headline retirement projection.

Retirement: Key results

- Over the coming decade, the number of retirements will increase markedly in Canada. This rise is due to the entry of the baby boomers into their retirement years.
- However, after the majority of the baby-boomers enter retirement, the new flows into retirement will stabilize somewhat until 2030. Retirements will then start to rise gradually, coinciding with the echo boom generation entering their retirement years.
- Retirement pressures are highest in occupations with an older workforce (such as in management) and where the retirement age is relatively low (such as in public administration).

Other components of replacement demand

Two other components of replacement demand are estimated: deaths and emigration.

Occupational deaths are computed using Statistics Canada demographic data. Aggregate death rates by single age are obtained by dividing deaths by population. These rates are projected forward using an autoregressive model and are applied to the occupational employment projections by single age. The aggregation across all age groups produces the occupational death projections. Occupational characteristics are taken into account simply by the age structure of the occupation. Hence, no information on occupation-specific risks enters the projections.

The estimation of emigration by occupation is done in four stages. First, it is assumed that net annual emigration will represent a fixed proportion of the Canadian population (0.14 % for an average annual emigration level of 48,000 people). Next, the historical data from the Annual Demographic Statistics are used on the proportion of emigrants aged 15 and over to obtain a projection of the emigration source population. Then, the number of emigrants who would have participated in the labour force is determined by using the overall participation rate projection. Finally, emigrants are distributed by occupation using occupational distribution of the non-student Canadian labour force in 2007.

Job openings: Key results

- Jobs are expected to open up as a result of increasing economic activity creating new jobs and the far-greater need to replace workers in existing jobs.
- In total, replacement demand will account for over three-quarters of job openings, higher than in the last 15 years, when job openings were equally divided into expansion and replacement demand.
- About two thirds (67.2 %) of all job openings over the next ten years will be in occupations usually requiring postsecondary education (university, college or apprenticeship training) or in management occupations (which often but not always require postsecondary education).
- Policy implication: it is important to ensure that the knowledge of older workers is not lost, but transferred to the younger generation.

6.5.2. Job seekers

The job seeker models replicate the dynamics of labour force flows. Over a given period, labour market composition and growth will be influenced by the arrival of recent school leavers (those permanently leaving the Canadian school system, whether as high school drop outs, high school graduates or college and university graduates), recent immigrants and persons returning to or leaving the labour market. The first three groups make up 'job seekers', while the last group, those leaving the labour market, are considered a source of replacement demand.

School leavers

The school leavers model produces projections of the number of people who leave the Canadian school system (whether graduates or not) to enter the labour market.

The first stage consists of projecting enrolments and graduates for four major educational levels: high school, trade and vocational, community college (including university certificates below a Bachelor's degree), and university (Bachelor's degree, university certificates above a Bachelor's degree, Master's degree, Ph.D.). To do so, administrative data are drawn from Statistics Canada's Centre for Education Statistics.

Several factors influence enrolment levels. It is expected that an increase in per capita real personal disposable income will drive up demand for education, and thus enrolments, as education is a «normal» good (i.e., consumption increases with income). An increase in the unemployment rate also boosts enrolments, as it lessens the probability

of employment in the labour market, thus reducing the opportunity cost of pursuing education. In addition, the more the government invests in the education system, through the funding of spaces in the education system or additional financial assistance (e.g., loans and scholarships), the easier it is to access it. Finally, the larger the source population, the higher enrolments should be.

Graduates are then projected based on the number of enrolments in past years. Enrolments are correlated positively with graduates. The more enrolments are observed, the more people should complete the program. The average program length is also taken into account. The second stage consists of estimating the number of dropouts, as not all enrolled students complete their studies. As a general rule, dropouts from a given level of the education system are assumed to be in competition on the labour market with the graduates of the level immediately below. For example, Master's degree dropouts are in competition with Bachelor's degree graduates. At the high school level, the number of dropouts in a given year is calculated by subtracting the number of graduates in the current year (2008) from the number of students enrolled in Grade 9 four years earlier (in 2004-2005, for example). At the postsecondary level, a coefficient based on the existing literature is used.

The third stage consists of measuring the number of school leavers by level of education. School leavers include those dropouts and graduates who do not continue their studies and want to enter the labour market. Foreign students are not included, because if they decide to become Canadian citizens, they will be taken into account through the immigration model.

The final stage consists of sharing out school leavers by occupation. As we all know, people have career aspirations that lead them to choose a certain educational path. They must decide on a field of study and complete the education required to be able to meet an occupation's requirements. In some cases, even if they complete their studies, their aspirations are not achieved. In fact, several factors may prevent them from being able to work in their desired occupation. For example, demand deficiencies or oversupply in certain fields of study may force graduates to seek employment in other occupations. Accordingly, two scenarios are considered for the distribution of school leavers by occupation: the first reflects these access problems, while the second derives a supply that is intended to reflect school leavers' aspirations.

More particularly, the first scenario, called the *ex post* scenario, reflects the experience of recent graduates, including their difficulties in accessing certain occupations. This scenario uses the Labour Force Survey (LFS) data to establish occupational distribution by age and level

of education. This scenario does not restrict graduates to holding an occupation directly related to their field of study or to their level of education.

The second scenario, called the *ex ante* scenario, restricts school leavers to holding occupations directly related to their field of study. This scenario thus makes it possible to derive a supply that more reflects school leaver's career goals.

Immigration

The immigration model produces projections on the number of recent immigrants by occupation. The model is composed of four stages.

The model first establishes a projection of the recent immigrant population. First, it assumes that annual immigration will represent a fixed proportion of the Canadian population (0.75 % for an average immigration level of some 256,000 people). Next, historical data from the Annual Demographic Statistics are used on the proportion of immigrants aged 15 and older to obtain a projection of the recent immigrant source population. Then, the non-student labour force is determined by using the proportion of those who were not attending school and the participation rate taken from the last census.

Finally, recent immigrants entering the labour market are distributed by occupation using the occupational distribution of recent immigrants from the latest Census. An alternative distribution could have been considered, based on immigrants' «intended» occupations before arrival. Some studies have shown, however, that the relationship between the «intended» occupation of immigrants before arrival and their «actual» occupation is not statistically significant. Green (1995) concludes that characteristics such as education and geographic location are more important determinants of occupation than statements of intent at the time of landing.

Job Seekers: Key results

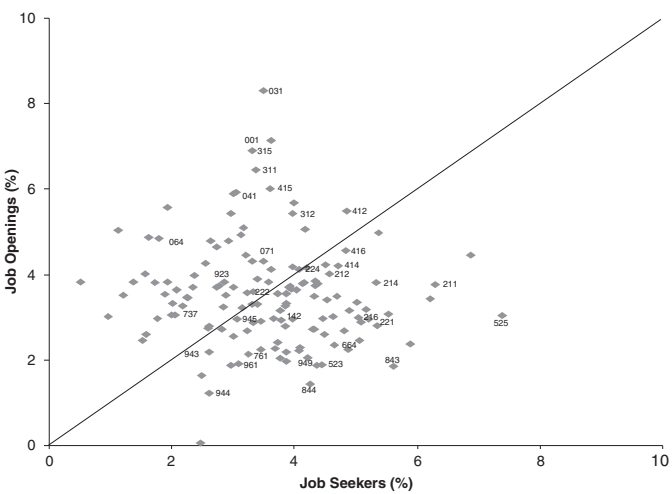
- The number of students coming out of Canada's education system, with educational attainment ranging from an incomplete high school certificate to a PhD, will remain the primary source of labour supply.
- These «school leavers» will account for four fifths of the projected total new annual inflow into Canada's labour supply.
- Overall, close to 69 % of school leavers will have a college or university education over the next 10 years, up from 65 % in the last 10 years.
- The number of new immigrants entering Canada's labour force will be much smaller than the inflow of school leavers.
- Policy implications: it is important to ensure that young Canadians are aware of the educational pathways to tomorrow's jobs.

6.5.3. Determination of Imbalances by Occupation

Potential imbalances by occupation are determined by comparing the number of job openings to the number of job seekers over the next ten years. Projections indicate upward (or downward) labour market pressures in a given occupation when the number of job openings for that occupation is considerably higher (or lower) than the number of job seekers.

The following chart plots projected job openings against projected job seekers on the vertical and horizontal axis respectively. Each point corresponds to one occupation.

Figure 34 Job openings and job seekers by 3-digit occupation (as a proportion of the 2007 employment level), 2008-2017



Imbalances by occupation: Key results

- The points are more dispersed around the 45 degree line than was the case for the broad skill levels.
- This suggests that a number of occupations will be facing excess demand while others will be facing excess supply over the next 10 years.
- Policy implication: labour market information should be produced to assist the young Canadians in their decisions regarding their educational and occupational choices.

6.6. Additional Uses Made of These Labour Market Projections

In addition to being used for medium-term policy planning and analysis, these labour market projections can be used:

– for program-related purposes, such as in the development of a list of occupations that can be used in the federal skilled worker program.[19]
– in the development of labour market information products, and more specifically to derive a qualitative rating of future work prospects by occupation.

Development of a list of occupations in shortages

The identification of occupations showing signs of shortage is done in two stages. First, we assess whether the occupations have shown signs of shortage in recent years with the help of labour market indicators. An occupation is considered to be in a shortage situation when employment and wages in that occupation are increasing substantially faster than in other occupations and when its unemployment rate is markedly lower than in previous years or relative to other occupations. This analysis is carried out using data from the Labour Force Survey for the last three years.

– More particularly, and using the U.S. Bureau of Labor Statistics (BLS) methodology, an occupation is considered to be in a shortage situation if it meets the following three conditions: its employment growth rate is at least 50 % faster than the average

[19] More information on this program is available at: http://www.cic.gc.ca/english/immigrate/skilled/apply-who.asp

for all occupations, wage increases are at least 30 % faster than average and the unemployment rate is at least 30 % below average.

– Since BLS criteria tend to limit the number of occupations showing indications of excess demand, occupations that meet two of the three aforementioned conditions and whose unemployment rates are close to their lowest historical levels (even if their unemployment rates were not 30 % below the average) are included. This is done to take into account the fact that similar unemployment rates do not necessarily indicate a similar tightening of the job market in each of those occupations. For example, an unemployment rate of 5 % is high for nurses but low for occupations in construction.

Then, we identify occupations where the number of job openings due to expansion and replacement demand should greatly exceed the number of job seekers over the next ten years. An occupation is considered to be in a shortage situation if i) it has shown signs of shortage in recent years as well as an excess demand (job openings exceeding job seekers) over the next ten years or if ii) job openings substantially exceed job seekers over the next ten years even if this occupation has not shown signs of shortage in recent years. The size of the imbalance must also be significant compared with the size of employment in the occupation.

Qualitative rating of future work prospects by occupation

Results are also used for Labour Market Information purposes (LMI). Labour market conditions are assessed by looking at job openings, competition for those job openings, the stability of employment and working conditions.

These indicators are combined for each occupation to derive an overall rating: good, fair, limited. Obviously, the forecasting models of labour demand and supply are the main tool used to assess future work prospects.

A «good» rating usually means that it is relatively easy to find steady employment and that labour market conditions are attractive or improving. This would be consistent with high employment growth, high and rising earnings and a low unemployment rate.

Alternatively, a «limited» rating means that individuals who are entering or re-entering an occupation will have difficulty finding steady employment and that labour market conditions are not attractive or are deteriorating.

6.7. Concluding Remarks

Since its creation in 1982, COPS has shifted its focus from one that mainly supported government purchase-of-training decisions to one that generates information on current and emerging pressures to support policy and program developers and to assist learning, skills and labour market decision-making by youths and adults.

The simultaneous existence of occupations where there are jobs without workers and others with workers without jobs are a challenge for matching school leaver and worker skills to the needs of the job market. While the inherent uncertainties of job market prospects mean that matching can never be perfect, it can be improved with better labour market information on potential future shortages and surpluses by occupation and a greater responsiveness of the postsecondary education system to those evolving needs. In addition, the changing nature of the economy and the labour market (as a result of factors such as increased globalisation and population ageing) pose interesting challenges over the coming years. Continuous enhancement will thus be required to take advantage of new data and new methodologies.

6.8. Biographical Sketch

Mario Lapointe is the Assistant Director of the Labour Market and Skills Forecasting and Analysis Unit in the Canadian Department of Human Resources and Skills Development (HRSDC). He is heading a Unit of 12 economists. The mandate of the Unit is to assist the strategic policy research functions by providing labour market analysis, projections of trends in labour supply and labour demand in Canada and policy research on labour market and skills issues. He is also responsible for the Canadian Occupational Projection System, also known as COPS.

Mario joined Human Resources and Skills Development Canada (HRSDC) in 1999. Previously, he worked in several other federal government Departments (Department of Finance; Natural Resources; and Foreign Affairs and International Trade) and the Quebec Department Finance. He holds an MA in Economics from Laval University.

7. THE CONSEQUENCES OF ECONOMIC GLOBALISATION FOR HIGHER EDUCATION AND SKILL FORMATION: AN ANALYSIS AND SCENARIO

Hugh Lauder
Phillip Brown

7.1. Introduction

There are striking parallels between the stories that were told to justify economic policy over the past decade in Britain and America and the stories that have been told about the benefits of globalisation and the knowledge economy. Just as we have been told that the business cycle could be abolished – the end to boom and bust – so the advent of the «knowledge» economy was accompanied by claims that for those that invested in education the rewards would be great. Peter Drucker, (1993) the management guru declared that we were on the threshold of a new form of capitalism in which knowledge workers would replace the owners of capital as the locus of power. He argued that we were in a new stage of post-capitalist development that would lead to a fundamental shift in power from the owners and managers of capital to knowledge workers. Not only would they assume power but with it would come greater autonomy, creativity and rewards. This is a story that politicians and policy makers have sold to the public and it has placed education at the centre of questions of economic competitiveness and social justice. In this scenario, his thinking echoes the pioneering work of Bell (1973) who predicted that the growing importance of «knowledge» work, reflected in the historical shift from blue-collar to white-collar work, would significantly raise the demand for educated workers, who would enjoy greater autonomy in their work.

The fundamental problem with this beguiling account is that it does not take into account the power relations and imperatives of capitalist economies. There have been significant changes to the division of labour and the nature of work in developed capitalist economies in which issues relating to the control of knowledge work have been linked to economic globalisation. But rather than these changes leading to greater creativity and autonomy for the majority of knowledge workers, «permission to think» has only been given to a minority, while (for) the majority of knowledge workers are being confronted by routinisation. Although myths and theories about how capitalism can be harnessed to human freedom have been popular over the past twenty years, the reality

has had much more to do with the dark side of capitalism, routinisation, surveillance, control and exploitation. In global terms there are significant differences, the remarks made here are particularly relevant to the West, while in the economies of India and China, the picture appears different as middle classes and those of the super rich emerge.

In turn this raises questions about the role of education in this re-ordering of the division of labour and of the role of knowledge and skill within it.

The analysis given in this report is based on a study of the skill formation strategies of transnational companies and there will be caveats that need to be entered. However, the broad trends that we have observed are likely to be integral to the advanced and emerging economic superpowers.

In this context we are focussing on economic globalisation in which the MNCs have played a key role in structuring global labour markets and acted as the conduits for learning by the emerging economic superpowers: China and India.

7.2. The Study

The study comprises 190 interviews with senior managers in 20 MNCs in three sectors, electronics and IT, automobiles and finance and senior policy makers. Where possible, interviews within companies were triangulated between head office (in the United States, the UK, Germany and South Korea) and their subsidiaries in China, India and Singapore over time. The timing of the interviews is important because it enabled us to gauge what has turned out to be very rapid change within MNCs over a period between 2004-2007. 65 of the interviews were with policy makers in the seven countries within which these multinationals operated. This enabled us to examine current changes in the ways in which these companies use skills as well as the relationships between them and the national education and training institutions that provided some of the skills they utilise.

7.3. The Analysis

The analysis focussed on three inter-related dimensions to the changing nature of skill and work. Firstly, the nature of skills and reward are fundamentally changing creating significant divisions in what were once considered middle class careers for graduates. Instead of a career ladder, it is clear that corporations are distinguishing between those they consider

the talented who are, typically, fast tracked into senior managerial positions and those that are considered worthy, loyal and committed but who do not have the key ingredients for leadership positions. Beneath them are workers who engage in routine work. There are two reasons for these changes. The first concerns the ideology of the war for talent, in which corporations seek to identify outstanding talent because global corporations now need a range of skills in leadership positions that were not in demand when corporations were embedded in national economies. These new skill sets that only the small minority of «talented» have are therefore highly rewarded. In contrast, much of the work that has been considered knowledge work is now routinised under a process akin to Taylorism, hence we term it digital Taylorism. In turn this requires much lower skill sets, and far lower rewards. Alongside digital Taylorism standardisation of judgements about human beings and their performance have also been introduced.

These changes in the division of labour, skills and reward can only be understood within the context of economic globalisation. Here there are two general points to make. The first is that electronic technology has enabled three key processes that have transformed the nature of work. Here, the standardisation of knowledge work, through digital Taylorism, is perhaps the most important because standardisation is required in order to transfer particular forms of knowledge work offshore. Equally it has enabled the development of packages by which worker performance can be judged by corporations on a global scale. Finally, it has enabled what has been termed the 24 factory, in which corporations can develop projects which follow the sun, thereby reducing the time it takes from innovation to invoice. The notion of factory is a little outdated because as we shall see it applies as much to high level research and design as to more routine tasks.

The second major development which has a direct bearing on graduate jobs concerns the increase in large numbers of highly qualified graduates in Russia, China and India. This has led to a global auction in high skilled jobs since typically graduates from these countries will work for anything between a third (R&D work) to a tenth (computer programming and system analysts) of the wage in the United States or Britain. The pressure of competition has meant that TNCs are seeking to cut costs and the arbitrage of high skilled work is one way in which it can be done.

It should be said that there are clearly differences in the competitive strategies of China and India. China has used MNCs as a way of gaining intellectual property through the rather weak implementation of IPR law and through the ways its corporations have learnt about organisation, management and the production of quality goods and services. However,

it would be wrong to think that China has simply «borrowed» the competitive strategies of western MNCs; its corporations are now developing its own low cost innovation strategies which threaten to disrupt global competition as we know it (Zeng and Williamson, 2007). India, in contrast, has used its maths and IT talent to develop a strategy whereby its service industries establish shop fronts to win projects in western nations and then cut costs in the by undertaking the projects in India. However, it would be a serious mistake to see China focussing on a cheap manufacturing strategy and India as adopting a cheap service industry strategy. Both are now home to cutting edge R&D institutions which relate to both manufacturing and services.

In the following a more detailed account for these changes is given.

7.4. Dividing Graduate Work: The War for Talent

Corporations typically rate their management workers according to sets of what appear to be clearly defined competences. Often referred to as A, B and C players. the A players are believed to be crucial to the future of the company. Every effort is made to retain this group through generous compensation, interesting assignments, and career development:

> You have just got to decide that those people are our future and whether they are kind of A players or they are kind of high potential people lower in the organisation, those are the people that we are going to pay, you know, whatever.

The B players are the «engine house» of the company, they get things done and need to be treated with dignity and paid at a competitive rate. It includes «engineering talent» with extensive experience but «they usually are folk that don't really want to lead the charge». The C players are those that they expect will leave through lack of skill or commitment. Beneath these categories are the routine knowledge workers, we discuss below.

The A category managers are those who are seen as exceptionally talented and as the quote above suggests, will be highly rewarded. We are told that such inequalities are justified because «Talent is the new oil and just like oil, demand far outstrips supply».[20] Consultants at McKinsey popularised the idea of a «war for talent» by arguing that

[20] HEIDRICK and STRUGGLES (2007), Mapping Global Talent: Essays and Insights, p. 2.

talent management had assumed greater strategic importance since the 1980s with the growth of the knowledge economy.[21] This, they suggest, reflects the changing economic role of talent as only 17 % of all jobs required knowledge workers in 1890, whereas now it's over 60 %. The result is that, «more knowledge workers means it's more important to get great talent, since the differential value created by the most talented knowledge workers is enormous.»[22]

In London the head of HR within the banking sector told us:

> We have segmented our employees brutally just in terms of talent. They've gone through quite a tough assessment process over many years now. So we have the group that are recognised as talent, and sadly there is this group who are recognised as not talent. I don't know how I fix that, that's next year's problem. That group who are talented we actively manage them in terms of how long have they been in their current role, what's their next role? They get moved around the world quite a bit. They get stretched and out there.

What is interesting about this war for talent is that the ideology appears ubiquitous, almost every HR executive or manger had on their bookshelf a copy of the book written by Michaels and colleagues who popularised the concept of war for talent (2001). And, it translated into a strategy for recruitment from universities based on a few select universities with high reputations. There were exceptions to this, especially in the motor vehicle sector, but generally it held true for the other sectors we studied and the countries that were part of the study.

Leading transnational corporations gravitate towards the global elite of universities because they are believed to have the best and brightest students. This view is actively promoted by leading universities as higher education has become a global business. The branding of universities and faculty members is integral to the organisation of academic enquiry. Claims to world-class standards depend on attracting «the best» academics and forming alliances with elite universities elsewhere in the world, while recruiting the «right» kinds of students. Universities play the same reputational games as companies, because it is a logical consequence of global market competition between universities.

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[21] MICHAELS, E., JONES, H. H. and AXELROD, B. (2001), The War for Talent, Boston, Mass.: Harvard Business School Press.

[22] MICHAELS, E., JONES, H. H. and AXELROD, B. (2001), The War for Talent, Boston, Mass.: Harvard Business School Press, p. 3.

Leading corporations and elite universities have engaged in a «tango that enhances each other's brands. But when companies recruit from these universities they are merely extending the notion of a brand to new entrants. The issue of recruiting to enhance the brand of the company extends to the highest levels. One of our finance interviewees had an international reputation in relation to banking in China and when he was recruited by a Western bank it made headlines in the financial sections of the papers in China. But by choosing to fish in such a small pond for talent companies are strengthening the barriers to entry: it is as if they are putting a sign out, «those who are not at internationally recognised universities need not apply». What may be considered extraordinary about this strategy is that despite the demand for increased numbers of young managers who can work across the globe, they remain focussed on recruiting from the elite universities in each country. The consequence is that many able students will not get their foot in the door: the ideology of the war talent leads to paradoxically to a massive wastage of talent. The problem is that «talent» that has a reputed university pedigree acts as an effective signal in the new global labour market.

7.5. Digital Taylorism

If it were true that the relentless nature of capitalism was leading to an unprecedented demand for employees to think for a living it would mark a profound economic transformation. But the reality is more complex. Historically, productivity has not come from giving people permission to think but from imposing barriers to individual initiative and control through a detailed division of labour. While the management of knowledge workers poses problems for HR professionals, there is also a major shift to what we called Digital Taylorism (Brown, Lauder and Ashton, 2008). If the era of Fordism, characterised by Mechanical Taylorism, involved the transformation of craft work through «scientific management» (Taylor, 1911; Braverman, 1974), today we are witnessing the translation of knowledge work into working knowledge.

There are many accounts of technology but here we see it as the social organisation of electronic and information technologies to reduce skill and consequently costs while standardising platforms so that the work to be undertaken can be done anywhere with the requisite levels of basic skills.

Digital Taylorism enables innovation to be translated into routines that might require some degree of education but not the kind of creativity and independence of judgement that is often associated with the knowledge economy. In order to reduce costs companies have to move from

knowledge work to working knowledge; that is, from the idiosyncratic knowledge that a worker has and applies, to working knowledge, where that knowledge is codified and routinised, thereby making it generally available to the company rather than being the «property» of an individual worker.

There are many ways in which digital Taylorism can be applied, for example, a leading company producing and selling software handling credit card transactions and credit rating expanded very rapidly over the last decade both within the UK and abroad, mainly through acquisitions. In an interview with the CEO in 2006 he defined the company's major problem as one of how to encourage his staff (mostly university graduates) to be innovative. He thought this was essential for the continued success of the business as they developed products for new markets and customers. Today the problem has changed dramatically. The company has achieved an annual growth rate of 25 % and opened offices across the developed and developing world, including China, India and Bulgaria. There has been a change in CEO, and the major issue in no longer defined as innovation, but of how to align business process and roll out software products to a global market. The creative work in producing new platforms, programs and templates, has been separated from what they call routine «analytics». Permission to think is restricted to a relatively small group of knowledge workers in the UK, while the more routine work (i.e. customizing products to different markets and customers), also referred to as the «grunt work», is offshored to their offices in Bulgaria (where graduates can be hired at a third the cost of the UK) and India.

In Britain we interviewed a premier banking relations manager at a retail TNC bank. He described how he used to have discretion over the amount of money he could lend to a customer. The bank relied on his expertise and judgement in making decisions. Now he no longer has that discretion, it's all done by computer algorithms. He had become a sales person and he had a whole series of manuals as to how to sell particular kinds of products. The knowledge and discretion that he once exercised was no longer required and as he noted, «a junior with a ready smile could now do my job».

There are two points to made from this example. The first is that the application of digital Taylorist techniques encompass the globe. In India we talked to the manager of another TNC retail bank who described exactly the same process as described by our English manager in respect to premier retail banking. He commented that:

> We basically work on something called scorecards (…) you punch in the data, and it moves on to the scorecard, it gives you a score,

> it is related to their (customers) credit effectiveness in a particular transaction and an approval comes through. So it is no longer the discretion of an individual across the table. It is purely, based on *scorecards*.

It is quite alarming how closely this situation echoes the «little Britain» comedy television sketch featuring the character «Carol Beer» a low level bank worker whose emotionless response following each of her customers requests is: «computer says no»!

Secondly, techniques of digital Taylorism are ascending the skills ladder. In an interview with a leading international law firm in the City of London we were told of how they offshored the preparatory work in the development of high profile cases to the Philippines. There lawyers, who would cost £125,000 a year in London, would work at a fraction of the price. This form of labour arbitrage could only work with standardised processes of analysis and of course sophisticated security devices to ensure confidentiality. Clearly, in this case, more professional judgement would need to be exercised than in the bank manager's present role. However, labour arbitrage would not be possible without standardised forms of process and quality control.

7.6. The Standardisation of Judgements About Workers

In order to be able to move workers to where they are most suited or needed TNCs need to standardise judgements about workers across the globe. This gives them a major competitive advantage in terms of the utilisation of talent. To give an example of how this works a TNC retail bank in India described a metric indicator, the Customer Relationship Management System (CRMS):

> which captures a numerical performance of individuals and this CRMS which captures the behaviour of an individual towards an activity (…) and we call it the Staff League Table.

He was asked how this league table was used and how often it was published, to which he responded:

> Every year, which means if I need to, if that particular person in the banking hall needs to know where he or she stands in the country in her particular function. She can just go and open the league tables and she will get to see where her position is.

This comment reveals an assumption that employees will inevitably «need to know» their relative position in the performance hierarchy. Echoing the league tables of schools and universities which comprise the education market as discussed above, these worker evaluation programs eradicate the unique benefits of personal difference (as a good thing). As such it follows there is but one formula determining the quality of a worker and therefore it is possible that pay and promotion are determined on this basis as well as recruitment to other positions, globally within the bank.

7.7. The Global Auction for High Skilled Jobs

The global auction has been made possible by the rapid expansion of high quality universities and graduates in Russia, India and China. In turn this has led to the rapid expansion in the global supply of high skilled workers that also has major implications for the future of high skilled, high waged work in Western nations. Table 3 shows that China had six times as many university students as the UK and almost as many as the US in 2001. It also has plans to increase university numbers to 16 million by 2005, including 600,000 engaged in postgraduate studies. This amounts to 15 % of age cohort. Even more ambitious is the plan to increase enrolment to Chinese senior high schools from 27 million in 2000 to 46 million in 2005.[23] The expansion of higher education in India is following a similar path. There are plans to increase the participation rate of 18-23 year olds in higher education from 6 % in 2002 to 10 % in 2007.[24]

While of degree of scepticism is required with respect to the accuracy of these statistics they show that in six years higher education numbers in China, India and Russia have almost doubled from a combined total of 15.8 to 30 million students. This is almost double the combined total for the US and the UK at 15.7 million. There is therefore a good supply of highly qualified Indian, Chinese and Russian workers entering the global labour market.

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[23] See «Chinese University Students to Top 16 Million» at http://www.edu.cn/20010903/200991.shtml

[24] The figures on China and India where compiled with the assistance of Gerbrand Tholen. For a broader statistical analysis of these issues see Brown, Lauder, Ashton and Tholen, 2005.

Table 3 The expansion of tertiary education in selected emerging and developed economies

Tertiary Education (ISCED 5&6): Total Enrolment (thousands)

	1970	1980	1990	1995	1999/2000	2000/2001
United States	8 498	12 097	13 710	14 261	13 202	13 596
France	801	1 077	1 699	2 092	2 015	2 032
United Kingdom	601	827	1 258	1 821	2 024	2 067
India	2 472	3 545	4 951	5 696	9 404	9 834
Brazil	430	1 409	1 540	1 869	2 457	2 781
China	48	1 663	3 822	5 622	9 399	12 148
Russia	NA	5 700	5 100	4 458*	NA	8 030

* 1994

See Brown, Lauder, Ashton and Tholen, 2005. Derived from the following sources:
UNESCO, Enrolment in tertiary education for the academic years 1999/2000, 2000/2001.

Rather than a magnetic attraction to a specific location, global economic integration has enabled companies to create a new spatial division of labour for high skilled activities including research, innovation, and product development, as well as for low skilled, low waged work.

In the 1960s and 1970s companies such as Ford, IBM or Siemens were characterised as «national champions» as they not only paid taxes that contributed to the public exchequer but also offered mass employment within the home nation. However, the IBM's and Siemen's of the post-war period that controlled all elements of hardware and software production have given way to a fragmented horizontal structure across national boundaries that combine speed and flexibility, while off-loading corporate risk. Facilitated by the personal computer, the internet and an increasing supply of highly qualified employees in developing countries, these networks extend across the globe, particularly to the Pacific Rim, India and Eastern Europe.

Saxenian (2002) has charted the development of this industry.[25] The story starts with an increasing numbers of Taiwanese, Indian and Chinese students enrolled in Ph.D programmes in the United States.[26] During the 1980s Taiwan sent more doctoral students to the United States than any other country. The first generation of these students tended to stay in the United States, working in the semi-conductor industry before returning home to establish their own businesses. Encouraged by government policies approximately 6,000 doctoral engineers were returning home each year by the mid-1990s (Saxenian,

[25] See also Saxenian1994, 2000a, 2000b, 2002.

[26] See also Alarcon (1999).

2002). The combination of the knowledge and networks established in the United States by the first generation of IT entrepreneurs, coupled with the critical mass of expertise of returnee graduates, enabled Taiwan to capitalise on the possibilities of a horizontally structured industry operating across national boarders.

The emergence of the electronics industry in Bangalore in India also demonstrates how less-skilled employment in the IT industry was exported from Western economies to enclaves in the developing world (Kobrin, 2000). The education and training of electronic engineers provided the necessary human capital for the electronics industry in Bangalore to take off. But contrary to the view that only lower skilled work would be subject to price competition, the IT industry suggests that this is at best wishful thinking. India's tertiary education system now trains over 67,000 computer science professionals annually and another 200,000 enrol each year in private software training institutions.

The cost advantage to companies employing software professionals in India in comparison to the United States is presented in Table 4:

Table 4 Salaries of software professionals in the United States and India, 1997 (OECD 2000)

	United States (USD per annum)	India (USD per annum)
Help desk support technician	25 000 - 35 500	4 400 - 7 000
Programmer	32 500 - 39 000	2 200 - 2 900
Network administrator	36 000 - 55 000	15 700 - 19 200
Programmer analyst	39 000 - 50 000	5 400 - 7 000
Systems analyst	46 000 - 57 500	8 700 - 10 700
Software developer	49 000 - 67 500	15 700 - 19 200
Database administrator	54 000 - 67 500	15 700 - 19 200

Source: OECD Information Technology Outlook, OECD, Paris, 2000, p. 140.[27]

It can be seen from this table that Indian programmers are around 14 times cheaper than those in the United States. But much of the work of Indians in the past has been at the low end of the market. Saxenian

[27] Notes for Table 4. Figures starting salaries for large establishments employing more than 50 software professionals. They may be marginally lower for small firms. Salaries for a particular designation vary owing to factors such as educational and experience profile of the professional; platform of operation; nature of the assignment (contract/ /full-time); location of the employer; and the additional technical/professional certification Converted at exchange rate of INR 41.50/USD, Source: INFAC, Bombay (1998).

(2000) has shown that the annual revenue per employee in the Indian software industry was $15-20,000 whereas in Israel and Ireland the corresponding figure was $100,000 per employee. However, wages have risen in Bangalore and there is now concern that, with increasing competition from China, Russia and Romania, amongst others, the industry will price itself out of the market unless it moves into higher value added production (Yamamoto, 2004). This may be facilitated by the large numbers of Indian entrepreneurs in Silicon valley where in 1998 they were running more than 775 technology companies, accounting for $3.6 billion in sales and 16,600 jobs (Saxenian, 2000).

This fundamental change in the division of labour has enabled transnational corporations to engage in a Dutch or reverse auction whereby they can locate work where it is cheapest. The key to understanding why this is possible is that now with the advent of the processes described above quality = price. Whereas once high quality could only be undertaken in the west, now it can be done almost anywhere, as long as there is a supply of high quality graduates and it is this that has turned the assumptions regarding globalisation on its head. Where once it was assumed that the west would do the brain work (Reich, 1991, Rosencrance, 1999) now that is no longer the case.

While the global auction is now a key feature of skill strategies, it is not always the case that all high skilled jobs will go East. For example, there are good reasons why TNCs will keep some of the high skilled work in the West: the concept of 24 hour project work which follows the sun is an example.

7.8. Following the Sun

We found most manufacturing companies operated in this way, not only with research but also design. A leading German motor vehicle manufacturer offered this example of following the sun:

> Stuttgart, Mumbai and Los Angeles in a 24 hour cycle, so we have round the clock. So there is a studio at Los Angeles the main part is at Stuttgart, in India we have some electronic design and other design parts, Italy we have some internal design, but they are connected and they are working 24 hours a day. In India people are working when it is night in Germany and German employees pick up the direction in the morning and continue.

This is an example of 24 hour design work but it also applied to R&D. An American motor manufacturer had recently set up a new research

centre in India. This centre specialised in the virtual modelling of the production process because they were able to recruit talented IT and Maths graduates. When asked whether they worked in virtual teams on the same projects he replied by saying that they also «followed the sun», with work project work initiated India, now being extended across the globe so that virtual modelling could be undertaken across the globe on a 24 hour basis.

The question to be raised is what effect these processes will have on education and in particular on universities with respect to issues of creativity.

7.9. The Role of Knowledge, Creativity and Education in the New Division of Labour

In order to develop a scenario, we need first to examine the situation in the HE sector. Here there are two related dimensions. The first concerns the way the university sector is differentiated by social class. The second is how these class differences map out in terms of teaching and learning.

7.10. Social Class and University Participation

Recent figures for the socio-economic profile of UK universities show that those from the upper end of the socio-economic scale dominate elite universities. For example, the university with the highest percentage of students from top socio-economic backgrounds (band 1, 2 and 3) in 2006/7 was Oxford with 90.2 % followed by Cambridge with 88.5 %. These are followed by some of the top ranked non Oxbridge universities including Bristol (85.7), Durham (85.2) and Warwick (82.6). In contrast those who attract the most working class students include the new universities such as Wolverhampton (51.3), Bradford (49), Sunderland (48) and Greenwich (46.4).[28]

These data suggest that as the higher education sector has expanded so it has also become more differentiated by social class. While it appears that there has been some improvement in access to the HE sector for working class students (Gorard, 2008) it does not follow that all students will have the same life chances in the labour market, nor that they will have the same experience at university.

[28] These data are taken from HESA.

A similar story applies in America. Bowen, Kurzwell and Tobin (2005) have documented the inequalities in participation in higher education in the United States. There are several reasons for this but they include the preferential treatment given to alumni of the elite universities and cost. In 2000, the cost of a year at the big three universities, Harvard, Yale and Princeton had reached $35,000 an amount that less than 10 % of American families could afford. By 2004 this had risen to $40,000. And while there was some assistance for less well off students, the majority paid full fees, even then better off families seemed to have captured the scholarships available. At Harvard, the majority of scholarship recipients had a family income of over $70,000 with a quarter having an income of over $100,000.[29] When this is translated into the share of family income that goes on tuition fees, even though there is a reduction for low income families, they still pay an estimated 49 % of. In contrast the proportion of family income paid in tuition fees for unaided students, those that come from wealthy families, is 21 %.[30]

In terms of wages once graduated, there is a clear difference between those who have attended elite universities and those who have attended less prestigious institutions. Hussain, McNally and Telhaj (2008) calculate that for Britain, those from elite universities earn twice the wages of those who attend less prestigious institutions. The question is why? There are many answers that can be given to this question and from the research cited above it is clear that TNCs recruit from elite universities because they believe that they will be getting not only technical skills but the «right kind of person»: in the current management jargon that these are people who will fit into the TNC because of their confidence, initiative, problem solving and communication skills. Arguably, here is a relationship between the way teaching and learning is conducted in the elite universities and those that are less prestigious that reflects some of the differences that TNC managers identify.

The following comments from a TNC in Shanghai underlines just how important it is to be the right kind of person to represent the company:

> in the total pool of (professionals) that are available there would only be a much smaller proportion that (…) I would be interested

[29] KARABEL, Jerome (2005), The Chosen, The Hidden History of Admission and Exclusion at Harvard, Yale and Princeton, Mariner Books, New York.

[30] HILL, Catherine (2003), Gordon Winston and Stephanie Boyd, Affordability: Family incomes and Net Prices at Highly Selective Private Colleges and Universities, Williams Project on the Economics of Higher Education, Discussion paper No. 66, October.

> in because I represent a MNC, I can only recruit people who have at least a certain level of English proficiency, I will only be interested in people who have a certain international sense of business, you know I am only interested in people who do not see themselves as civil servants, you know the 9-5ers, where as that kind of you know qualities maybe accepted by a local company or a state owned company, it is not acceptable to me. So the market is quite small to begin with and competition is extremely fierce because the cream of the crop, everybody, all the MNC's are fighting for them.

7.11. Social Class, Teaching and Learning in HE

Naidoo and Jamieson have sought to examine the impact of consumerism on higher education exploring both the field of higher education in Bourdieuian terms (Naidoo and Jamieson, 2006) and the impact on teaching and learning of where an institution is positioned within the field. They argue that lower ranked universities are more likely to engage in pre-packaged learning materials, for example through e-learning type strategies, and forms of assessment and pedagogy that narrow the tasks that students need to accomplish. In turn the knowledge that is «transmitted» will be pre-packaged and divided into modular form. This view raises the question put by Michael Young (2007) as regards the distinction between knowledge of the powerful and powerful knowledge. The former refers to the knowledge that dominant groups impose on others to their advantage, while the later is the knowledge that is needed in order for individuals to develop an understanding of the world and is potentially emancipating.

The implications of the position developed by Naidoo and Jamieson (2005) is that the knowledge of the powerful and powerful knowledge reside in the elite institutions which are by and large dominated by the most privileged in society, since it is in the elite institutions that powerful knowledge is taught and the pedagogy that is practised enables considerable freedom of expression and creativity.

Given this analysis what is the most likely scenario for higher education, and the fostering of knowledge and creativity?

7.12. Scenario: Higher Education, and the Fostering of Knowledge and Creativity

The analysis developed above leads to a scenario where the decline in professional middle class jobs leads to an intensification of positional

competition for access to the elite universities. Three further factors need to be considered. We are undergoing a financial crisis which will impact on the higher education sector. In turn, there is a question as to whether the present participation target of 50 % of an age cohort attending university in the UK can be met. It may be that some universities will be closed because public debt is so high. In this case positional competition will further intensify. On top of this, fees are likely to rise, especially in the elite universities, when the cap is taken off in 2010. Even without the economic crisis this will act as a deterrent to many middle class, far less working class students. Finally, governments will always support the elite universities because their research is seen as a source of global competitive advantage. Given these near term developments we can speculate as follows:

Greater elitism in relation to university participation.

Within the middle class there will be an intensification of positional competition to get into the elite universities in order to become a high earner. This in turn will lead to greater selectivity with new exams introduced in order for the elite universities to pick the «brightest and best». On current form that will mean recruiting from private schools. In effect educational selection will be increasingly determined by parentocracy (Brown, 1997) – the wishes and wealth of the parents rather than the abilities and motivations of the child. This will extend through the educational market mechanisms to all parts of the educational system. Here it is the sons and daughters of those defined as «the talented» that will capture the places at the elite universities.

7.13. Knowledge and Creativity

The In this scenario, powerful knowledge and associated creativity will reside with the executive and management elite and their state counterparts. Rather than the democratisation of powerful knowledge we are likely to see it even more in the hands of the few. It can be argued that there are countervailing tendencies, such as the internet but the crucial point here is that data and information from the internet needs interpreting and evaluating. Such tools require greater skill and selectivity amongst multiple information sources so as to locate, analyse and use information so as to answer questions, solve problems and make decisions (Kasper; 2000 Leu; 2001). And as has been discussed above it requires powerful knowledge to do so.

Given the rather pessimistic account we have given in contrast to the official scenario that policy makers adhere to and which we outlined at the start of this report, are there counter trends which may challenge the alternative scenario we have presented?

There are several points to make. As many have observed there are political, social and economic infrastructural factors in China and India which may throw their extraordinary economic development off course. For example, in respect of education, there is now considerable graduate unemployment in China and students have frequently rioted because their graduate credentials were considered worthless in the labour market. However, both are vast countries with widely distributed resources and there would only be a major interruption to their development if either country were caught in nation wide social unrest. This does not mean that their development may not falter but short of a fundamental re-writing of the current rules of globalization (see Lyn, 2005) we can expect the trends we have identified to intensify.

7.14. Conclusion

The scenario we have developed is pessimistic but there are further reasons for thinking that it is most likely. In the face of failing financial sectors in The United States and britain, it is unclear how these economies will be rebalanced in order to provide mass employment, especially in relation to skilled work. There is vague talk of launching a new industry in renewables: perhaps but it should be noted that some countries with cutting edge engineering skills such as Germany are well ahead in this respect. For this scenario to be consigned «to the dustbin of history» would require a fundamental change in the politics and economics of Anglo-Saxon economies like the United States and Britain.

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7.16. Biographical Sketch

Hugh Lauder, PhD

Academic positions

Professor of Education and Political Economy, University of Bath (since 1996).

Professor of Education, Victoria University of Wellington, New Zealand (1990-1996):
- Chairperson, Department of Education (1990-1991).
- Inaugural Dean of the Faculty of Education (1991-1994).

Lecturer and Senior Lecturer in Education, University of Canterbury, New Zealand (1982-1990).

Editor of the *Journal of Education and Work* (since 2001).

Educational qualifications

1982. Ph.D., University of Canterbury, New Zealand.
1976. MA., Institute of Education, University of London.
1974. Dip.Ed., Institute of Education, University of London.
1972. PGCE, University of Oxford.
1970. BSc (Econ) Hons., University of London.

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Recent Reports:

LAUDER, H.; EGERTON, M.; BROWN, P. (2005), *Graduate Incomes, New Technology and the Skills Bias Theory: A Heterodox Analysis,* report to the Welsh Assembly.

Selected research grants

2004-2007 Principal Investigator Primary School Composition and Student Progress, ESRC (Grant No RES 000-23-0784) £420,000.

2004-2007 Globalisation and the Skill Strategies of MNCs: A Comparative Analysis, ESRC (Grant No: RES –000-23-0287) £240,051.

1997-2000. Principal Investigator, Education and Training for a High Skills Economy: A Comparative Study (The High Skills Project), funded by the Economic and Social Science Research Council, report Completed March 2000, rated «Outstanding». £155,000

1994. The Smithfield Project Phase 2: $338.000. Funder Ministry of Education (NZ)

1992. The Smithfield Project, Phase 1: A longitudinal study of the Effects of Market Competition on Equity and Educational Standards. $208,000. Funder: Ministry of Education.(NZ)

Recent keynote and distinguished presentations

2007 «Education, Globalization and the Future of the Knowledge Economy», Keynote symposium with responses from representatives of the European Commission and the OECD. *European Conference of Educational Research (ECER)*, Ghent, Belgium, September, (with Brown).

2007 «Education, Skills and Economic Growth?», Keynote Presentation to the 9th *UKFIET International Conference*, Oxford, September.

2004, Lead academic speaker at Public Policy Seminar (Queen Mary College, London University) with Mike Tomlinson on the «Tomlinson Report», November.

2004 Public debate held at LSE, on the paper «*Sociology and Political Arithmetic: Towards a New Policy Science*», in which I was the lead author with A.H.Halsey and Phil Brown. Respondents included Lord Giddens, Lady Blackstone, Professor Amitai Etzioni, October.

2004 Keynote Addresses in Cape Town and Johannesburg, to senior policy makers and academics on skill formation. I had been invited to give these keynotes because the theoretical work I had developed for the High Skills project. The occasion was the launch of a major report on Education and Skill Strategies by the Human Sciences Research Council (SA), March.

2003 BERA Keynote at a Conference on Globalisation and Education, Bristol, June.

Ph.D Supervision

19 Ph.D students and 3 Ed.D., thesis students have graduated.

8. ANEXO

8.1. Agenda de Trabalhos

METODOLOGIAS DE ANTECIPAÇÃO DE NECESSIDADES DE COMPETÊNCIAS E DE CAPITAL HUMANO

– SESSÃO DE REFLEXÃO –
(Lisboa, 9 de Dezembro de 2008)

09h30m – *Sessão de Abertura*, por *Maria Cândida Soares e Roberto Carneiro*

09h45m – 10h45m – *Apresentação* por T*orsten Dunkel, CEDEFOP, UE*
Comentários e dinamização do debate por
Roberto Carneiro

10h45m – 11h00m – Pausa para café

11h00m – 12h00m – *Apresentação* por *Stephen Fuller, School of Public Policy, George Mason University, USA*
Comentários e dinamização do debate por
Fernando Chau

12h00m – 13h00m – *Apresentação* por *Simon Dolan, ESADE, Barcelona*
Comentários e dinamização do debate por
Mário Caldeira Dias

13h00m – 14h30m – Almoço

14h30m – 15h30m – *Apresentação* por *Mario Lapointe, Human Resources and Social Development, Canadá*
Comentários e dinamização do debate por
Ana Cláudia Valente

15h30m – 16h30m – *Apresentação* por *Hugh Lauder, University of Bath, UK*
Comentários e dinamização do debate por
Manuel Mira Godinho

16h30m – 17h00m – *Conclusões* por *Maria Cândida Soares e Roberto Carneiro*

METHODOLOGIES OF ANTICIPATION OF SKILL NEEDS AND HUMAN CAPITAL

– WORKSHOP –
(Lisbon, the 9th of December of 2008)

09h30m – *Opening Session*, by *Maria Cândida Soares and Roberto Carneiro*

09h45m – 10h45m – *Presentation* by T*orsten Dunkel, CEDEFOP, UE*
Comments and debate by Roberto Carneiro

10h45m – 11h00m – Coffe-break

11h00m – 12h00m – *Presentation* by *Stephen Fuller, School of Public Policy, George Mason University, USA*
Comments and debate by Fernando Chau

12h00m – 13h00m – *Presentation* by *Simon Dolan, ESADE, Barcelona*
Comments and debate by Mário Caldeira Dias

13h00m – 14h30m – Lunch

14h30m – 15h30m – *Presentation* by *Mario Lapointe, Human Resources and Social Development, Canadá*
Comments and debate by Ana Cláudia Valente

15h30m – 16h30m – *Presentation* by *Hugh Lauder, University of Bath, UK*
Comments and debate by Manuel Mira Godinho

16h30m – 17h00m – *Conclusions* by *Maria Cândida Soares and Roberto Carneiro*

O Gabinete de Estratégia e Planeamento (MTSS) tomou a iniciativa de fomentar o debate sobre esta temática, para o que convidou um conjunto de investigadores e peritos internacionais a apresentar os seus estudos e experiências no domínio das metodologias de antecipação de necessidades de competências e de capital humano, assim como um conjunto de individualidades nacionais a debater estes mesmos estudos e experiências, à luz das inquietações europeias e, sobretudo, nacionais decorrentes da actual conjuntura económico-social de crise global.

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