Towards A Global Labour Market In A Knowledge-Dominated Economy

Haris Papoutsakis, Technological Education Institute (TEI) of Crete

---

ABSTRACT:

In the past thirty years a huge shift has been noticed in the structure of employment. The booming manufacturing sector, traditional employer until the seventies, slowly and gradually gave place to what many researchers call ‘knowledge intensive services’. In a knowledge economy environment, highly skilled workers and skilled or unskilled migrants around the globe compete with each other for the same jobs. Narrow, economic definitions of the labour market fail to elucidate this shift. Broader definitions, including dimensions like professional occupations, skilled labour and immigration, or import of labour force, are provided in order to describe this new, global labour market.

After elaborating on this matter, the paper focuses on answering two questions. First, which is the best way to face skills shortages in a knowledge economy? This is important because a skill gaps is a symptom that appears even within a global labour market. It can be quantitative, when there is an excess demand for workers with a particular set of skills; it may also be qualitative, when the skill requirements differ from the skills possessed by the existing labour force. Skill gaps can be transformed into labour shortages and skill shortages can lead to unfilled vacancies. Training offered by employers and changes in education and the migration policies are some of the possible answers examined in the paper.

The second question has two branches. To what extent is the above noted shift in employment driven by small businesses? Is the noted transformation towards a knowledge based economy accompanied by a shift to innovative and technology-based start ups or are big corporations still considered most effective for generating and exploiting new forms of knowledge? Answers here vary, especially between Europe and the US, but the research review presented sheds enough light on the issue.

Finally, upon concluding, the paper summarises the most important lessons learned through our study, for those who have to navigate in the rough seas of a global labour market in times of a knowledge-dominated economy.

Keywords: *Labour market, Knowledge economy, Small business, Skill shortage, Migration*

---

1. Introduction

In the past thirty years a huge shift has been noticed in the European structure of employment. The booming manufacturing sector, traditional employer until the seventies, slowly and gradually gave place to what many researchers call ‘knowledge intensive services’ and the supplementary ‘all other services’. The Organisation for Economic Co-operation and Development (OECD) defines knowledge intensive services as business, high tech and communication services, financial services and health and education services. All other services include retail, hospitality, transport, public administration and other community, social and personal services.

A survey covering the thirty years period between 1978 and 2007, using data from the UK Office for National Statistics and building on the above OECD definitions, demonstrates that: In 1978 employees in manufacturing slightly exceeded those employed in knowledge intensive services by approximately 28 to 26 percent. All other services ranked first with a 35 percent. By 2007, though, just eleven percent of employees worked in manufacturing while an approximate 45 percent worked in knowledge intensive services and an approximate 38 percent in all other services (Brinkley, 2008). Furthermore, significant changes and a rapid increase in the numbers of enterprises occupation areas, as well as employees’ professions and specialization sectors in a typical knowledge intensive sector, such as Information and Communications Technologies (ICT) has been observed and measured in both EU and USA (Kostoglou and Paparrizos, 2003). At this point, it must be noted that manufacturing today includes both knowledge based and other sectors, while knowledge based enterprises exist in all industrial sectors and many of the processes characterising the knowledge economy are taking place in both low and high tech sectors.

Within the European Union (EU) it became clear, early enough, that this shift to the knowledge based economy could not be fed by its own work force alone. The Lisbon Agenda (2000) set the ambitious objective for the EU member states to become the world’s most competitive, knowledge-based economy by the year 2010, a goal which today, only a year away from target year, seems unattainable. Some years later, an EU report charged with the objective to assess the Lisbon Agenda, concluded that “Europe needs to dramatically improve its attractiveness to researchers, as too many young scientists continue to leave Europe on graduating, notably for the US. Too few of the brightest and best from elsewhere in the world choose to live and work in Europe” (EU Report, 2004). And very recently, Commission President José Manuel Barroso (2007) announced the EU ‘Blue Card’, aiming at attracting highly skilled migrants, with the following statement: “Labour migration into Europe boosts our competitiveness and therefore our economic growth. It also helps tackle demographic problems resulting from our aging population. This is particularly the case for highly skilled labour. With today’s proposal for an EU Blue Card we sent a clear signal: highly skilled migrants are welcome in the EU”.

As a result, lately, many EU member states launched the first daring steps of new, point-based migration systems that will eventually replace the existing, old fashioned work permit schemes in order to help their businesses recruit the skills needed from abroad and thus transform their economies into a global hub of worldwide talents. But the shift into the knowledge economy is also associated with high level investments in

human and organisational capital, which eventually lead to higher levels of workplace innovation. The interaction between technological change, workplace innovation and a highly skilled workforce has had notable impact on the nature of work over the last twenty years.

There are two main objectives of this paper. First, to take a close look at the labour market for highly skilled workers in the emerging knowledge economy and to find out whether there is a global labour market for knowledge workers; and if yes, what it looks like. This is done in the following section. These workers, who are most likely to be in direct global competition, fall in one of the following two broad categories: researchers or highly skilled migrants, which are examined in more detail in section three. The second objective of the paper is to explore how much of the above noted shift in employment is driven by the Small- and Medium-size Enterprises. Furthermore, to detect if the noted transformation towards a knowledge based economy is accompanied with a shift to innovative and technology-based start ups or whether big corporations are still considered most effective for generating and exploiting new forms of knowledge. Answers to the above two questions are provided in section four, while our conclusions and some significant lessons learned are presented in the paper's concluding section.

2. What Is A Global Labour Market?

Under a narrow, economic definition labour market is described as the locus in which workers compete for jobs and employees compete for workers. From a similar viewpoint, labour force can be defined as the number of people employed plus the number of unemployed looking for a job. Under this perspective it is, indeed, difficult to conceive how labour markets could ever become really global, with workers around the globe competing with each other for the same jobs.

This could only happen if we broaden the definition of labour market by introducing other dimensions rather than just the geographical locus. Such components could very well include professional occupations, skilled labour and immigration or import of labour force. Let us start from a realistic observation: Since the early nineties, economic reforms in countries like China, India and the former Eastern block (mostly in Poland, the Chez Republic, Slovakia, Romania and Croatia) have led to a closer global economic integration, with labour markets also becoming more integrated. Scientists and financial analysts have tried to assess the effect that these global changes might have upon employment in rich countries. 'Sceptics' believe that this new, large and growing pool of cheap labour will flood developed countries and will put pressure on the wages of their labour force. They are afraid that it will eventually lead to the development of, what they call, 'high skill, low wage' economies (Freeman, 2006).

But just across the line stand the 'optimists' who focus on the demand side of the global labour market and the needs of companies for highly skilled workers. They argue that the increased demand of skilled labour in emerging economies like China and India, combined with the declining demographics and the evolution of the knowledge-dominated economy in Europe, will eventually lead to an overall global shortage of skilled labour. Financial media reports in the developed world go one step

further and, with a tone of exaggeration, use slogans like ‘war on talent’ in order to describe the wild competition in the global labour market (Wooldridge, 2006).

Recent research has demonstrated that technological change, apart from leading to workplace innovations and highly skilled workforce, was one of the leading contributors of increasing work intensification during the last twenty years. Computers enabled workers to take more control over their work and facilitated decentralisation of the decision making process; new technologies also allowed managers to more readily monitor workers’ performance. As a result, workers have substantially increased their speed and job efficiency and, at the same time, share their knowledge more widely (Papoutsakis 2007 and 2006; Green, 2004; Rubery and Grimshaw, 2001). As more and more workers contribute with flexible knowledge rather than a prescribed package of skills to the innovative workplace, their jobs and roles tend to advance rapidly; this means that knowledge workers need to remain vigilant and updated on the latest innovation, intelligence and trends (Lang, 2001).

Bearing this in mind, in the following section we shall examine global development and shall further define highly skilled workers in order to better clarify the concept of the global labour market.

3. Skill Shortages In The Knowledge-Dominated Economy

Labour specialists use the term ‘skills shortage’ or ‘skills gap’ in order to describe inadequacy within a labour market. This gap can be quantitative, when there is an excess demand for workers with a particular set of skills; it may also be qualitative, when the skill requirements differ from the skills possessed by the existing labour force. Skill gaps can be transformed into labour shortages and skill shortages can lead to unfilled vacancies. Skill and labour shortages vary considerably across the EU. This is due to the variations of the overall growth performance of each member state economy and is also related to the quality of education, the immigration policies and the geographical position of each member state. Very often, the existing education and vocational training systems fail to adapt, in time, to meet changing demands.

Analysing data for knowledge workers from the European Working Conditions Survey, Rudiger and McVerry (2007) claim that less than half of Europe’s knowledge workforce believe their skills matched their actual job demand and just over half of it have access to training provided by employers. The authors do not fail to mention that this varies strongly within the EU member states. The key component of the knowledge-dominated economy is the effective deployment of a highly skilled workforce. Moreover, the knowledge economy implies a rising demand and premium for skilled rather than unskilled labour. The noticed growing phenomenon of ‘hetero-employment’ (fresh knowledge workforce searching for jobs not vocationally related to its subject of study) and the reported high national unemployment rates in many EU member states are also two important related issues needing appropriate adaptable policies (Kostoglou and Paloukis, 2007).

Scientists are faced with a number of problems when it comes to the assessment of human capital in the knowledge economy and the definition of the ‘knowledge

workers'. The terms knowledge workers or 'highly skilled migrants' are both imperfect, as definitions tent to vary significantly. Usually, knowledge workers are defined as those occupying the top three Standard Occupational Classifications (SOC) categories: managers and senior officials, professionals, and associate professionals; or as graduates and post-graduates. But, no doubt, it is problematic to consider every manager as a knowledge worker. Knowledge workers are, thus, contrasted against the remaining six SOC categories: administrative and secretarial, skilled traders, personal services, sales and customer services, process, plant and machine operatives and elementary occupations (OECD, 2006).

In a study aiming to exploit Europe's knowledge potential, Rudiger and McVerry (2007) notice that the majority of European workers (62 percent) are still non-knowledge workers. This leaves us with a 37 percent of knowledge workers, vaguely defined as those occupying the above top three SOC categories. In their study, the highest number of knowledge workers is noticed in Scandinavia, followed by the Netherlands and the UK.

The OECD, in its *Science and Technology Scoreboard* (2007), gives a narrower definition of human capital in the knowledge economy as 'human capital in science and technology'. With regard to highly skilled knowledge workers it only focuses on 'researchers', defined as "professionals engaged in the conception and creation of new knowledge, products, processes, methods and systems and directly involved in the management of projects" (OECD, 2006). An even more narrow definition is the one limiting researchers to only those possessing a doctorate degree.

The situation is even worse when it comes to the 'highly skilled migrants', where lack of an internationally accepted definition is noted. Migrants are, by nature or their status, difficult to define by occupational standards and their educational qualifications are not compatible. The World Bank uses the broad term 'skilled worker' for those with some secondary or vocational education. The OECD (2007) defines 'highly skilled migrants' as "having completed education at the third level in science and technology related subjects" or as "not formally qualified but employed in a science and technology occupation where those qualifications are normally required". As it appears, the definition of a 'highly skilled migrant' is much broader than that of the 'knowledge worker'. The lack of clear, common and internationally accepted definitions makes it difficult to understand the concept of a global labour market and the various ways that skill shortages are successfully addressed within it.

4. Small And Large Firms In The Knowledge Economy

It is also true that there is no internationally agreed standard definition of what constitutes a business or whether a business is small, medium or large. Commonly accepted standards vary between USA, EU and other parts of the developed world.

David Birch, the renowned economist and MIT business demographer, was the first who showed the importance of small firms in creating jobs and helped give recognition and respectability to the field of small business research. Birch paved his reputation with some remarkable iconoclastic analyses in the mid-1970s. In his well-cited 1979

book, The *Job Generation Process*, Birch classified the USA firm population in wild-life terms. The large, publicly traded firms that have shed millions of jobs over the past two decades are elephants. Small, main street businesses that create jobs when they start up but then grow very little are mice. And fast-growing businesses that start small, then double in size and double again, are the gazelles. Subsequent commentators added a fourth animal, gorilla, consisting of gazelles that turned into major corporations. According to Birch, for the past 25 years, the most effective job creators have been the gazelles and the mice. Among those two, the gazelles have been the prolific ones: some 350,000 of these fast-growing companies have created as many jobs in the recent past as the mice, which number in the millions.

More recently, as reported at the Advocacy's 25th Anniversary Symposium (2001), Birch compared today's shift towards a knowledge-dominated economy to what happened 200 years ago, with the Industrial Revolution in the years 1810-1820. He believes that in the current revolution, the raw material is not steel or rail lines, but knowledge and brainpower. And it is not just the high tech businesses that propel most of the growth; it is the businesses that make efficient use of knowledge, including the tools of technology. As part of this shift, certain knowledge-based gazelles, benefiting from a wide range of new technologies, products, processes and services have successfully transformed into gorillas. Microsoft, Intel and Dell are some examples of companies founded twenty five years ago and are now recognised as world class companies in their particular sector.

Eurostat, the statistical arm of the EU, in an effort to promote harmonization among the EU member states, defines a small business as employing less than 50; medium as employing between 50 and less than 250; and large as employing 250 or more employees. It also includes a 'micro' firm category of between one and nine employees. In Europe, the EU administration has also introduced the term 'small- to medium-sized enterprise' (SME) which is used differently to the way the term 'small business' is used in the USA.

Early studies in the EU, indicated that probably too much was being expected from innovative and technology-based start ups in terms of their overall contribution to employment growth (Tether, 1999). A recent study on UK gazelles by Parker et al (2005), described them as 'middle market' high growth companies with sales between £5 and £100 million and annual sales growth of 30 percent over a five year period. But this growth was rarely sustained as "gazelle like behaviour of firms appears to be fragile" and only a small number of gazelles manage to successfully jump over the barriers to sustainable growth, while the majority "are thrown back into a state of low-growth lethargy".

Gazelles may behave differently in the US and Europe, but gorillas are not frequently noted in Europe. Researches tend to attribute the lack of gorillas in the continent partly to a noted failure to match the USA government support for the high tech sector. Stan and Garnsey (2006) highlight the lead role of this support in generating high growth firms together with other factors that may play an important role, like the advantage of a large home market and the highly developed financial system. And as Sir Geoffrey Owens (2004) explains: "There is no magic bullet available to government which will

produce British versions of an Intel or Hewlett-Packard and no clear market failure which calls for government intervention". Evidently, due to the recent global recession, academics and politician have expressed and interpreted such assumptions in a different way.

The answers to the questions of how much of the employment growth and the shift from employment in traditional manufacturing to knowledge based services were driven by SMEs and how much by large firms differ in EU. Brinkley (2009), summarising recent UK statistics, makes the following important remarks:

- SMEs are major providers of jobs in the knowledge based industries and services as they provide around half of all jobs in the industrial sector and more than half in services.

- In 2006, SMEs accounted for 51 per cent of total employment in the knowledge industries and about 37 per cent of all employees who worked in SMEs worked in knowledge based industries.

- Financial services and telecommunications are the two 'big firm' sectors, within the knowledge based service industries, where employment is heavily (between 80 and 90 per cent) concentrated in large enterprises.

In contrast, business services are dominated by SMEs offering an approximate 60 per cent of total employment.

When Brinkley looks at the number of people working in SMEs and large firms, he notices that employment has grown for both, but the number of people working in large firms has increased significantly faster than those working in SMEs.

There is also strong evidence that knowledge-dominated economies tend to encourage the formation of collaborative networks both among SMEs and between small and large firms. Cooperation among SMEs and between small and large firms has provided a further stimulus to employment and enterprise growth.

5. Conclusions And Lessons Learned

The foregone analysis has demonstrated that employment within the developed world has largely shifted from a manufacturing base to a service base including, at the higher end, knowledge intensive services. In today's global labour market, occupations rely more heavily on knowledge intensity, creation and innovation rather than on routine physical inputs or natural resources as in the past. While there is no official definition of this new 'knowledge economy' it is generally agreed that this sift is, at least partly, due to a combination of general purpose technologies with workers' intellectual and knowledge assets to create value within the organisation.

Nonetheless, a key component of the knowledge-dominated economy is the effective deployment of a highly skilled workforce, which can be either locally available or imported in today's global labour market conditions. The knowledge economy implies a rising demand and premium for skilled rather than unskilled labour. It also suggests a

sharper dichotomy in today's labour force in comparison to the past, with significant increase of highly skilled knowledge workers as against less skilled non-knowledge workers. Migrants also contribute in filling this labour gap but their contribution is not yet equal. The majority of the less skilled non-knowledge workers are found in the southern EU member states, while most of the highly skilled knowledge workers are met in the north. Nonetheless, there are strong indications that there will soon be a balance, with the northern EU member states expected to be the pioneers.

As the supply of skilled workers, local or migrants, increases and as employers demand higher levels of knowledge and innovation output in an increasingly global and competitive market, we might expect to see an increased demand of human capital across the global labour market. This will also make available to the skilled migrants, various components of job quality including skill utilisation, autonomy, perceptions of job security, support and opportunities for advancement, currently available only to the local workforce.

Finally, as the ubiquity of new technology allows knowledge workers to work alone or in overseas collaboration around the clock, they must be adaptable and able to apply their skills flexibly to new situations. At the same time, employing organisations should take measures so that this interaction among technological change, workplace innovation and the highly skilled workforce may create friendlier and healthier working environments for their employees.

6. References

Advocacy's 25th Anniversary Symposium (2001), "Small Business and the Knowledge-Based Economy", US Small Business Administration, November 2001

Birch, D.L. (1979), "The Job Generation Process", MIT Programme on Neighborhood and Regional Change, Cambridge, MA.

Brinkley, I. (2008) "How Knowledge is Reshaping the Economic Life of Nations", Economy Interim Report, The Work Foundation

Brinkley, I. (2009) "Knowledge Economy and the Enterprise: A Knowledge Economy Working Paper", The Work Foundation

Commission President José Manuel Barroso (2007) "Making Europe more attractive to highly skilled migrants and increasing the protection of lawfully residing and working migrants", Press release, IP/07/1575, Brussels, 23 October 2007

EU Report (2004) From the High Level Group chaired by Wim Kok, "Facing the Challenge: The Lisbon strategy for growth and employment", November 2004

Freeman, R. (2006) "The Great Doubling: The Challenge of the New Global Labour Market", Berkley University, August 2006

Green, F. (2004) “Why has work effort become more intense?”, Industrial Relations, Volume 43, Issue 4, pp. 709-741

Kostoglou, V. and Paparrizos, K. (2003) “Occupation Areas, Specialization sectors, and professions in ICT: An overall analysis and selection methodology”, Proceedings of the 9th Pan-Hellenic Conference of the Greek Computer Society, pp. 310-321

Kostoglou, V. and Paloukis, S (2007) “Graduates’ employment in European Union”,
Proceedings of the 5th International Conference “New Horizons in Industry, Business and Education” (NHIBE 2007), pp. 103-107

Lang, J.C. (2001) “Managing in knowledge-based competition”, Journal of Organisational Change Management, Volume 14, Issue 6, pp. 539-553

Lisbon Agenda (2000) European Commission, “The Lisbon European Council – An Agenda of Economic and Social Renewal for Europe”, Contribution of the European Commission to the Special European Council in Lisbon, 23-24 March 2000, Doc/00/7 28 February 2000

OECD (2002) *International Mobility of the Highly Skilled*

OECD (2006) *Science, Technology and Industry Outlook 2006*

OECD (2007) *Science and Technology Scoreboard*

Owens, G. (2004) “Where are the Big Gorillas? High Technology Entrepreneurship in the UK and the role of public policy”, Produced for the Entrepreneurship and Public Policy Project, organised by the Diebold Institute for Public Policy Studies, December 2004

Papoutsakis, H. (2006) “How Far Can Information Systems Support Inter-firm Collaboration?”, Journal of Knowledge Management Practice, Vol. 7, Nr. 3, September 2006

Papoutsakis, H. (2007) “Sharing Knowledge in the Organization: a Retrospective Analysis and an Empirical Study”, Electronic Journal of Knowledge Management, Vol. 5, Issue 2, May 2007 (Special Issue ICICKM 2006) pp. 231-243.

Parker, S., Storey, D. and van Witteloostuijn, A. (2005) “What happen to Gazelles: The Importance of Dynamic Management Strategies”, Warwick Business School, September 2005

Rubery, J. and Grimshaw, D. (2001) “ICTs and employment: The problem of job quality”, International Labour Review, Volume 140, No. 2, pp. 165-192

Rudiger, K. and McVerry, A. (2007) “Exploiting Europe’s Knowledge Potential: ‘Good work’ or ‘could do better’ – Knowledge work and knowledge workers in Europe”, The

Work Foundation

Stan, E. and Garnsey, E. (2006) “Entrepreneurship and the Knowledge Economy, University of Cambridge

Tether, B. (1999) “Small Firms and Employment Creation in Britain and Europe: A Question of Expectations”, CRIC Briefing Paper No 2, March 1999

Wooldridge, A. (2006) “The battle for brainpower”, Survey: Talent, The Economist, October 5th, 2006

Meet the Author:

Prof. Haris Papoutsakis (Greece) is an academic faculty member in the School of Applied Technology at the TEI of Crete, since 1986. Prior to that, and holding an Electrical Engineering Degree from the Athens Technical University and an MBA from the Athens University of Economics and Business, he has had a 12-year career in senior sales and marketing positions for Mobil Oil, Hewlett-Packard and ITT. Apart from lecturing at TEI, he conducted a number of seminars on topics related to improving Industrial Business Management and authored, co-authored and translated five books, in languages other than Greek. He has extensively lectured as a visiting Professor in many EU, ex-Eastern Europe and Latin American universities. After having recently (2005) completed a PhD from the Polytechnic University of Catalonia, he produced eight articles in academic journals and presented 22 more in peer reviewed conferences. His area of research relates to innovation, entrepreneurship, quality and knowledge management and focuses on the industrial inter-departmental relationships and the acquisition of work-related knowledge and skills in education and training.

Prof. Haris Papoutsakis, Electrical Engineering Department, School of Applied Technology, Technological Education Institute (TEI) of Crete, P.O. Box 1939, GR-71004 Heraklion, Crete, Greece.

Contact: Prof. Haris Papoutsakis, 9, G. Georgiadi St., GR-71305 Heraklion, Crete, Greece; Tel: +30 2810 229246; Fax: +30 2810 319281; Mob: +30 6947 083878; e-mail: harispap@career.teicrete.gr and harispap1948@yahoo.com

---