

Ερευνητικό Πρόγραμμα

«Πρόσβαση στην Ανώτατη Εκπαίδευση.

Μελέτη των κοινωνικών, εκπαιδευτικών και θεσμικών διαστάσεων της ζήτησης τριτοβάθμιας εκπαίδευσης, των προβλημάτων και των πολιτικών ικανοποίησής της – μία Συγκριτική και εμπειρική προσέγγιση»

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A study of the social, educational and institutional dimensions of demand for and supply of higher education in Greece.

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Andy Green, Ye Liu and Nicola Pensiero

International Trends in Higher Education Access and Attainment and in Opportunities for Graduates.

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«ΘΑΛΗΣ-ΕΚΠΑ Πρόσβαση στην Ανώτατη Εκπαίδευση. Μελέτη των κοινωνικών, εκπαιδευτικών και θεσμικών διαστάσεων της ζήτησης Τριτοβάθμιας εκπαίδευσης, των προβλημάτων και των πολιτικών ικανοποίησής της – μια Συγκριτική και εμπειρική προσέγγιση»

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International Trends in Higher Education Access and Attainment and in Opportunities for Graduates.

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A Contribution to the Project :

Access to Higher Education. A Study of the Social, Educational and Institutional Dimensions of Demand for and Supply of Higher Education in Greece. Problems and Policies in Comparative-historical and Empirical Perspective.

Introduction

The expansion of higher education has enduring public and private benefits both in developing and developed countries. Since the 1980s there has been a rapid global expansion of recruitment to higher education, such that many countries now have mass higher education systems (Marginson, 2015). This is widely believed to benefit national economies at a time when technological innovation and increased global economic competition demand countries shift their production and services increasingly into the high-value, high skilled knowledge-based sectors to maintain competitiveness and living standards (Brown et al, 1999). The public, non-market benefits of higher education are also believed to be considerable in terms of enhancing social trust, civic engagement and tolerance (McMahon, 2010). At the same time graduate labour markets have become more globalised and competitive (Brown et al, 2013), raising concerns about whether the promises of graduate careers can be fulfilled (Brown et al, 2010). Many countries have experienced substantial declines in earnings in middle class jobs over several decades, and this process has been intensified since the onset of the economic crisis and the ensuing austerity measures after 2008 (Hutton, 2011). Unemployment of graduates has risen in many countries and of those graduates who find jobs many are not employed in jobs which

require graduate qualifications. While the wage premia for graduates have been sustained in most countries (Marginson, 2015b), with both graduate and non graduate pay in decline, there is considerable downward pressure on wages in graduate jobs in many countries. These trends raise serious concerns for many about the future returns to study in higher education, yet undergraduate programmes remain popular, since graduates still tend to do better than those who have not obtained degrees.

Rising inequality is another significant secular trend which impacts on higher education in various ways. Inequality in incomes and wealth has been rising dramatically during recent decades, not only in most developed countries but also in many developing ones (Esping-Andersen, 2005). Extreme levels of inequality, such as are now appearing, not only represent a major challenge to social cohesion; they are also associated with negative social outcomes across a range of areas: from public health and well-being, to social trust, political engagement, social mobility and crime (Wilkinson and Pickett 2009; Green et al., 2006, 2011). Globalisation and changes in the deep structures of modern capitalism may be responsible for much of the longer term economic change (Piketty, 2013). However, skills inequality also has a measurable effect on gaps in earnings, thus contributing to the overall level of inequality and its social effects (Nickel and Layard, 1998; Bedard and Ferrall, 2003). It may also contribute directly to reducing levels of social trust, as some research has suggested (Green et al., 2006). This rising inequality impacts on both the drivers and outcomes of higher education since higher education is a key mechanism in the distribution of future life chances for new generations.

How these trends impact on higher education is complex, however. While expansion of higher education has generally be seen as a democratising process which will contribute towards greater equality, these claims are now contested, as some argue that differentiated mass higher education may even be to contributing to greater inequality (Carnoy, 2011). What is clear, however, is that as higher education becomes massified, it becomes increasingly diversified and differentiated (Clark, 1998; Marginson, forthcoming). This is partly a result of higher education seeking to respond to the more diverse needs of its broader clientelle. But it also reflects the pressures on states from the international rankings to have elite universities which compete well internationally and the needs of governments to economise on costs by

focusing resources on their elite research institutions whilst economising on provision in primarily teaching institutions. The results in many countries seem to be that university types are becoming more disparate and hierarchies of institutions and subjects more pronounced. The greater heterogeneity in quality across institutions is already reflected in the increasing differentiation in the value on the labour market of degrees from different institutions and in different subjects (Green and Zhu, 2010; Reimer et al, 2011).

How do all these trends affect access to higher education, the choices students make regarding undergraduate study, and the future benefits they gain from these choices? This study attempts some provisional answers to these questions by analysing the trends in higher education participation and qualification overall, and by fields of study, and by examining the factors that may be influencing these trends, including the costs and benefits of different types of HE provision. We also look at how these trends are affecting opportunities to access higher education for different social groups. We do this by examining trends across OECD countries for which we have the best data, using a variety of indicators. We also compare the trends in different groups of countries, using a comparative analysis to seek to answer some questions about how different policies and structures in higher education may be affecting the evolutions of student choices regarding access and resulting in equalities in access and qualification in higher education.

Comparative education researchers have long been aware that education systems vary substantially across countries and that the characteristics of systems are related to differences in learning outcomes (Sadler, 1897). It has also been common to identify countries with similar and distinctive system characteristics which are said to represent a particular type or 'model' (in the Weberian 'ideal type' sense) of education and/or training. Such models have been identified, for instance, for English-speaking countries, German-speaking countries, Nordic countries, southern European countries and so on,¹ much in the same way that comparative political economy identifies different types of economies and welfare regimes (Esping-Andersen 1999; Hall and Soskice 2001). Comparative historical analysis seeks to show how these

¹ See, for instance: Green, 1996; Green, 2001; Hall and Soskice 2001, McLean, 1990; Mons, 2007).

different models (or traditions) have evolved over time, due to regional, cultural and socio-political peculiarities and the existence of institutional arrangements which are subject to a degree of path-dependency in the way they evolve.² For most of the history of comparative education such analyses were made using primarily qualitative data and historical methods of analysis. However, since the 1960s there has been a proliferation of international surveys which measure a range of system characteristics and learning outcomes across countries. Increasingly sophisticated statistical techniques, using multiple cross-sectional times series datasets, are now used to explain the effects of system characteristics on learning outcomes across countries (Hanushek and Wößmann, 2010). These techniques have not, for the most, part been applied to higher education. However, we seek here to make a start in this using primarily descriptive data on characteristics and outcomes of HE systems in different countries and groups of countries.

The first part of the analysis looks at the patterns of expansion of higher education participation across countries and groups of countries in the OECD. The second part looks at the diversification of higher education systems and how this relates to the expansion of higher education. First, we investigate the extent to which diversification of higher education provision emerged during the expansion process and what are the patterns of diversification in the OECD countries. By the degree of diversification provision, we mean the presence or absence of non-traditional academic universities and programmes, including technological and vocationally-oriented education programmes and professional programmes within the higher education system. Second, we examine the degree of diversification in governance and funding. We specifically highlight the trends of the proportion of the cost of higher education from public and private sources over time. Lastly, we investigate the outcomes of diversification of higher education systems, in terms of the employment rates and wage returns to graduates in different countries.

² See: Archer 1979; Green, 1990; Thelen 2004; Wiborg 2009.

Expansion of Higher Education across the OECD Countries by Cohorts

Trends in access to higher education can be analysed in different ways. Where data are available we can look at the proportion of a typical HE age group (say 18-24s) that are participating in higher education at different points in time. This gives us picture of changes over time in the proportion who take part in higher education, and gain an extra few years of education, but it tells us little about the proportion who actually complete their courses and gain higher education qualifications. Since completion rates (the numbers qualifying relative to the numbers entering) vary considerably across countries, this this is not very informative about trends across countries in the output of higher education qualifications. A better method is to look at the proportion of different birth cohorts who gain higher education qualifications, and to make deductions from this about trends over time in qualification rates. Here we adopt this second method using the data compiled by OECD from labour force surveys on the highest qualifications held by adult populations in different countries. This has the merit of including qualifications that were gained outside the country in question. We take the data for the different age groups from different survey years to establish higher education qualification rates of successive age cohorts which typically undertook their higher education in each decade from the 1960s. Since very few higher education qualifications are acquired after the age of 25 the slight variation in the survey years will make little difference to the figure for qualification gained by different cohorts.

Chart 1 presents the data on the proportion of different birth cohorts who had attained a tertiary (ISCED 5 Type A or B) qualification at the time of the survey from which the data were taken. OECD defines ISCED 5 A and B programmes as long cycle programmes in either general (A) or vocational areas (B), so these correspond to what is normally referred to as higher education on a broad definition, which includes bachelor style degrees, normally lasting three to four years, obtained in traditional universities or polytechnic-type institutions. Since the vast majority of HE graduates have undertaken their undergraduate degrees between the ages of 18 and 25, and typically between 18 and 23, we use these age ranges to estimate the output of HE qualifications during different time periods. The birth cohorts are selected to represent, as far as possible, higher education qualifications rates in each decade from the 1960s.

Chart 1: Trends in HE qualification rates by Birth Cohorts and Countries

YOB	1977-1986	1964-1973	1951-1960	1943-1952
Country				
Australia	45	38	31	27
Austria	21	19	17	14
Belgium	42	35	27	22
Canada	57	54	43	39
Czech Republic	25	14	13	11
Denmark	39	37	32	24
Finland	39	44	34	28
France	43	31	18	17
Germany	28	27	26	23
Greece	33	27	19	14
Hungary	28	19	16	16
Iceland	39	36	29	23
Ireland	47	37	22	17
Italy	21	15	11	9
Japan	59	48	38	24
Korea	64	43	18	11
Luxembourg	47	28	22	19
Netherlands	40	33	30	26
New Zealand	46	40	27	35
Norway	47	38	30	26
Poland	39	19	12	12
Portugal	27	15	10	7
Slovak Republic	26	14	14	11
Spain	39	33	22	16
Sweden	43	33	28	26
Switzerland	40	36	29	26
Turkey	19	11	9	8
United Kingdom	47	33	28	25
United States	43	43	39	39

Data source: OECD (2007, 2009, 2010, 2013) Education at A Glance
OECD 2007:29 Chart A1.3 <http://dx.doi.org/10.1787/068015451617>
OECD 2009: 30 Chart A1.3 <http://dx.doi.org/10.1787/664024334566>
OECD 2010:36 Table A1.3a <http://dx.doi.org/10.1787/888932310092>
OECD 2013:37 Table A1:3a <http://dx.doi.org/10.1787/888932848077>

The oldest age group, aged 55-64 in 2007, were born between 1943 and 1952 and typically entered tertiary education at 18 years of age in the years between 1961 and 1970. Their HE qualification rates therefore represent the output of tertiary education in the 1960s.³ The next oldest age group (45-54s in 2005) were born between 1951 and 1960 and were undertaking their undergraduate higher education between 1969 and 1978.⁴ Their HE qualification rates represent the output of tertiary education in the 1970s. The age group which was 35 to 44 in 2008 were born between 1964 and 1973 and typically started their undergraduate education, aged 18, between 1982 and 1991.⁵ Their HE qualification rates represent the output of tertiary education in the 1990s. The youngest age group, those aged 25 to 34 in 2011, were born between 1977 and 1986 and typically started undergraduate higher education between 1995 and 2004. They are the youngest birth cohort for which we have highest qualification level data from labour force surveys. They can be used to proxy the outputs of higher education in the period between 1995 and 2004, which is as up to date as we can get using this method.

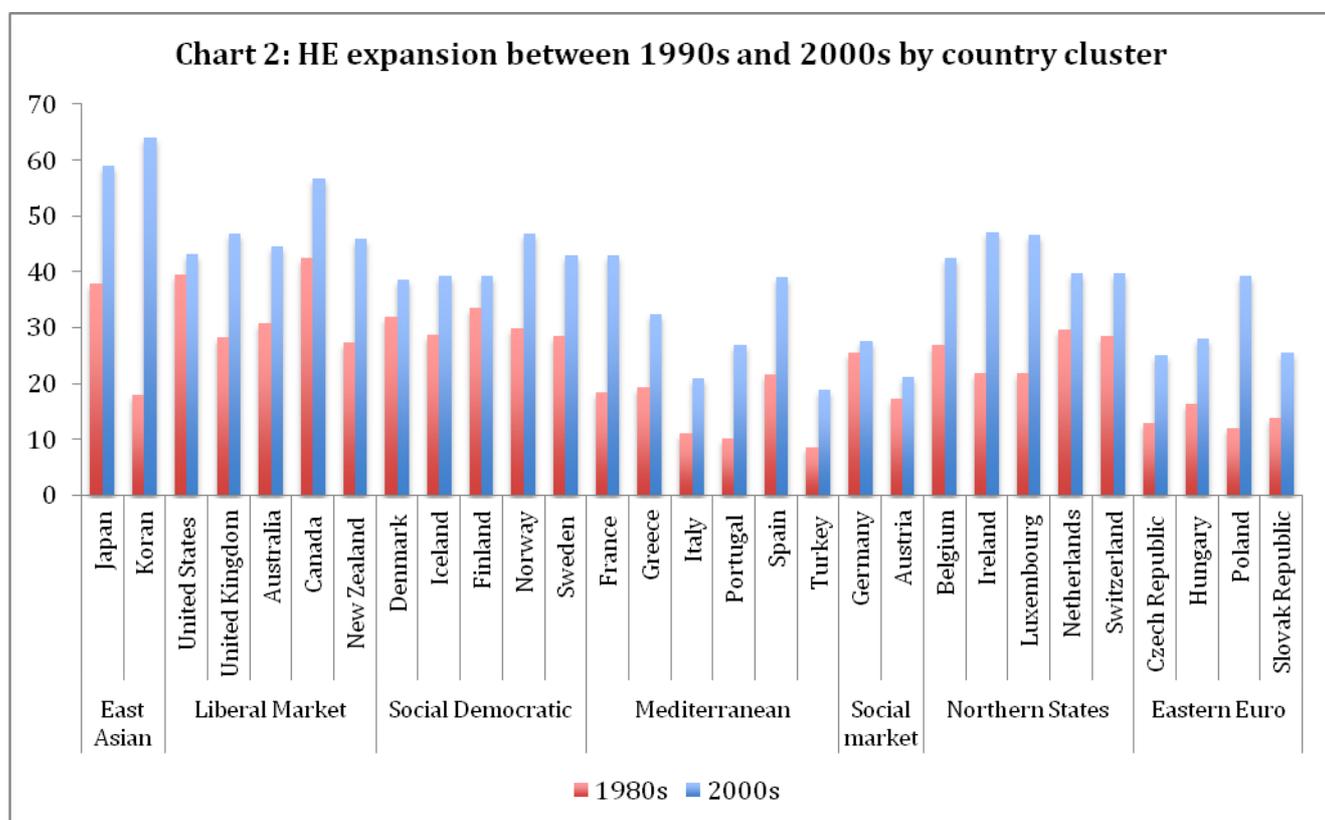
What can our birth cohort analysis tell us about trends over time in higher education qualification rates and what were the patterns of expansion in different countries? First of all we must look at where countries were in the 1960s when the expansion began in most countries. As Chart 1 shows, HE qualification rates varied considerably across countries and groups of countries. Some of the English-speaking countries, such as the USA, Canada and New Zealand, had more than 30 per cent qualification rates for the first birth cohort in the 1960s, with Australia having nearly one-third age cohort achieving higher education degrees. Nordic countries and other northern European countries, including Belgium, Germany, the Netherlands, Switzerland and the UK, had more than 20 per cent HE qualification rates for the oldest age cohort during this period. By contrast, southern European countries (including France, Greece, Portugal and Spain) and Eastern European countries (including Poland and Czech Republic), all had participation rates well below 20 per cent. The two East Asian countries had relatively low participation rates, although

³ Survey data from 2007 (EAG, 2009)

⁴ Survey data from 2005 (OECD, EAG, 2007).

⁵ Survey data from 2008 (OECD, EAG, 2010).

with Japan (24 per cent) at this stage having much higher participation than Korea (11 per cent).



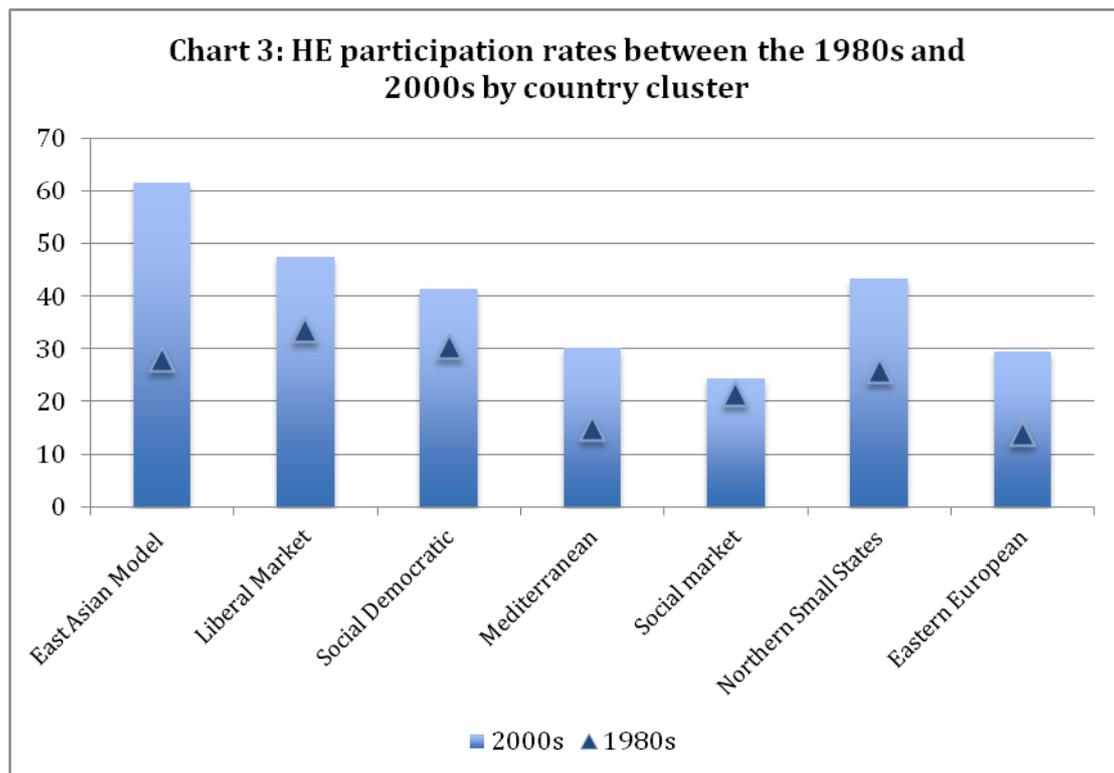
Data source: For 2000s, data are from Education at a Glance (OECD, 2013:37) Table A1.3a; For 1980s, data are from Education at a Glance (OECD, 2010:36) Table A1. 3a.

By the 2000s the patterns of participation across the different countries and groups of countries had changed radically (See Chart 2 and Chart 3). Chart 2 provides a detailed comparison of rates of HE qualification in the 1980s and 2000s by each country, organised into country clusters. The English-speaking countries with relatively high participation rates in the 1960s, still had relatively high participation rates compared with most other country groups. They were now joined by the UK. But the East Asian countries (Japan and Korea), now had far higher participation rates than other countries. By contrast, participation in some of the social market countries, such as Austria and Germany, was relatively low, and lower than in some Eastern European countries, such as Poland and Hungary. Mediterranean countries exhibited quite differentiated patterns of participation, with Italy, Portugal and Turkey having much lower qualification rates than France, Greece along with several other smaller states in northern Europe (including Belgium, Ireland, Luxembourg, the Netherlands, and

Switzerland). Many countries had thus developed mass participation higher education systems by the 2000s. More than two-thirds of the age cohort attained HE qualifications in Japan and Korea; and nearly half of the eligible population on average had higher education qualifications in liberal market countries, including Canada, Australia, the US, and the UK. In the Nordic countries, the smaller northern European countries and in France and Spain, participation had reached around 40 per cent. However, many countries were still well short of majoritarian HE participation and HE qualification. Two of the social market countries, Austria and Germany, had only reached qualification rates of 21 and 28 per cent respectively. Greece and Portugal ranked in the middle spectrum for the Mediterranean cluster with around 30 per cent of the age cohort qualifying in higher education but the rates were only 21 per cent in Italy and 19 per cent in Turkey. Among Eastern European countries, Poland achieved the highest rates (at 39 per cent) by 2000s, ten per cent points higher than their Eastern European counterparts.

The changes in the rank ordering of countries on qualification rates between the 1960s and 2000s is indicative of varying rates of higher education expansion across countries and country groups in the intervening period. Chart 3 demonstrates the changes in the participation rates in these country groups. In terms of the change in qualification rates between the 1980s and 2000s, the East Asian countries, Japan and Korean, experienced the most dramatic increase in higher education qualification with an average 33 percentage point increase in the rates, so that two-thirds of the cohorts were achieving higher education qualifications in 2000s compared to their relatively low participation rates in the 1980s. Small northern European small states, such as the Netherlands, Luxembourg and Switzerland, also experienced relatively fast expansion with on average 17.4 percentage point rises in higher education qualification between the 1980s and 2000s. By contrast, social market countries, including Austria and Germany, had the least change with only three percentage point increases on average in qualification rates between the 1980s and 2000s. Mediterranean countries and Eastern European countries also achieved more than 15 per cent point rises in higher education recruitment, while around a 10 to 14 percentage point increases was observed in the social democratic and liberal market countries. Some questions arise from the statistical evidence on the patterns of the expansion among different country clusters. How could we make sense of the diverging trajectories of the expansion

patterns? How effective was the expansion of higher education for the labour market? By effective expansion, we mean that the provision of higher education programmes and training that would match the skill demands in the labour market. To gain a better understanding of the expansion of higher education, we move on to investigate the diversification of higher education during the expansion process by highlighting absence or presence of diversified types of institutions and fields of study.



Source: Education at a Glance (OECD, 2013:37) Table A1.3a; Education At A Glance (OECD, 2010:36) Table A1.3a.

Diversification of Higher Education Institutions and Courses

One of the key themes regarding the expansion of higher education is concerned with diversification of higher education institutions and qualifications (Marginson, 2015, forthcoming). Researchers in higher education and policy makers traditionally used the status of an institution as a measure to distinguish one from another; a two-tier system separated the elite universities from the rest, for example, the Russell Group in the UK, the Ivy league in the USA and the Grandes Ecoles in France. The main measure used in international comparative research to define the variety of higher

education institutions (for example, OECD) is the programmes and the orientation. Tertiary-type A institutions are categorised as providing ‘largely theory-based programmes designed to provide sufficient qualifications for entry to advanced research programmes and professions with high skill requirements, such as medicine, dentistry or architecture’ (OECD 2013: 23). Type B institutions tend to offer ‘programmes typically shorter than those of tertiary-type -A’ with a ‘focus on practical, technical or occupational skills for direct entry into the labour market, although some theoretical foundations may be covered in the respective programmes’ (OECD 2013: 23). The main difference between two types of institution is the orientation of the programmes (academic or professional), the duration of the courses (3 years or 4 years), intensity of the programmes (full-time or part-time). We will first map out the trends in the enrolment to different types of programmes from the 1960s to the 2000. Estimates are again based on the HE qualification rates of the four ten-year birth cohorts which would typically have gone into higher education in the 1960s, 1970s, 1980s and the mid 1990s to mid 2000s.

Table 1: Enrolments by Types of Programme from 1965 to 2005

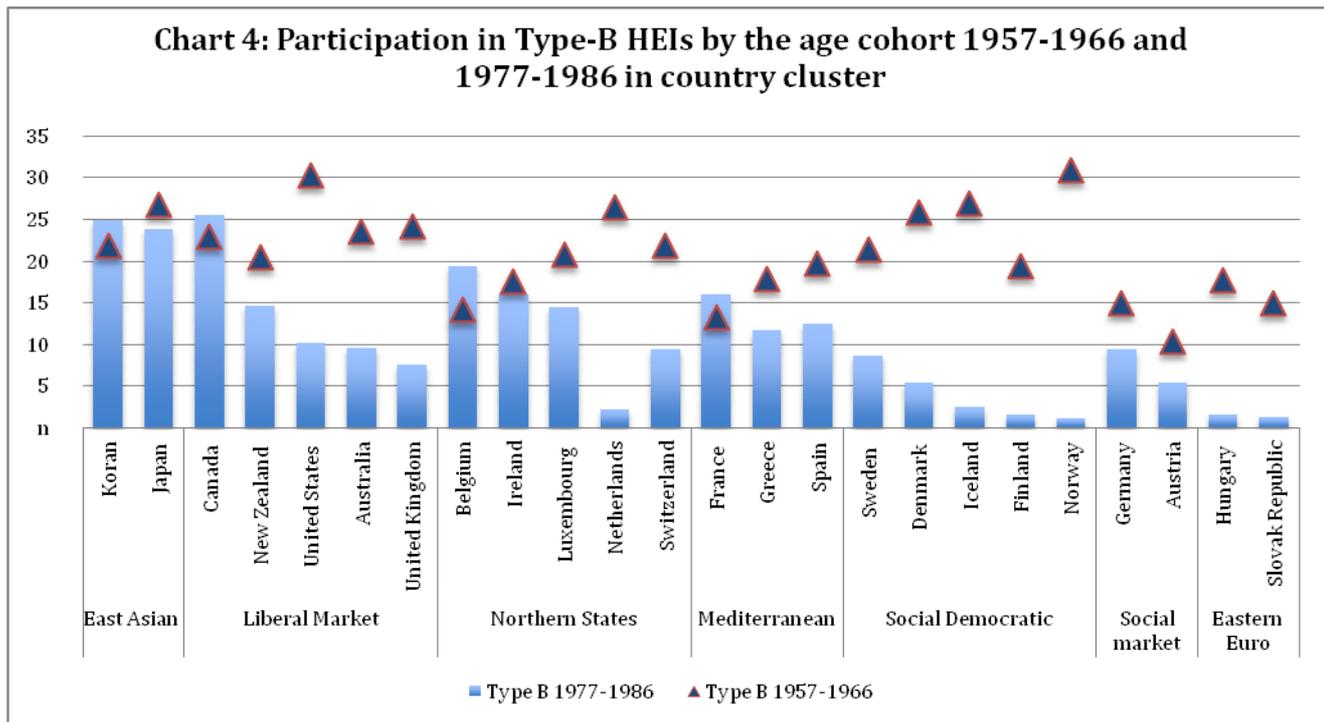
	Type-B	HEIs				Type-A	HEIs		
	1977-1996	1967-1976	1957-1966	1947-1956	1977-1996	1967-1976	1957-1966	1947-1956	
Australia	10	11	12	9	35	30	24	21	
Austria	5	7	8	8	16	14	10	8	
Belgium	19	20	17	14	23	19	14	11	
Canada	26	26	25	21	31	32	23	22	
Denmark	5	6	6	5	33	31	26	23	
Finland	2	17	22	17	38	30	19	15	
France	16	14	9	7	27	21	13	12	
Germany	9	11	12	11	18	18	15	15	
Greece	12	9	6	3	21	19	18	15	
Hungary	2	1	n	c	27	21	18	16	
Iceland	3	5	4	4	37	34	27	20	
Ireland	16	18	13	10	31	26	18	13	
Japan	24	25	20	12	35	26	27	18	
Korea	25	15	6	2	39	35	22	11	
Luxembourg	14	13	10	10	32	27	21	19	
Netherlands	2	3	3	2	38	31	27	24	
New Zealand	15	15	16	16	31	26	20	17	
Norway	1	2	3	3	46	39	31	26	
Slovak	1	1	1	1	24	16	15	13	

Republic								
Spain	12	12	7	4	27	25	20	15
Sweden	9	9	9	10	34	31	21	18
Switzerland	9	12	12	9	30	28	22	18
United Kingdom	8	11	12	9	39	32	24	22
United States	10	10	11	10	33	34	30	31

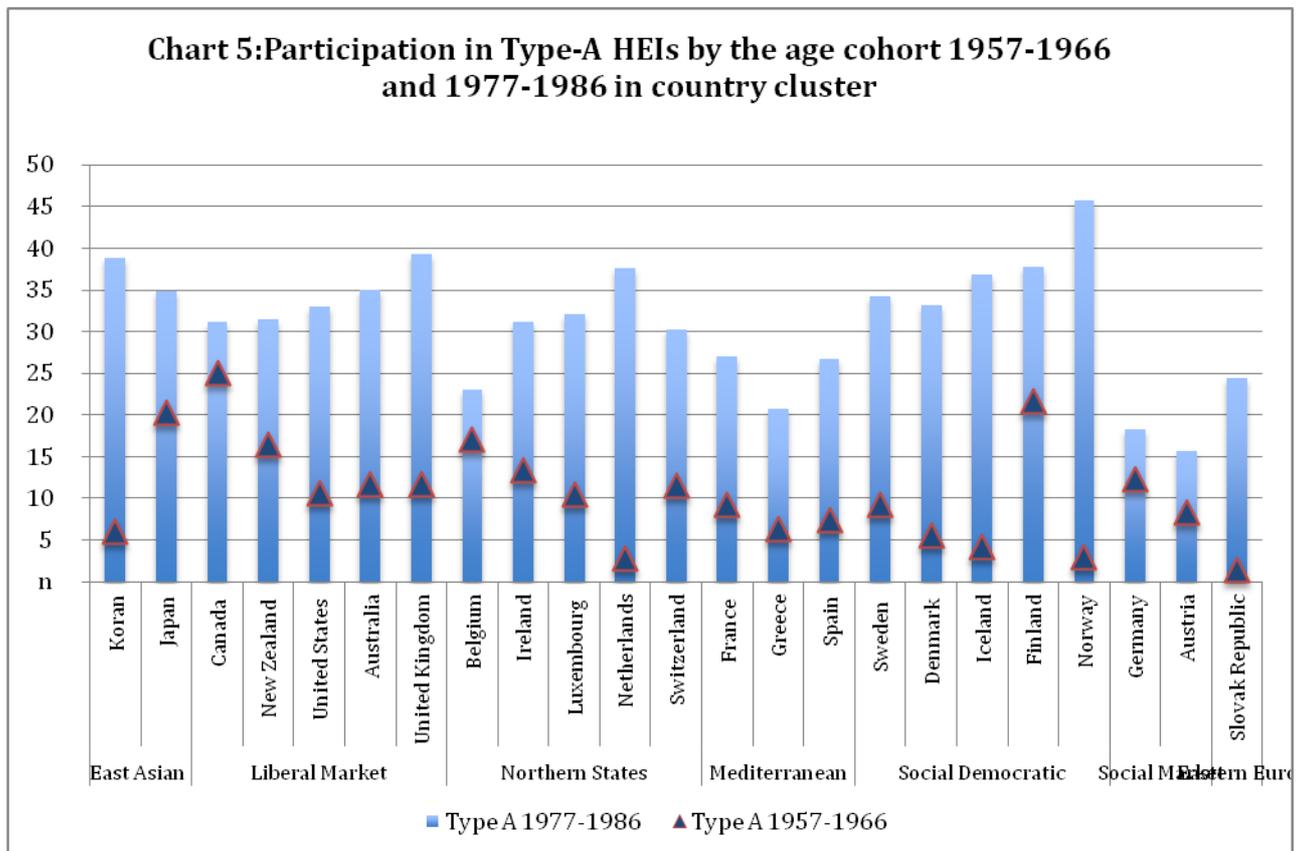
Source: Education at a Glance (OECD, 2013) Table A1: 3a

Table 1 shows that tertiary type A qualification rates rose significantly across OECD countries, while changes in qualification rates for tertiary type B programmes were small, on average, and varied significantly across countries. Type-A qualification rates expanded most dramatically between the mid 1980s and mid-2000s; they were responsible for 75 per cent of the total tertiary qualifications on average in the OECD countries by 2005, a level around 10 percentage points higher than in the mid 1980s. Type-B qualification rates on average remained stable, changing from 33 percent of graduates in the mid 1980s to around 31 percent in 2005.

Charts 4 and 5 show the qualification rates in the two different types of programme for the two birth cohorts (1957-1966; 1977-1986) who would participate in tertiary education in the 1980s and from 1995 to 2005. During the period, in the East Asian countries, qualification rates from type A programmes increased rapidly, whilst qualification rates from type B programmes remained steady. Among liberal market countries, two trends were observed. Australia, the UK, the USA and New Zealand experienced rapid increases in qualification rates from type-A programmes, while their type-B programme qualification rates substantially declined. By contrast, Canada increased its type-B qualification rates at the same time as increasing its type A qualification rates. The dominant pattern in the liberal states, of increasing type A qualification rates and diminishing type B rates, is also found in Social democratic countries, Social market countries, Eastern European countries and Northern European small states. The main exception to this pattern was in the East Asian States and in Southern European countries, such as France, Greece and Spain which maintained or increased their type-B qualification rates at the same time as increasing their type A qualification rates.



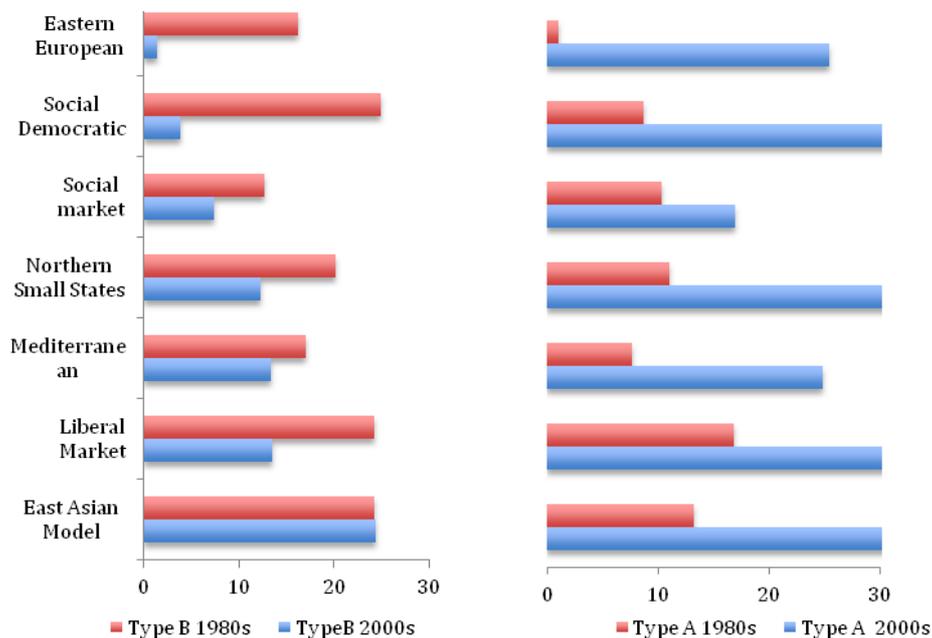
Source: Education at a Glance (OECD, 2013:37). Table A1.3a



Source: Education at a Glance (OECD, 2013:37). Table A1.3a

Chart 6 illustrates the patterns of participation in type-A and type-B programmes in country clusters from 1980s to 2005. Although, in general, the expansion of type-A programmes has been responsible for most of the increase in HE qualification rates in almost all countries, there are some distinctive patterns within this trend. Countries which had the largest overall increases in HE qualification rates, including the East Asian countries (Korea, Japan) and some of liberal market countries (Canada and New Zealand), tended to have relatively strong type-B sectors and qualification rates. The countries whose HE qualification rate increases were least substantial, compared to other country clusters (see Chart 3), were the social democratic countries and the social market countries, where the type-B qualification rates shrank most dramatically over the observed period.

Chart 6: Participation by HEI types between 1980s and 2000s by country cluster



Source: For 1980s, Education At a Glance (OECD, 2010:36) Table A1.3a Column Cohort 35-44. For 2000s, Education at A Glance (OECD, 2013:37) Table A1.3a Column Cohort 25-34. The two column cohorts represent participation in two types in the 1980s and 2000s.

However, there are some exceptional cases in different countries. For example, the UK experienced a dramatic increase in overall HE qualification rates, despite declines

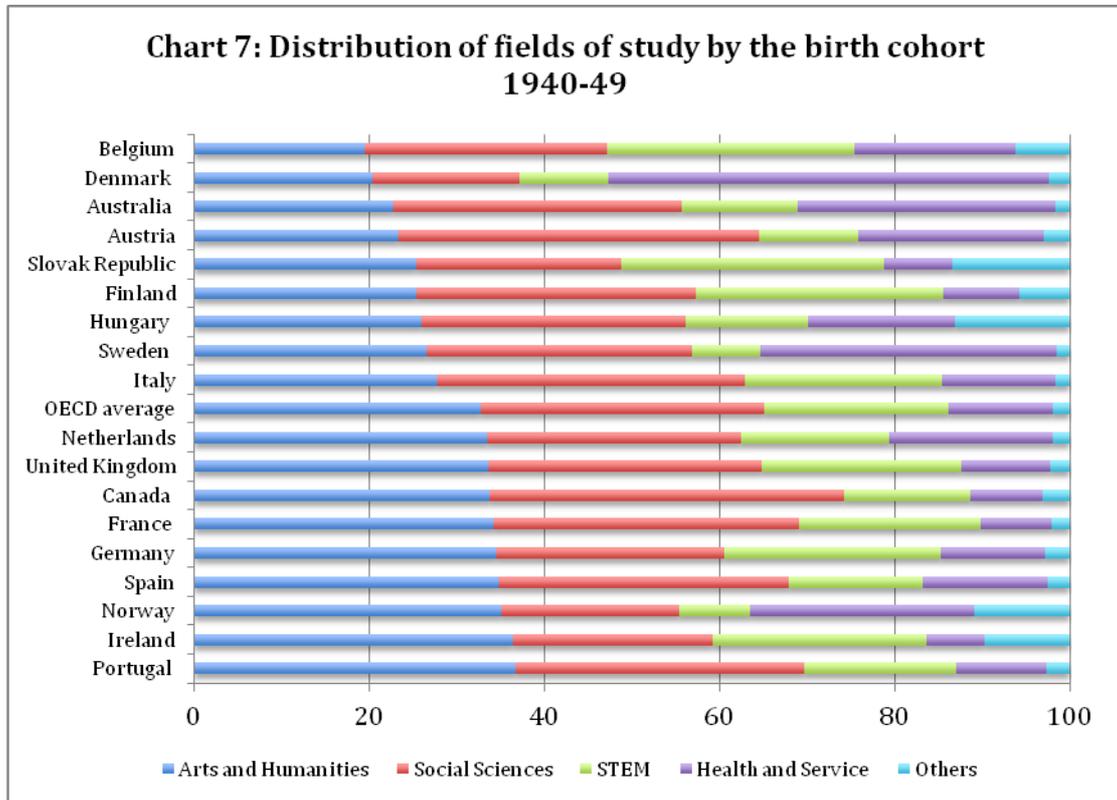
in type B qualification rates, due to the massive increase in type A qualification rates. This resulted from the policy changes which integrated former polytechnic institutions into the university sector during the 1990s, whereby an increasing number of type B programmes were transformed into type A programmes. Specific country analysis is therefore required to explore the in-depth causes for varied trends during the expansion. This must examine not only the types of institutions but the variety of the programmes the higher education sector offers. The next indicator will present the trends of different fields of study among the OECD countries.

Trends in Participation and Qualification in Different Fields of Study

The expansion of higher education has promised some social benefits, such as 'enhancement of peoples' general well-being and of societies' macroeconomic development' (Shavit et al. 2007:3). It has also been associated with increasing differentiation with the system and between fields of study. As Burton Clark predicted, 'expansion into mass higher education has widened these internal differentials, with medicine, the natural sciences and sometimes engineering protecting their students through limited access, while other units in humanities, the social sciences and sometimes such semi-professions as education take all comers' (Clark 1978: 248). Here we compare the trends in participation across different fields of study.

Firstly, we compare the distribution of participation (proxied by qualification rates) by fields of study of two birth cohorts - the cohort born between 1965 and 1979 and that born between 1940 and 1949. The first cohort participated higher education before the 1980s, when much of the expansion began, and the latter cohort participated between mid 1980s and late 1990s. Chart 7 demonstrates the distribution of fields of study for the first birth cohort prior to the expansion of higher education. The chart shows that Arts and Humanities, alongside Social Sciences, accounted for two-thirds of higher education recruitments in most of the OECD countries. The STEM fields, including Sciences, Technology, Engineering and Mathematics, attracted around one-fifths of students. Health and Medicine subjects recruited around one-tenth of higher education students. This pattern of participation in fields of study can be explained by the rise of professional society after the Second World War.

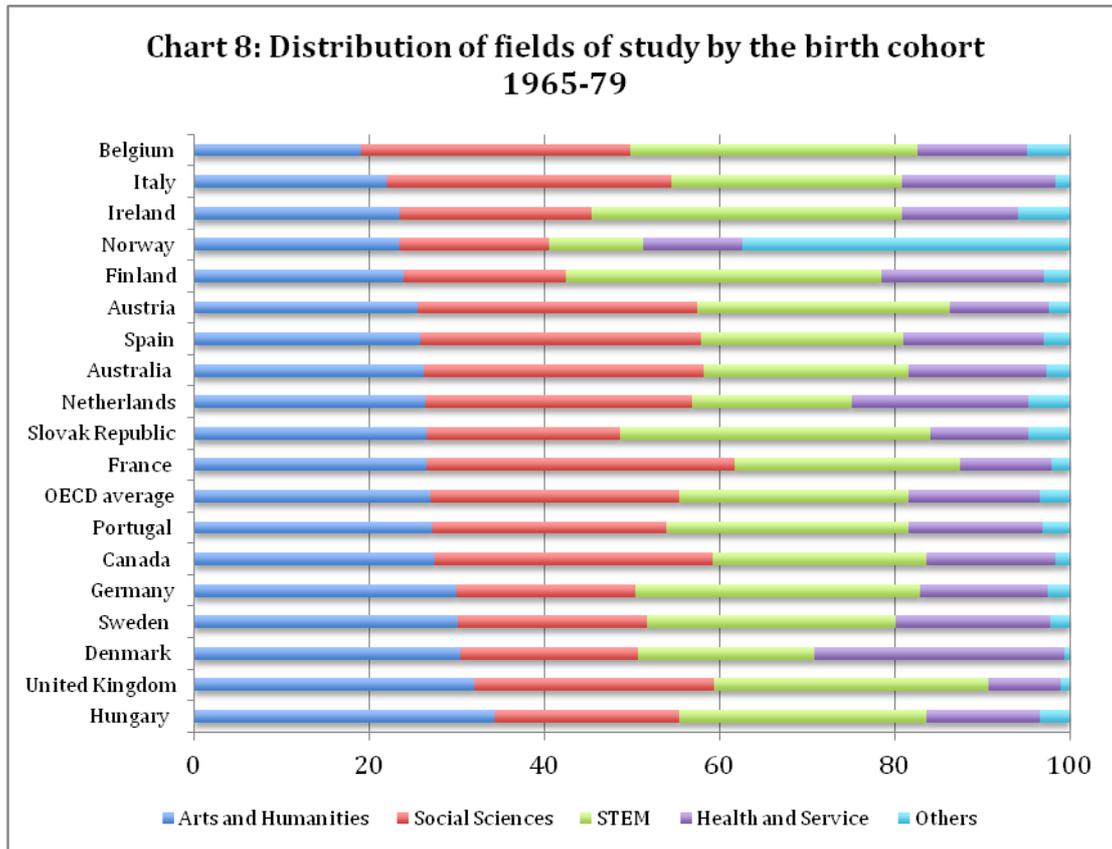
Perkin argued that the changes in labour market saw a growing number of jobs in the civil service, education and other social services (Perkin, 1996). Such change particularly attracted female students to go to universities with reasonable career aspirations.



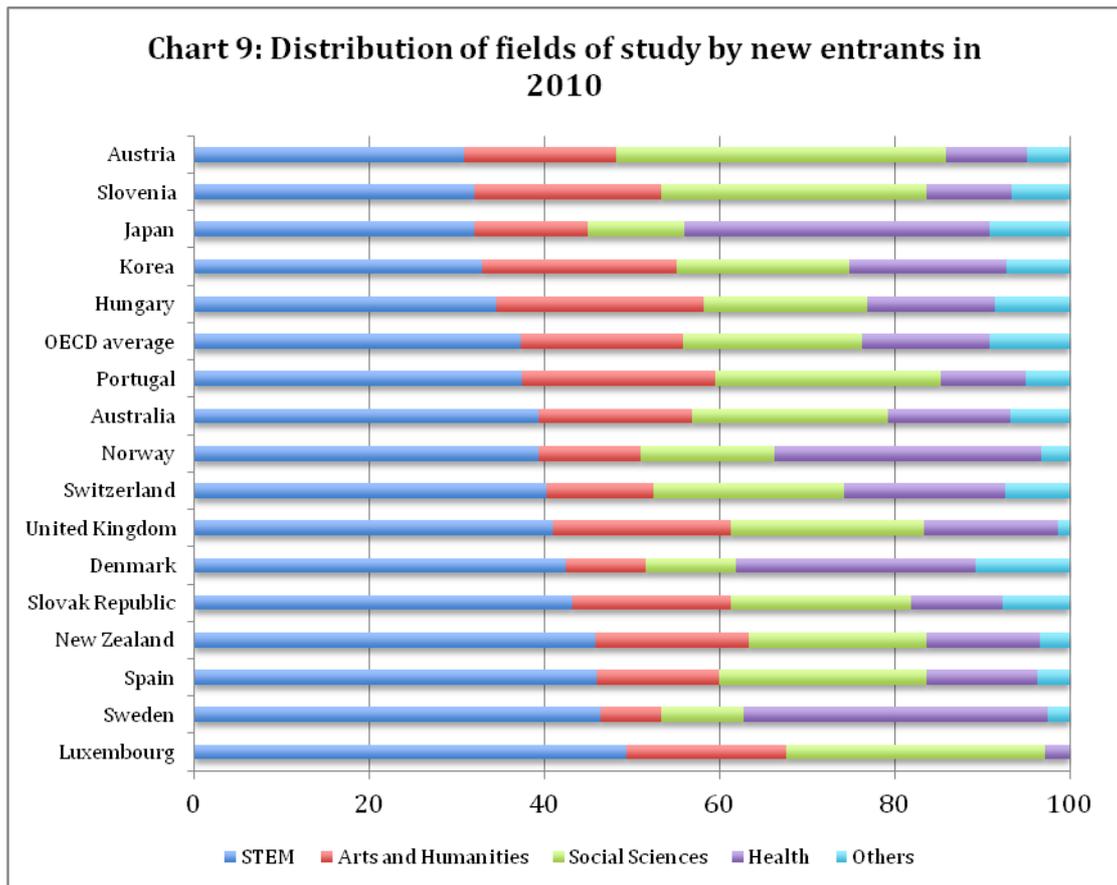
Source: Education at a Glance (OECD, 2007) Table A1.5. This is calculated by ratio between two age cohorts.

Chart 8 illustrates the distribution of fields of study for the second generation after the expansion of higher education participation. The Chart shows that fields such as Arts, Humanities and Social Sciences accounted for around half or more of students in higher education, although this was around ten percentage points lower than for the first generation. The STEM fields now accounted for five percentage points more participation than in the case of the earlier generation. However, the Arts, Humanities and Social Sciences still enrolled twice as much students as the STEM fields combined together. The proportion of students who chose Health and Welfare remained the same after the beginning of the higher education expansion. It can be argued that the STEM fields still had limited access compared to other fields such as Arts, Humanities and Social Sciences by the late 1990s when higher education recruitment began to expand and attract more students in the eligible population.

However, higher education has expanded at an unprecedented rate since 2000s across most of the OECD countries. Hence, we will select the latest available data on the distribution of fields of study by new entrants in 2011 to represent the second and more dramatic expansion of higher education.



Source: Education At A Glance (OECD, 2007) Table A1.5. This is calculated by ration between two cohorts.



Source: Education at A Glance (OECD, 2013) Chart C3.3

Chart 9 illustrates the new entrants in different fields of study in 2011. Due to lack of consistent and comparable data, the selected countries vary from the previous two cohorts. However, we can gain a general picture of the pattern of participation by fields of study for younger generation. The biggest change from Chart 8 is the proportion of the STEM enrolments, rising from around one-fifth of participation by late 1990s to around 37 per cent on average OECD countries. Both STEM fields and non-STEM fields recruited similar number of new students in 2011, counting for nearly two-fifths each in the total population of the new entrants. These three charts demonstrate the general trend of changes in the distribution of fields of study over time in selected OECD countries.

This general trend also mirrors the general changes in industry, economic structure and labour market, although they vary somewhat from one country to another. When we consider these changes in the context of the expansion of higher education opportunities, three questions arise from the general trend. Why some fields, such as

Arts, Humanities and Social Sciences, have been most popular among students and attracting half of new entrants since 1960s? Why the STEM subjects became more popular with younger generations since 2000s and why there are different patterns of the STEM participation in different countries? Why the participation in Health and Welfare subjects varied from country to country?

The three questions look different but they can all be explained by affordability of a higher education degree, which is concerned with both public and private cost. Before and at the early stage of the expansion, higher education was primarily funded by the governments except in liberal market countries such as the USA, Canada and Australia, where there was a substantial number of fee paying students. At the onset of the expansion period Arts, Humanities and Social Sciences programmes cost significantly less than the STEM fields both for governments which funded them or for the relatively small number of students paying fees. By the second and latest stage of HE expansion, more and more countries, excepting European countries, shared the cost of higher education between the public and students, with private contributions increasingly growing since 2000s. Under such circumstances, students tend to make choices in the fields of study regarding the costs and returns. For most students, the non-STEM fields are most affordable in terms of access for tuition fees and repayment of student loans. So, the affordability of non-STEM fields might have been a driving force for the expansion of higher education. But there was a significant increase in the recruitment to the STEM fields since the 2000s. Two possible reasons might provide explanations for this. With increasing private contributions to the cost of a higher education degree, students tend to make choices in fields regarding the returns of their degrees. Since it has been suggested that returns of the STEM fields were significantly higher than non-STEM fields, the rates of return might be a contributing factor towards the rise of the STEM applications. However, the participation in the STEM fields varied from country to country. This will be explored in later section.

Regarding the last question, the recruitment to fields of Health and Welfare illustrated a very interesting picture. First of all, the proportion of the recruitment in these fields hardly changed since the 1980s. However, the size of the recruitment varied from country to country. For example, the social democratic countries such as Sweden,

Norway, Denmark and Finland have had persistently higher participation in fields of Health and Welfare. It is therefore necessary to explore the changes in public and private contribution to the cost of higher education and the returns of higher education by fields of study to gain a better understanding of the diversification of higher education systems.

Costs and Benefits of Higher Education and their Implication for Access and Participation

The demand-driven nature of higher education participation has been key for human capital theory, because it is based on the hypothesis that the higher levels of skills will produce better employment opportunities and higher earning power and that decisions about participation in higher education are largely based on perceptions of rates of return on investments. Human capital theory has often been criticised (Brown et al, 2001) for reducing education to rather crude measures of years of education and training and levels of testable skills, and for its questionable assumptions that individuals are rational utility maximisers and that pay levels naturally reflect skills and skills-based productivity. Nevertheless, this theoretical standpoint rightly addressed the necessity for investing education and training at the individual and governmental levels. For individuals, education and training are seen as a form of investment that can result in an increase in lifetime earnings. For states, investing in education and expanding educational opportunities is predicted to enhance economic performance and growth. Governments were urged by human capital theorists to invest in education particularly where the evidence showed that there were market failures, whereby individuals would under-invest due to lack of access to finance, or because of the difficulty and risk of assessing future returns to investments.

However, with the expansion and increasing diversification of higher education in recent years, several pressing issues emerge to challenge the human capital rationale. Firstly, the growing tendency towards private contributions to higher education funding in many OECD countries raises serious questions regarding the affordability of a higher education degree. The cost does not simply refer to the private investment in tuition fees; but also to the opportunity costs of delaying entry to labour market with potential loss of the earnings. These factors make it particularly important for

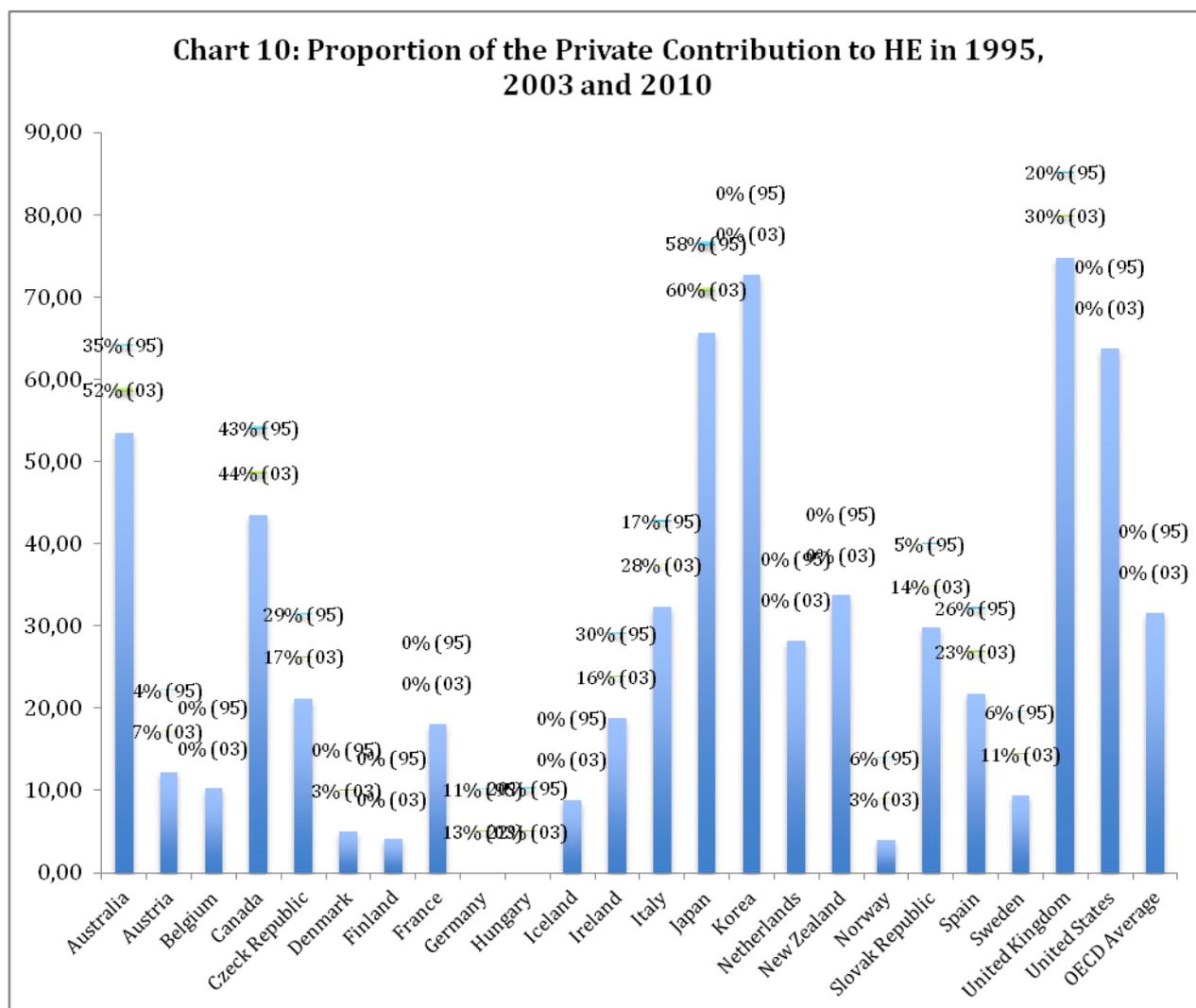
students to make the right choices in higher education. Moreover, the cost for the STEM fields of study is generally higher than the non-STEM fields both for individual students and for institutions. It is therefore the cost of a particular degree will affect students' incentive to invest in higher education.

Secondly, diversification in higher education is accompanied by stratification in fields of study. Voluminous research has demonstrated that the graduates from the STEM fields have significantly higher wage returns than those from the non-STEM fields (Carnevale, 2012). The economic return of higher education degrees is a contributing factor for students to make a choice in higher education. Thirdly, the cost and return of higher education is complicated by a range of socioeconomic and geo-political circumstances. The recent global economic crisis from 2008 led to significant reductions in the public funding in higher education in some of the European countries. Youth unemployment is another pressing consequence from the recession. Employability of higher education graduates could also be related to the overall skill demand in the labour market, and more recently, the flexible measures in the labour market triggered by the recession worsened the job prospects of higher education graduates. The employability of higher education graduates is also determined by presence or absence of the strength of welfare system and labour unions, which varied from country to country.

Costs by Country and Fields of Study

This section will present evidence on the cost of higher education in the OECD countries by highlighting the proportion of private contributions from 1995 to 2010. Then we will use country cluster analysis to examine the trends of the private contribution to higher education among different countries. Chart 10 illustrates the general trend from 1995 to 2010 in the proportion of total HE expenditure coming from private sources. It is clear from the data that there have been increasing private contributions to higher education in most of the OECD countries between 1995 and 2010 except in the social democratic countries including Denmark, Sweden, Norway, Finland and Iceland. Generally speaking, continental European higher education tends to be more publicly-funded than in East Asia, north America, Australia and the UK. But private contribution grew between 2003 and 2010 in most of the countries. By

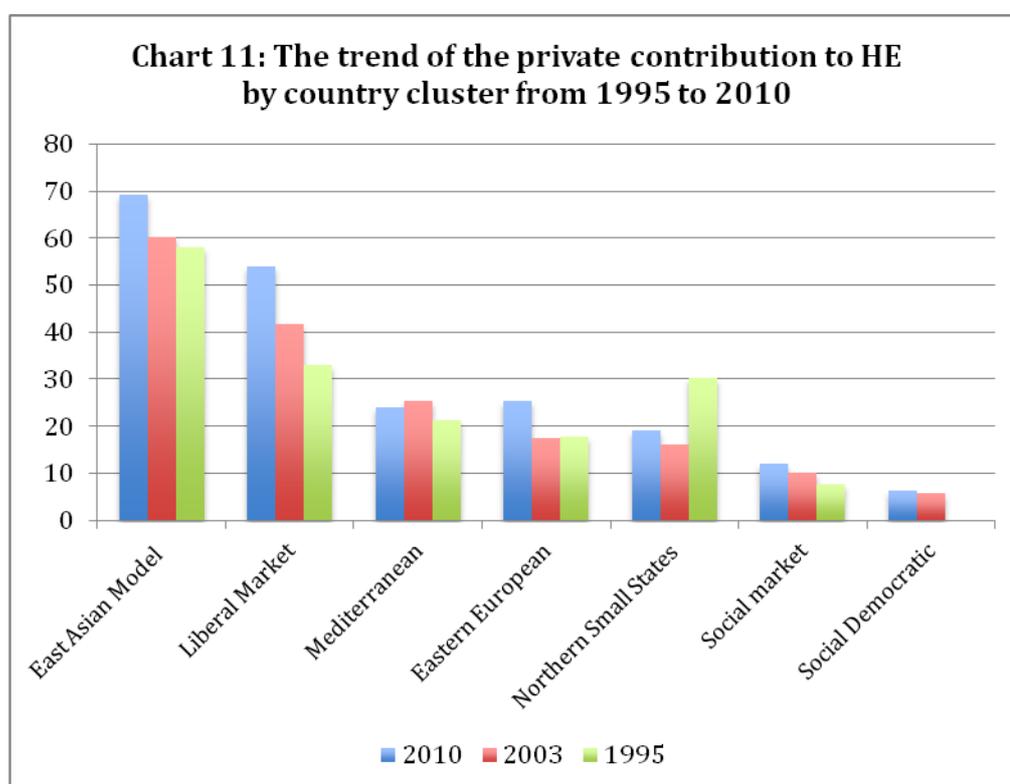
2010, the OECD average private contribution accounted for 31.63 percent of the total cost of higher education. The largest private contributions, of more than 60 per cent of the cost, were observed in Japan, Korea, the US and the UK.



Source: For 2010, data are from Education At A Glance (OECD, 2013) Chart B3.1; For 1995 and 2003, data are from Education At a Glance (OECD, 2006) Table B3.2a.

Chart 11 provides the trends in private contributions to higher education by country cluster from 1995 to 2010. East Asian societies (Korea and Japan) alongside the liberal market countries, including Australia, Canada, the UK, the US and New Zealand, have had a much higher proportion of private contribution than other country clusters. Social democratic countries, including Denmark, Sweden, Finland, Norway and Iceland, still maintained state-funded higher education to a large extent with private contribution around 6 per cent by 2010. Within the social democratic countries, Sweden has had slightly higher privation proportion than the rest of the

Nordic countries. Another case of low private contribution to higher education is the social market countries such as Austria and Germany. The private contribution in these two countries hardly changed between 1995 and 2010, accounting for around 10 per cent of the total higher education cost. Among Mediterranean countries, such as France, Spain and Italy, the private contribution has not changed significantly, rising to 25 per cent in 2010 from 21 per cent in 1995. Eastern European countries experienced slight increase in the private contribution from 18 per cent in 1995 to 25 per cent in 2010.

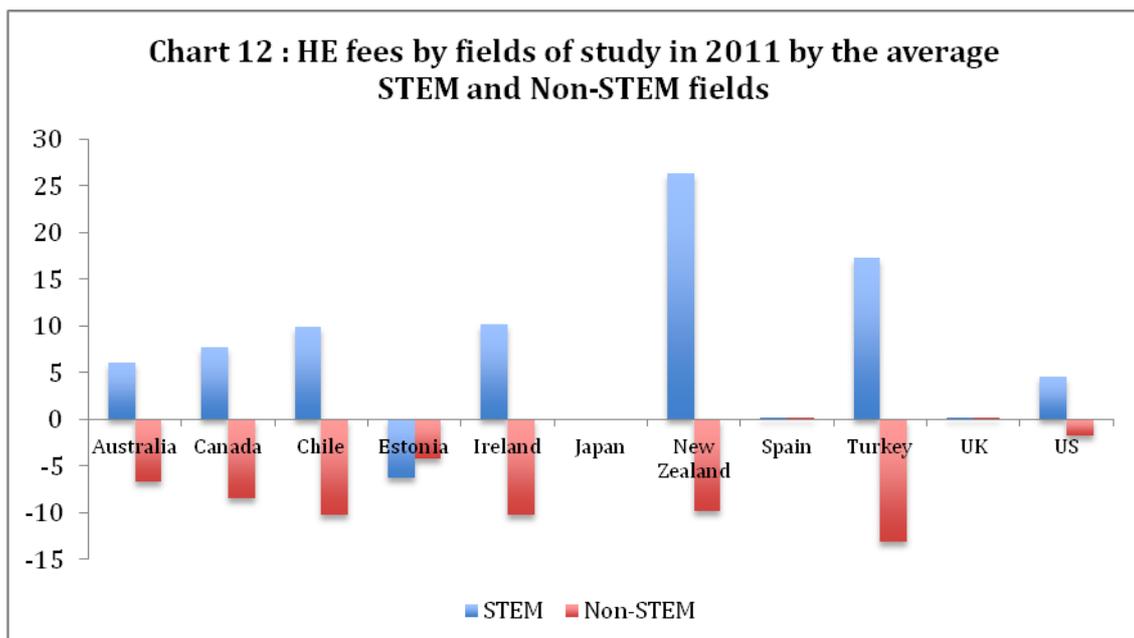


Source: For 2010, data are from Education At A Glance (OECD,2013) Chart B3.1; For 1995 and 2003, data are from Education At a Glance (OECD, 2006) Table B3.2

When we compare Chart 11 with Chart 3 it would seem that countries with high proportions of private spending in education, such as East Asian countries and liberal market countries, also tend to have high HE growth rates. By contrast, the countries that experienced the slowest growth rates in higher education also had lowest private contributions to higher education spending. This suggests that HE expansion is driven more by government decisions on spending in HE than by student demand. In countries where the costs of HE enrolments to Government are higher, because of low tuition fees, governments may have deliberately restricted their supply. On the other

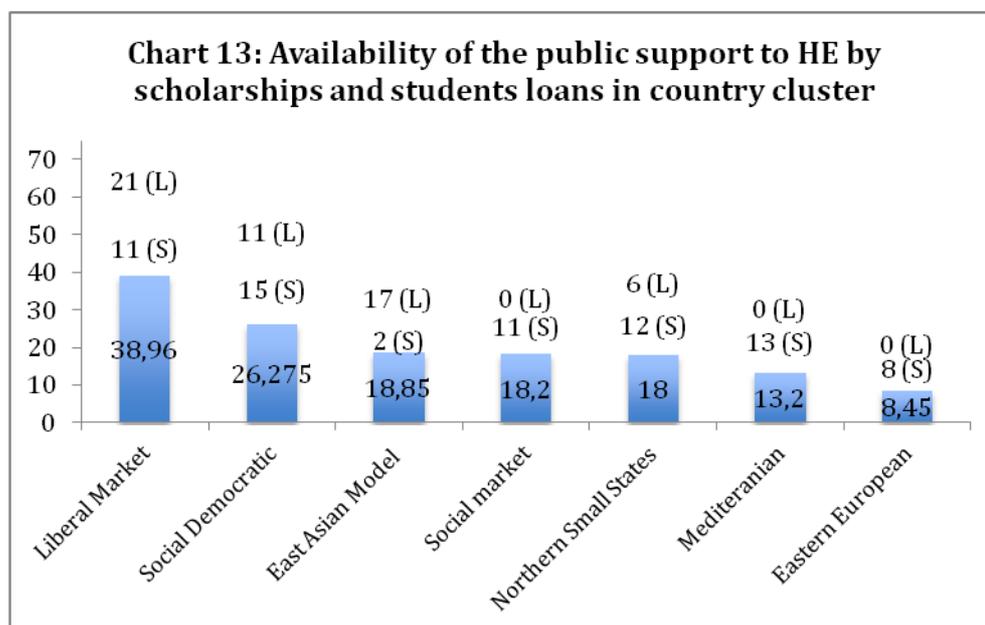
hand, where costs are shared with students, there are less government restraints on numbers, and there is still an increasing number of students willing to pay – at least in these more affluent OECD countries. However, student calculations of costs will also affect their choices of fields of study, since these are often differentially priced.

To investigate the effects of cost sharing on student choices, therefore, we also need to examine the cost of higher education by in different fields of study in selected OECD countries where tuition fees are charged in public higher education institutions. Eleven countries were identified for the breakdown of tuition fees by fields of study in 2010, among which there was a standard charge for tuition fees in public universities in Japan, Spain and the UK hence no breakdown details regarding the fields of study were available. Chart 12 provides the comparison between the tuition fees for the STEM fields and the non-STEM fields of study. This chart is calculated by dividing the fees for the STEM and the non-STEM subjects by the average fees for public institutions respectively. It is shown that the STEM fields charged significantly higher than the average higher education tuition fees in most of the observed countries except Estonia. Students who chose the non-STEM fields would pay much less than those who were enrolled in the STEM fields. This snapshot illustrates how the variation in the cost of a higher education degree in fields of study may affect significantly students’ choices in higher education.



Source: Education At A Glance, 2013 Table B5.3.

Note: In the UK, the HE fees for undergraduate degrees were generally charged at a standard rate regardless the fields of study.



Source: Education At A Glance (OECD, 2013) Table B5.4

Note: 1. The base data, which refer to the direct public spending on higher education institutions and subsidies for households and private entities as percentage of the GDP, are multiplied by 100 to include the breakdown data on the public support such as scholarships/grants and public student loans.

2. L refers to the public student loans, which are in percentage of the total public support in higher education.

3. S refers to the scholarships and grants, which are in percentage of the total public support.

However, access to higher education is not only affected by the cost of tuition. The availability of public support in the form of scholarships, student loans, and tax transfers will also shape student decision about participation. Chart 13 provides a snapshot for 2011 for different groups of countries of the extent of public support in the form of scholarships, student loans and other subsidies. It shows that social democratic countries spent the highest among country clusters on these forms of support. Given the low/zero tuition fees charged in these countries, the net costs to students in higher education would appear to be relatively low. By contrast, East Asian countries spent the least in funding higher education and provided very weak public support in terms of scholarships and student loans. Since students have been contributing the majority tuition costs for higher education through fees, the costs of obtaining a higher education degree in East Asian countries are relatively high. The liberal market countries, including Australia, Canada, New Zealand, the US and the

UK spent relatively large amounts in supporting students in higher education. However, much of this in countries such as the UK and the USA takes the form of loans, which have to be paid back at some point. So, whilst initial access may not be impeded by financial constraints, despite the high level of fees, in the long term private costs to higher education study are still relatively high and involve the accumulation of sizeable amounts of debt. The rest of European countries have lower level of public support for student participation, but fees are very low, so the net costs of participation to individual students are much lower.

Returns to Higher Education

As discussed earlier, decisions on participation in higher education are influenced by individual calculations about both the costs and benefits of studying. In the following section we will analyse the private benefits of education, limiting ourselves to the individual economic benefits and leaving aside the wider social benefits where it is more difficult to estimate an economic value. Private economic benefits are normally measured in two ways. The wage premium represents the estimated average additional earnings of a graduate compared with a non graduate (usually those qualified to upper secondary level as the baseline). The private rate of return is the estimated future earnings premium relative to the net costs of the initial investment, including actual costs of studying and plus opportunity costs in the form of income foregone as a result of studying. Employment and unemployment rates of graduates and non graduates can also be used in the estimation of rates of return.

The most recent OECD data (OECD, 2013) show that tertiary educated adults generally earn more than adults with lower levels of education in OECD countries. Tertiary educated adults earn 1.5 times as much on average as those with only upper secondary level qualifications. This premium applies to both tertiary Type A and tertiary Type B graduates. Men in OECD countries with Type B tertiary education earn on average 26 per cent more than those with only upper secondary education and women 32 percent more.

Countries vary considerably in the wage premia experienced by graduates. Taking the relative earnings of tertiary educated graduates of all ages relative to those only

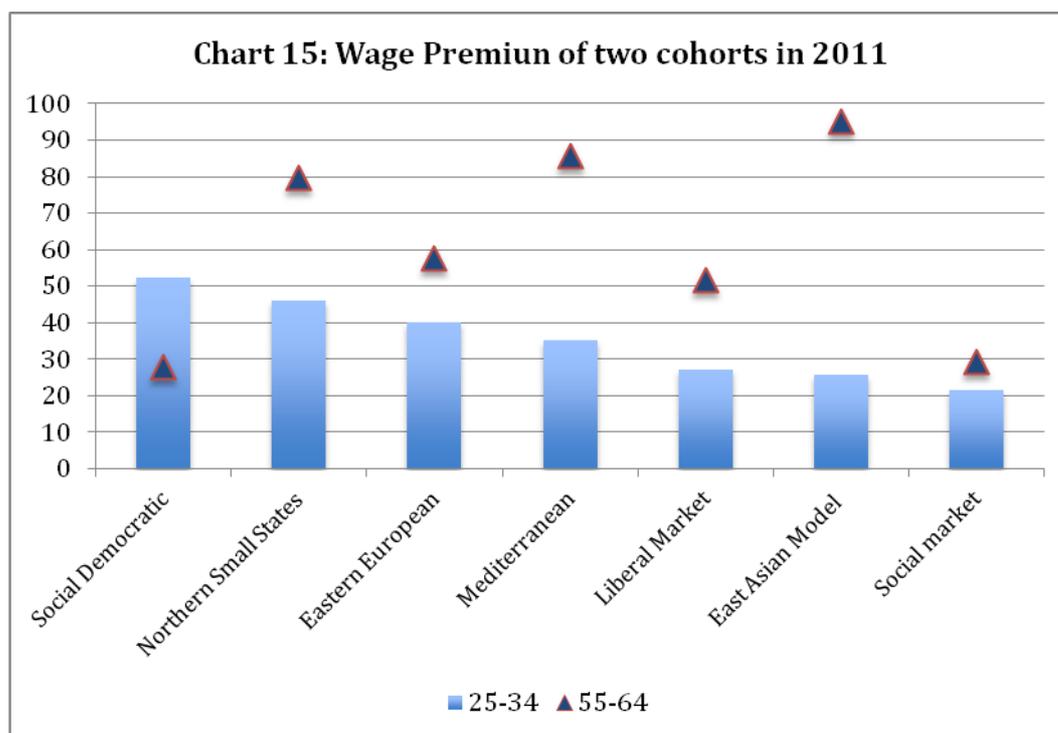
educated to upper secondary level or non-tertiary post-secondary level, the OECD estimate that in 2010/11 the average wage premium in the OECD was 1.64. The countries with the highest premia tended to be the less affluent countries, including Chile, the Czech Republic, Greece, Hungary, Poland, Portugal and the Slovak Republic. More affluent countries, including the Nordic countries, and most of the north-west continental European Social Market countries, had rather lower wage premia. Amongst the more affluent countries, several stand out as having higher wage premia (Germany, the UK and the US).

The earnings for tertiary educated adults relative to those with only upper secondary level education increased or held steady in the majority of countries between 2000 and 2011, and the average trend for the OECD as a whole, and for the EU 21 countries, has been up. However, there are a number of countries where the graduate wage premium has declined over this period. These include Canada, New Zealand and the UK, amongst the liberal countries, and Finland, Norway and Sweden amongst the Nordic countries.

Graduate wage premia are typically higher for older age cohorts than younger cohorts. This is because whereas earnings for graduates generally keep rising beyond middle age, those for non-graduates often plateau in middle age and thereafter decline. Chart 15, using OECD data, shows the average wage premia for countries in each country group for two different cohorts, those aged 25-34 and 55-64 in 2011. The country groups are ranked by the size of the average wage premia for the younger age group. Several observations emerge from this.

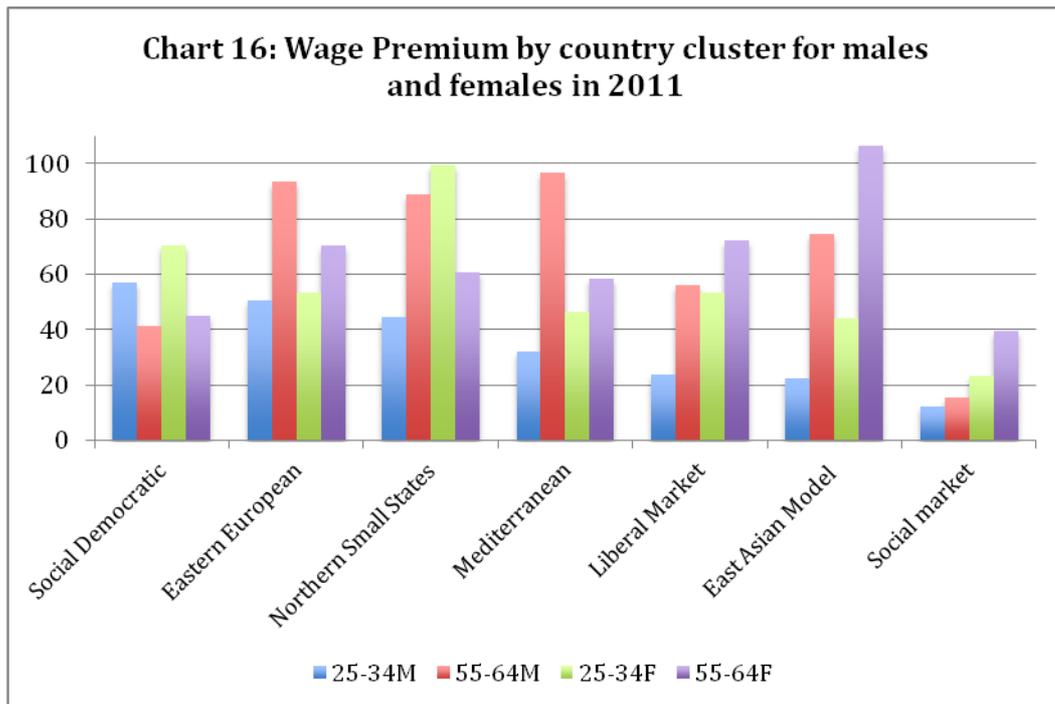
Firstly there is a substantial wage premium to graduates of both cohorts in all the country groups. However, the wage premia are considerably lower for the younger cohort than for the older cohort in all country groups excepting the social democratic ones. For instance, a graduate from the older cohort in the East Asian countries could expect to earn 1.95 times the earnings of a non-graduate whereas a graduate from the young cohort would be expected to earn only 26 percent more. Secondly the wage premia seem to vary considerably by country group. Amongst the older cohort, wage premia are highest on average in the East Asian, Mediterranean and small northern European countries, and lowest on average in the social market and social democratic

countries. The premia in the liberal and eastern European countries lie somewhere in between. However, the relative positions are different with the younger age group, where the highest premia on average are found in the social democratic countries, small northern European countries and eastern European countries, and the lowest premia in east Asian and social market countries.



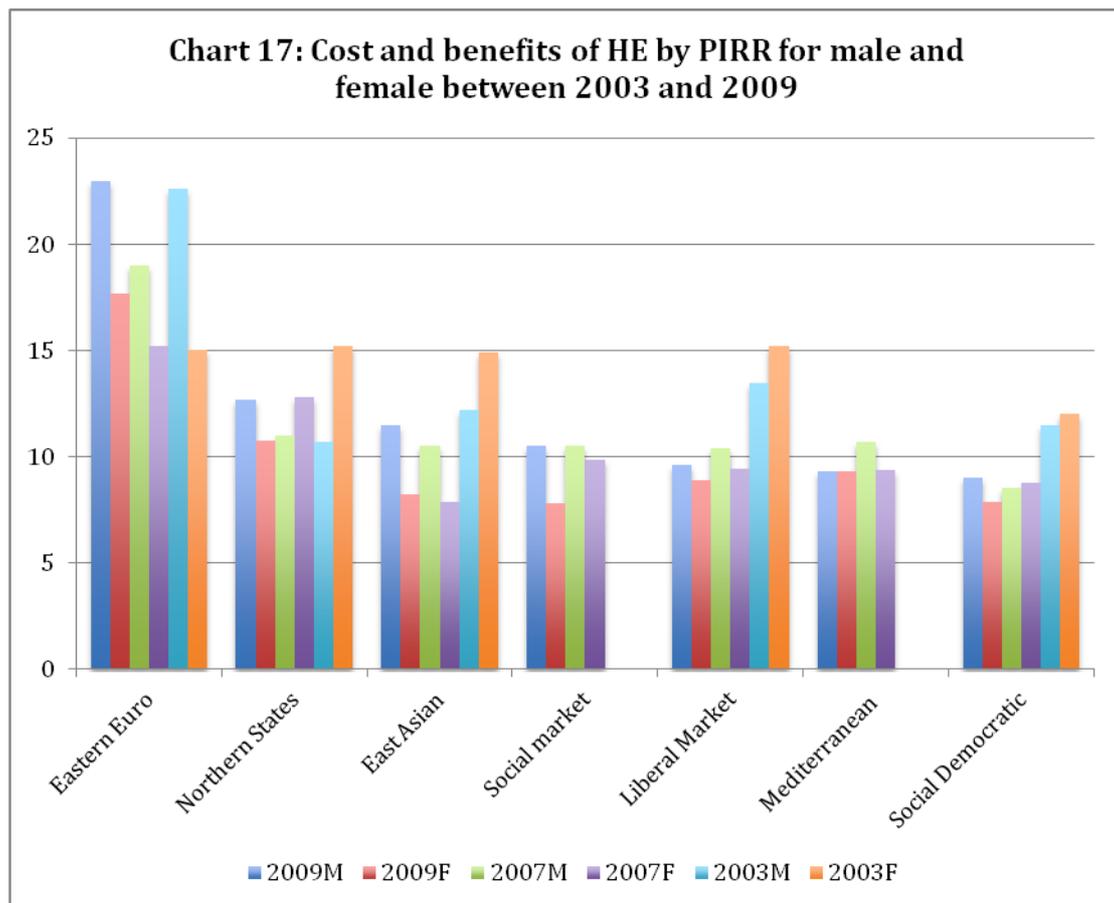
Source: Education at A Glance (OECD, 2013) Table A6.1

Chart 16 gives the wage premia separately for men and women for the two age cohorts, taking the average value for the countries in each country group. Amongst the older cohort wage premia are higher for women than men on average in social democratic, liberal, East Asian and social market countries. In eastern European countries, small northern European countries and Mediterranean countries, the advantage lies with men. However, amongst the younger cohort the situation has changed significantly. In this group, women have a higher graduate wage premium than men on average in all groups of countries.



Source: Education at A Glance (OECD, 2013) Table A6.1

We turn now to rates of return. The rate of return is an estimated measure of the extent to which the costs of obtaining a higher education degree can be translated into higher level of earnings. Private internal rates of return are an estimate of ‘additions to after-tax earnings’ as a result of higher education degree, net of private costs except living expenses such as tuition fees and foregone earnings that achieving this degree requires (OECD 2007:150). We use this indicator to provide a general estimate of an individual’s net benefits from higher education. Chart 17 compares private internal rates of return for an individual with a higher education degree by men and women between 2003 and 2009.



Source: For 2009, data are obtained from Education At A Glance (OECD, 2013) Table A7.3a for male and Table A7.3b for female. For 2007, data are from Education At a Glance (OECD, 2011) Table A9.3. For 2003, data are from Education at a Glance (OECD, 2006) Table A9.5

Various observations can be made from these data. Firstly, there appears to have been a dominant trend across the groups towards falling rates of return for both men and women. In the Asian, liberal, and social democratic countries rates of return went down between 2003 and 2009 for both men and women. No country group shows rises for both men and women and indeed the only rise is with women in the eastern European countries. The social market and Mediterranean countries have stable rates of return over the period for both men and women. By 2009 there is not much difference between country groups on rates of return for either men or women. Only the eastern European country group stands out as having rather higher rates of return than other groups of countries. The second observation is that gender gaps in rates of return have changed significantly during the period. In 2003, rates of return were on average higher for men than women in eastern European, social market and Mediterranean countries but higher for women than men in east Asian, liberal and

social democratic countries, as well as in the small northern European countries. By 2009 all country groups show higher rates of return for men than women. So whereas women in 2003 got relatively more economic advantage than men from investment in higher education in Asian, liberal and social democratic countries, this was no longer the case by 2009. So overall, time has only improved the gains from higher education for women in eastern European countries and for men in small northern European countries. For all others groups, there has been a decline or flat-lining in economic benefits from investment in higher education.

Employment opportunities

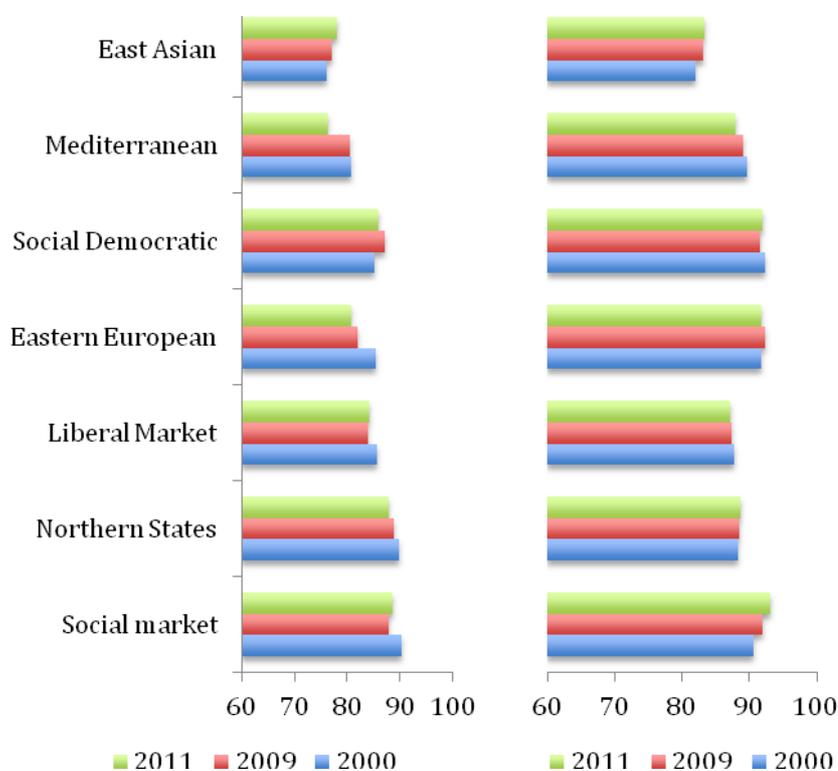
We saw earlier that there is still a substantial wage advantage for graduates in jobs compared with their non-graduate peers. However, this only applies where graduates are in jobs. What has happened the graduate employment rates and are graduates employed in graduate jobs? Data across countries demonstrate that employment rates of graduates from higher education are still relatively higher compared to those with non-tertiary qualifications. However, the financial crisis since 2008 complicated the whole picture of youth employment across different continents. There has been growing employment insecurity in the labour market. More specially, a rising flexibility measure in employment has been adopted such as temporary employment, part-time employment, and zero-hour contracts, which are regarded as a growing army of 'shadow labour' (Standing 2012). For example, full-time jobs dropped more than 650,000 within the first year of the recession in the UK with part-time jobs soaring up by 80,000.

For the second question, there has been mounting evidence that many graduates with higher education degrees are trapped in low-paid, low-skilled jobs in order to fulfil an employment opportunity. This phenomenon is coined as 'status discord' by Kosugi who analysed the youth employment in contemporary Japan. According to Kosugi (2008), 'younger generation with a relatively higher level of formal education, who have to accept jobs that have a status or income beneath what they believe accord with their qualifications, are most likely to suffer status frustration'. This status discord can be applied to explain youth employment in different contexts. It has been argued that massive production of higher education graduates resulted in the

‘devaluation’ of skills. Standing describes the university tuition debt and the discord between qualifications and job status as two traps facing the young graduates from higher education (Standing 2012).

This section will illustrate the general employment/unemployment rates in the observed countries for the age cohort between 25 and 34. Chart 17 compares the employment rates between two cohorts-the younger 25-34 and the prime cohort 45-54 between 2000 and 2011. It is shown that the employment rates were generally higher for the prime cohort than for young cohort across most countries under investigation. East Asian countries have lowest employment rates compared to other countries given the highest private contribution to the tuition fees. The low employment rates in East Asian countries can be explained by the high participation rates in higher education, which did not match the labour market demand. Social market countries and Northern European small states have higher employment rates for university graduates.

Chart 18: Employment rates by the 25-34 and 45-54 cohort with HE degrees between 2000 and 2011



Source: Education At A Glance (OECD, 2013) Table A5.3b

Trends in Inequality of Opportunity in Access to Higher Education

Much has been written about past trends in inequality of access to higher education and the literature is much too vast to review here. However, comparable data is often not available over time for a large number of countries, so comparisons of levels of inequality in different countries and their changing patterns over time can be difficult. What we can contribute here is a brief analysis of what a very recent survey conducted across 24 countries and regions in 2011 tells us about the cross national patterns in inequality of access to HE and how these are changing. As in the analysis above we estimate changes over time on the basis of data for different age cohorts in a cross sectional survey, on the assumption that most HE qualifications are attained before the age of 25 and that cohort qualification rates provide a good proxy for qualification rates in different periods.

The data comes from the recent OECD Survey of Adult Skills conducted amongst 16-64 year olds in 2011 across 22 countries (plus two country regions). The survey contains data on the highest qualifications held by respondents and their parent's levels of education. Using a technique frequently used in higher education mobility studies, we are therefore able to compare the chances of gaining a higher education amongst groups with parents educated to different levels. In this case the data on respondents' parents' education is restricted to three levels, differentiating between those with graduate parents, those who had a parent who achieved an upper secondary qualification and those who had a parent who achieved no more than lower secondary qualifications. Since the error terms in the data for the lowest category are often too large, we restrict ourselves to comparing the chances of HE graduation amongst respondents with graduate parents and the rest. Relative chances are presented in terms of odds ratios which gives the ratio of the probabilities of each group of getting an HE qualification. Thus, if the chances of children with graduate parents getting an HE degree is 80 per cent and the chances of children of non-graduate parents getting an HE degree is 40 per cent the relative odds for the two groups (or odds ratio) is 2.

Chart 19 shows by country and age cohort the relative chances of children of graduate and non-graduate parents of getting a higher education qualification at level ISCED 5

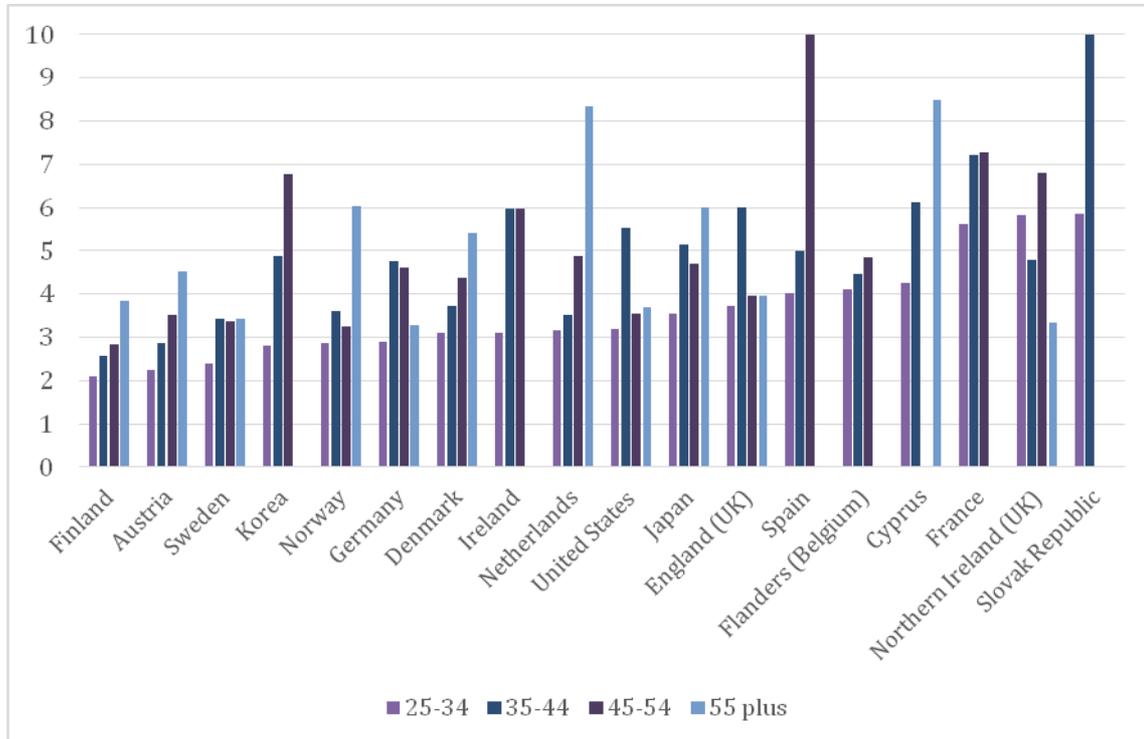
(A or B) or higher. Chart 20 focuses on the 25-34 year olds in SAS and plots for the range of countries the attainment rate for HE qualifications (which proxies for participation rates) against the social gaps in achievement (using odds ratios again).

The first observation to make from Chart 19 is that the advantage of children of children of graduate parents in getting HE qualifications has declined through the generations in all countries except Northern Ireland. Given that nearly all HE qualification are gained between the ages of 20 and 25, the four cohorts are proxying for graduation rates in each of four decades from the 1970s through to the 2000s when those aged 25-34 in 2011 were graduating. We can therefore say that inequality of opportunity for higher education, measured in terms of social background effects, has been decreasing over the four decades in each country except Northern Ireland. The steepest declines have generally been in the less developed or less affluent countries, such as Cyprus, Korea, Spain and the Slovak Republic, but the Netherlands has also shown sharp declines in inequality. By contrast a few countries, including England, Sweden and the USA, have seen only very small declines in inequality.

The second observation we can make, from Chart 20, is that there is a significant relationship between rates of qualification and inequality of opportunity for HE qualification. Countries with higher qualification rates (and therefore participation rates) do tend to have smaller social gaps in attainment of HE qualification, as measured in the odds ratios. This would suggest that as you increase participation in HE there tends to be an equalisation effect in terms of the chances of children from different social groups (by parental education level) attaining HE qualifications. However, two qualifications need to be made here. Firstly we are only able to differentiate between the two social groups – those with graduate parents and the rest. We do not know from this whether the relative chances of attaining HE qualification from those with parents in the lowest educational category are improving relative to the chances of the children from graduate parents. The second point to make it that although the relationship is significant there is considerable variation across countries in the relationship, with a number of outliers. For instance, amongst countries the average levels of participation and attainment, there are some, including France, Northern Ireland and Poland, where social gaps in attainment remain very high,

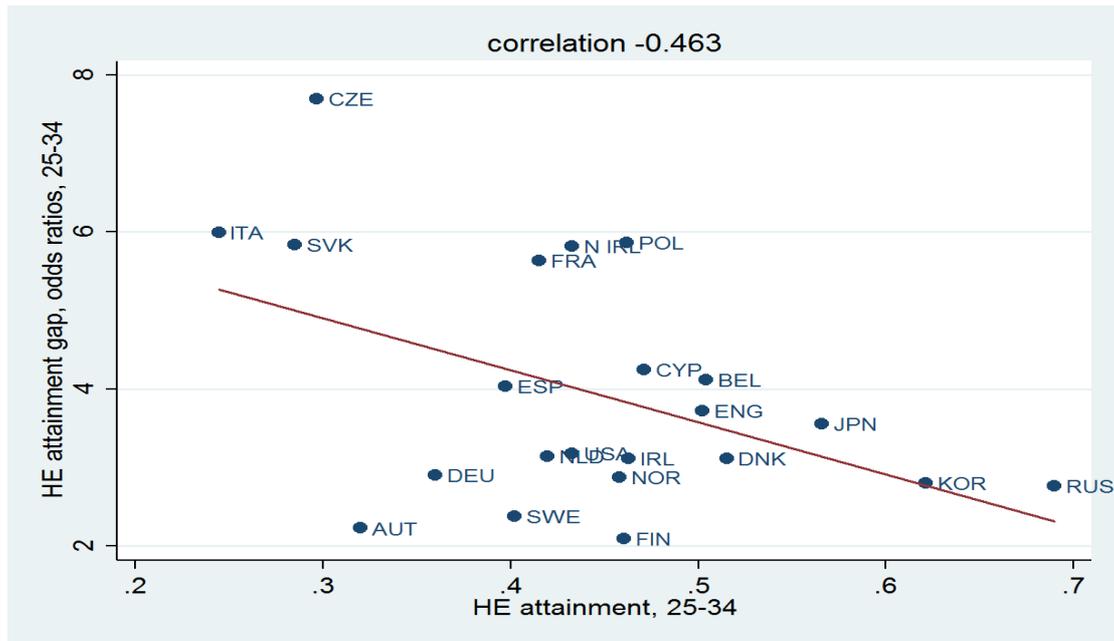
whereas as others, like Germany, Sweden and Austria, where the social gaps are relatively low.

Chart 19: Probability of Gaining HE Degree of Children of Graduate Parents Compared with those of Non-Graduate Parents (Odds Ratios) by Age Cohort



Source: Survey of Adult Skills (OECD 2013b)

Chart 20: HE Qualification Rates and Inequality of Opportunity amongst 25-34 Year Olds by Country



So inequality of opportunity in higher education varies substantially between countries with similar participation and attainment rates.

Chart 19, shows that inequality of opportunity for HE qualification varies quite substantially across countries. For the youngest cohort, aged 25-34 in 2011 and graduating in the 2000s, inequality of opportunity is lowest in Finland where the chances of graduating from HE were only 2.09 times higher amongst the children of graduate parents than the children of non-graduate parents. At the other end of the scale was the Slovak Republic where children of graduate parents were 5.84 times as likely as children of non-graduate parents to get an HE degree. In terms of the comparison between county groups, a few clear patterns emerge. The Nordic countries are all ranked quite low in terms of inequality of opportunity with Finland at the bottom and Sweden, Norway and Denmark, respectively third, fifth and seventh from the bottom (out of the 18 countries and country regions shown here). The social market countries are mostly relatively egalitarian also, with Austria, Germany and the Netherlands, respectively, second, sixth and ninth from the bottom. Only Flanders, amongst this group is towards the more unequal end of the ranking. The two East Asian countries are rather disparate, with Korea fourth from the bottom in terms of inequality and Japan in eleventh place. By contrast inequality of opportunity is relatively high in all the Mediterranean countries, including Cyprus, France and

Spain. The liberal English-speaking countries are quite disparate but all are in the top half in terms of level of inequality.

Conclusions

What does this analysis tell us about the relative benefits of different types of higher education system in terms of inclusiveness, equality of opportunity and the individual economic benefits to higher education?

Participation. The most rapid rises in participation and HE qualification during the past three decades have been achieved in the East Asian countries, which now have the highest HE qualification rates of any region. This has been achieved despite relatively high private costs to higher education and low levels of government support to students. We have not examined here the cultural factors that lie behind this rapid increase but we can at least say that it appears not to have been hampered by the high private costs involved in this case. The same may be said for the liberal countries, where there has also been rapid expansion, despite relatively high private costs to participation. These two groups of countries have been most successful in widening overall access to higher education but have taken somewhat different routes. The East Asian countries have rapidly increased participation in general academic programmes whilst keeping participation in vocational programmes stable. The liberal countries have rapidly increased participation in general academic programmes but at the cost of declining participation – until recently – in vocational programmes. This applied particularly in the STEM areas, where the costs of participation to students were highest.

Relatively high participation rates have also been achieved in the Scandinavian countries and in the smaller social market countries of north-west continental Europe. Here, as in the liberal countries, high participation has been achieved through the expansion of general academic programmes, despite a decline in participation in vocational programmes. Private costs to students are relatively low in these countries (which retain minimal tuition fees, unlike in liberal and Asian countries) and state support to students is relatively generous. These factors will be increasing demand for

higher education places, which, through generous government funding, has been largely met by generous public funding of institutions.

Participation rates achieved in the Mediterranean and two of the Social Market countries (Austria and Germany) are substantially lower. This is despite the generally relatively low fees charged. Lack of public financial support may be part of the explanation for this in the Mediterranean countries (although this has not deterred participants in the East Asian countries) but this does not apply to the same extent in Austria and Germany. In these two countries, it seems more likely that participation in higher education has been kept down intentionally by governments which have been keen to provide alternatives through various forms of high quality vocational training (Dual System Apprenticeships etc.).

Inequality of Opportunities and Outcomes

Higher participation in full cycle higher education programmes is generally seen as a public economic and social benefit. It is also generally believed to be a democratising process which helps to increase equality in opportunities and outcomes in education. Our analysis here suggests that the relationship between participation rates and inequality of opportunities and outcomes is more complicated than this implies. The gap in the probabilities of children from different social backgrounds of gaining HE qualifications has generally declined in most countries. We saw from the analysis in Chart 19 of the odds ratios of HE qualification for children of graduates and non-graduate parents that the social gap in the probability of HE graduation declines through the age cohorts in most countries. However, inequality of opportunity for HE graduation is by no means lowest in countries with the highest participation rates. The liberal and East Asian countries, which have the highest average HE qualification rates, generally have relatively high inequality of opportunity, with the exception of South Korea which has achieved sharp declines in inequality of opportunity through the age cohorts. On the other hand, the Social Democratic Nordic countries, with lower rates of participation, have relatively low inequality of opportunity. The contrast is even stronger with Austria and Germany, which have relatively much

lower participation rates but much less inequality of opportunity than the countries with high participation rates.

Individual Benefits of Higher Education

Generally, graduates benefit from a substantial wage advantage over non-graduates, and this increases as they grow older. This still remains the case, even after some decades of downward pressure on wages in many graduate occupations in some countries. However, the private economic benefits to higher education vary substantially across countries and have been changing over time.

The more affluent countries, with generally higher participation rates in HE, tend to have below OECD average wage premia for adult graduates. The only countries where this is not true are Germany, the UK and the US. In the German case this will be partly because graduation rates are still relatively low. In the UK and the US it is presumably because wage inequality is in general relatively high. If we take only the 25-34 year olds graduates, however, wage premia are also relatively high in the Nordic countries and the smaller north-west European countries. But in many of the countries where graduate premia for all adults have been relative high (including in most of the Nordic countries and in Canada, New Zealand and the UK amongst the liberal countries), there have been declines in the relative economic benefits to graduates over the past decade. High participation higher education systems have generally seen a decline in relative adult graduate wages through the 2000s, although Australia, Denmark and the Netherlands seems to have avoided this. Germany stands out amongst the affluent countries in managing to hold up its graduate wage premium, no doubt partly because its graduation rates are quite low, relative to most affluent countries.

What is the balance sheet for the different types of higher education system? There seem to be a number of trade offs for different types of system.

1. Countries which have achieved very high rates of participation (including the East Asian countries and the liberal countries) may be producing public economic benefits in increasing skills levels, but they have not been very

successful in reducing inequality and generally produce diminishing economic returns for their graduates. Given that in these countries costs of higher education have risen substantially, we may wonder whether in the future declining rates of return to investment in higher education may not reduce incentives to study and make these systems unsustainable.

2. Countries which have increased higher education participation to more moderate levels, including the Mediterranean countries and the social market countries in north-west Europe, seem to have had more mixed results on our main criteria. Mediterranean countries (for which we have data) have not been very successful in reducing inequality, and the benefits they offer graduates are severely marred by high graduate unemployment rates, even where wage premia remain high, as in Spain and Greece. On the other hand, a few social market countries, including Austria, the Netherlands and Germany, have relatively low inequality of opportunity for higher education qualifications, and have been quite successful in sustaining the economic benefits for graduates.
3. The countries which have been most successful in terms of increasing participation in higher education and achieving relatively low inequality of opportunity are the Nordic countries. These have generally maintained high employment rates and relatively high wage premia for younger graduates as well (although not for adult graduates as a whole). They may also prove to be the countries where rates of return are least likely to fall, since costs to graduates have been kept low at the same time as graduate wage premia are sustained. This should maintain high demand for higher education participation in these countries. However, the problem to be faced by their governments is that the public costs of the HE systems will increase to very high levels if the demand for higher education is met.

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