ESRI

Working Paper No. 419

January 2012

To Convergence and Beyond? Human Capital, Economic Adjustment and a Return to Growth

John FitzGerald

Abstract: This paper considers the impact on growth and convergence in the EU over the last 20 years of investment in human capital. It examines the current adjustment of a range of economies to the external imbalances at the beginning of the current crisis. Finally it considers how the adjustments under way will contribute to a return to long-term growth.

Corresponding Author: John.FitzGerald@esri.ie

To Convergence and Beyond? Human Capital, Economic Adjustment and a Return to Growth

1. Introduction[1]

While the EU economy is suffering from its worst economic crisis since its foundation, it remains likely that an eventual resolution will be found which will allow a return to growth. As of today it is not clear what the nature of that resolution will be or how long it will take before an economic recovery will be clearly established. It is also not clear what permanent damage has been done to the EU economy as a result of this crisis. While it is absolutely certain that the current crisis will leave a permanent scar on the EU economy, resulting in the level of output per head in the future being substantially lower than it would have been absent the crisis, it still seems likely that there will be an eventual return to growth. How vigorous that growth will prove to be will depend on the underlying factors that drive long-term growth and also on the legacy effects of the current crisis, including the legacy of public debt.

This paper considers the evidence from the past quarter of a century on the factors that underpinned growth and the resulting experience of a limited convergence in living standards within the EU. In particular, this paper considers how the rising educational attainment of the EU population over that time contributed to the growth and convergence process. The paper then considers the nature of the adjustment process occurring in a range of EU economies today and its implications for future growth. The final section of the paper discusses what lessons can be learned from the past experience of growth and convergence in the EU for growth in the eventual recovery phase.

2. The Data

The data used in this paper on population, the labour force and employment, together with educational attainment, are taken from the EUROSTAT Labour Force Survey for the years 1992-2010. In the case of some countries the earliest data available from this source start in the latter half of the 1990s (new member states). In the case of the US, the data on the educational attainment of the population are taken from the US Bureau of the Census. The data on the returns to education are taken from the OECD publication *Education at a Glance, 2010*. For a few countries (the Baltics) and for the EU as an aggregate the average returns to education for the OECD as a whole are used. The other macro-economic data are taken from the DG ECFIN Ameco database.

While in this paper the data on educational attainment are used to make comparisons across countries, this approach is subject to significant problems. The classification of different levels of education differs across countries. For example, the data for Germany

[1] This paper was first presented at the DG ECFin research conference in Brussels on 21st November 2011. The paper has benefitted from comments received at that conference and comments from Iulia Siedschlag and Thomas Conefrey. The author alone is solely for the views expressed in this paper.

undervalue the sector-specific human capital of the work force arising from the unusual national mix of training and education. This limitation on the data must be taken into account when considering the results shown below. However, this problem is likely to be less serious where the data are used to make comparisons over time within individual countries.

The rise in the share of the EU population completing high school and going on to third level education may be accompanied by a decline in the quality of that education. Carneiro and Lee, 2011 show for the US that the rising share of the population obtaining a college education has seen a fall in the quality of that education, resulting in a perceptible fall in the private returns to education over time below what they would otherwise have been[2]. This decline could be due to either a reduction in the ability of those going on to third level education or else to a decline in the quality of education provided; the paper cannot identify the precise mechanism. It is quite possible that a similar process may accompany the upgrading of educational attainment in individual EU countries.

The data from the AMECO database are used for the period up to and including 2010. These data were finalised early in 2011 so that they do not take account of new information which has become available over the course of the year.

3. Methodology

For each country a human capital index is developed for each age cohort of the population. This is done by weighting the returns to education for a base year (the most recent year available) by the proportion of the population with each (of three) levels of education. Under a series of demanding assumptions, including perfect competition in the labour market, each factor of production is paid its marginal product. Under these circumstances the human capital index will reflect the productivity of the labour force at the margin. If the returns to education were unchanging over time then the change in the index will reflect the effect on labour productivity of changes in the educational attainment of the population. However, changes in the relative supply of the different types of labour will interact with changes in the demand for labour resulting in changes in the returns to education. This paper does not attempt to take account of this factor – a more sophisticated model would be required to do so, as in Bergin and Kearney, 2006. With a rising share of the EU population having third level education, ceteris paribus, this would be expected to reduce the returns to third level education. Carneiro and Lee, 2011, report that in the US, in spite of a fall in education quality, returns to education have increased over time. As the EU economy shifts its production structure, reflecting its changing comparative advantage in the world economy, the rising demand for products and services that require skilled labour input may also result in an increase in the share of labour demand for skilled workers.

[2] In spite of the effect of the decline in the quality of education, returns to education did increase due to changes in the demand and supply of skilled labour.

4. The EU experience of growth and convergence: 1985-2010

Even after the very serious downturn in the EU economy over the last three years it is apparent that there has been significant convergence in living standards within the EU over the last quarter of a century. In the case of the original EU 15, the former "cohesion countries" Spain, Portugal, and Ireland saw a substantial rise in GDP per head over that period, bringing living standards closer to the EU average. In the case of the 12 countries that subsequently joined the EU there is also a clear success story which has not been rolled back by the current crisis.

One of the issues which arises in looking at the more recent history of the EU is whether the convergence that has occurred was, in fact, sustainable. In the case of the former "cohesion countries" Ireland, Spain, and Portugal and Greece a significant part of the growth over the last decade was clearly unsustainable. This was reflected in the large and rising balance of payments deficits in those countries. It is obviously too early to determine what the "sustainable" growth record was for those countries. However, here we look at the record up to 2010, taking into account the first three years of the current recession.

The track record on convergence

Figure 1 shows the movement in GDP per head (in PPS) for a range of countries in the original EU 15 over the thirty years from 1980 to 2010. Portugal showed a significant improvement in its relative position between the time it joined the EU and 2000. However, since that date there has been little progress. Spain and Ireland showed continuing progress over the period from the late 1980s through to 2007. While the current recession has seen a substantial reduction in their relative position (especially for Ireland) the relative level of output per head is still substantially higher than it was in the late 1980s. For Greece, even before the current recession, the record was poor with some evidence of longer term divergence rather than convergence.

Figure 1:

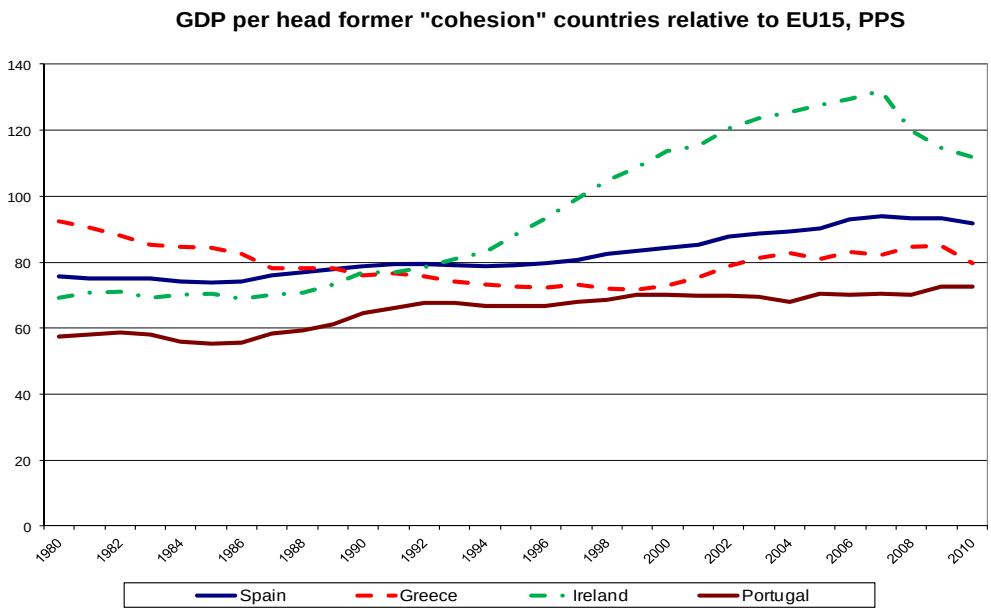


Figure 2:

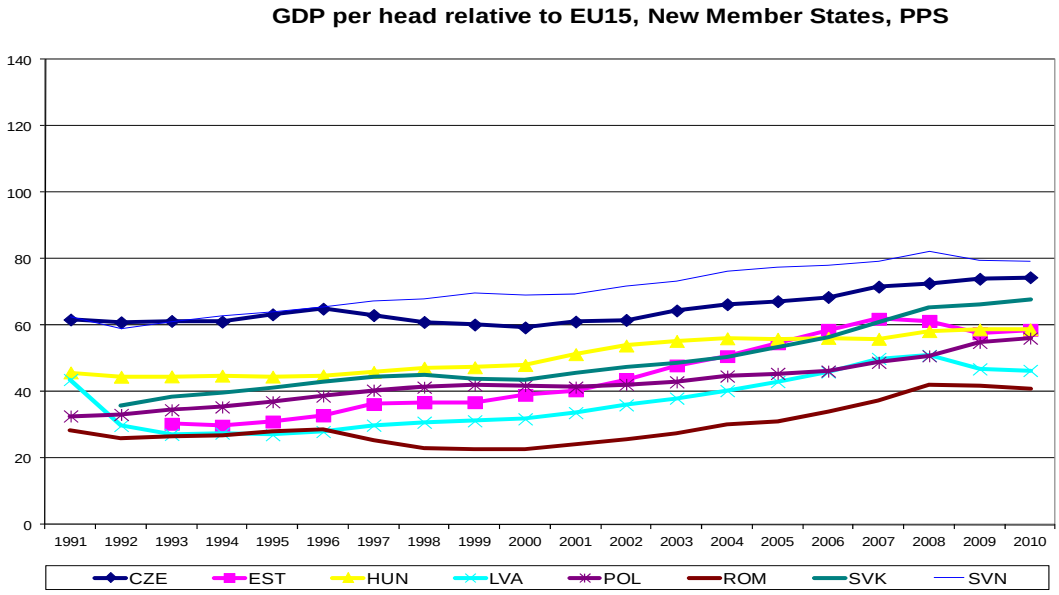


Figure 2 shows the record since 1991 for most of the newer member states. In nearly all cases there is evidence of convergence. The smallest improvement is in the case of the Czech Republic which was already the richest of these countries in the early 1990s. The biggest improvements in relative position occurred in the case of the Baltics (Estonia and Latvia) and Hungary. In spite of the very severe recessions in the Baltics in the 2007-09 period, they have held onto much of their previous gains.

This suggests a reasonably successful record of convergence in living standards within the EU over the past twenty years. However, in considering how the process may play out over the coming decade it is important to understand the different factors that have contributed to this process.

It is useful to decompose the change in living standards (GDP per head) into a number of components, as shown in Figure 3. Probably the key factor in the long-term convergence process is the growth in productivity. The growth in productivity can be affected by supply side policies in a number of different ways, including investment in human capital. However, public policy and the effects of EU integration can also affect the employment rate (the inverse of the unemployment rate) and the participation rate. While also affected by policy in the very long-term, the age dependency ratio was largely predetermined within the period of EU integration considered here: the effects of the fall in the birth rate in earlier decades took some considerable time to affect this ratio.

Figure 3: Decomposition of Measure of GDP per head

$$\underbrace{\frac{GDP}{Pop}}_{\text{GDP per capita}} = \underbrace{\frac{GDP}{Emp}}_{\text{Productivity}} \cdot \underbrace{\frac{Emp}{LForce}}_{\text{Employment Rate}} \cdot \underbrace{\frac{LForce}{Pop1564}}_{\text{Participation Rate}} \cdot \underbrace{\frac{Pop1564}{Pop}}_{\text{Dependency Ratio (inverse)}}$$

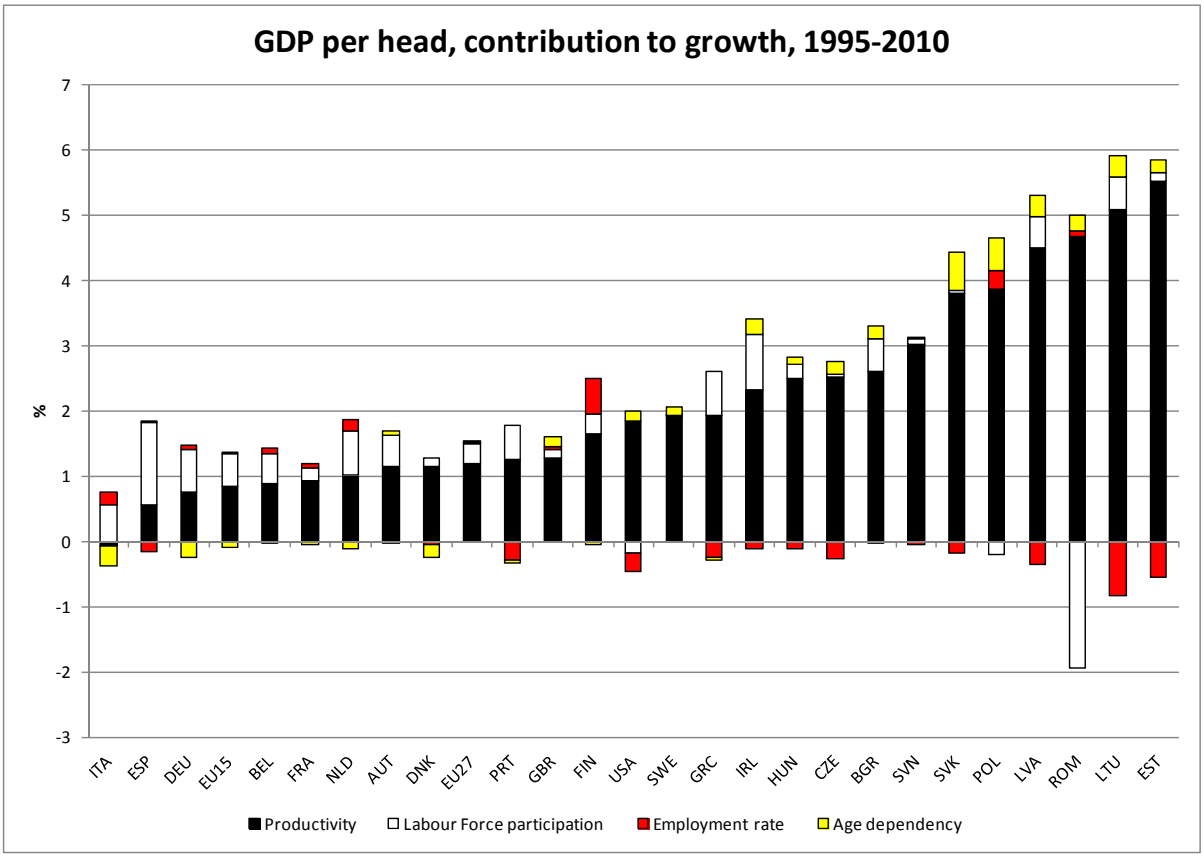
In addition to these factors, as discussed later, the investment in human capital over the last half a century in Europe has affected directly three of these factors – productivity, the employment rate and the participation rate. The effect of rising educational attainment through these channels is considered below.

Figure 4 shows a decomposition of the growth in GDP per capita over the period 1995-2010 for most EU countries and the US. The countries are ranked in order of the size of the productivity effect. What is clear from the Figure is that the rise in output per person employed (productivity) was the single most important factor in the growth that took place over that period 1995-2010. All of the newer member states appear in the right hand side of the Figure, reflecting their above average growth in productivity. This is what would be expected in countries catching up from a significant distance behind the production frontier. The new member states were able to adopt the technologies and approaches to organising their economies that were readily available in the rest of the EU, allowing them to accelerate the convergence process.

The US appears in the middle of the range of countries, with an average growth in productivity that was higher than in most of the EU15 over the same period. This meant that, while the US had a level of output per head significantly higher than in the EU15 at the beginning of the period, there was no significant convergence between the US and the EU over the fifteen years.

Spain and Italy show a very low rate of productivity increase over the period whereas Greece and Ireland show an above average increase. However, until the current recession has played out, returning these economies to a new equilibrium, it may be too early to draw firm conclusions.

Figure 4: Growth in GDP per head, 1995-2010



The Role of Education

Over the last half a century there has been substantial increase in the educational attainment of successive cohorts of young people leaving the educational system in what is now the EU. However, when compared to the US the average education of the population looks rather low, especially for the cohorts born before 1960. In the case of the US the educational attainment of those born in the 1950s is very similar to that born in the 1980s. By contrast, in the EU, the cohort from the 1990s achieved a much higher rate of completion of high school relative to the 1950s cohort and also a much higher proportion completing a third level qualification. Nonetheless, even for the 1980s cohort, in the EU around 20 per cent failed to complete high school relative to 10 per cent in the US and the proportion completing a third level qualification was also significantly lower. (There is considerable diversity of experience within the EU.)

As discussed above, there are serious problems in comparing educational attainment across countries. However, within countries the data have greater validity. As discussed below, these data suggest that for the US the growth experience of recent decades owes little to increasing educational attainment as the educational attainment of new labour market entrants is similar to those who are retiring. By contrast, the rising educational attainment of the population as a whole could be expected to have played a bigger role in contributing to growth.

Figure 5: Educational Attainment of the Population, EU, Successive birth cohorts

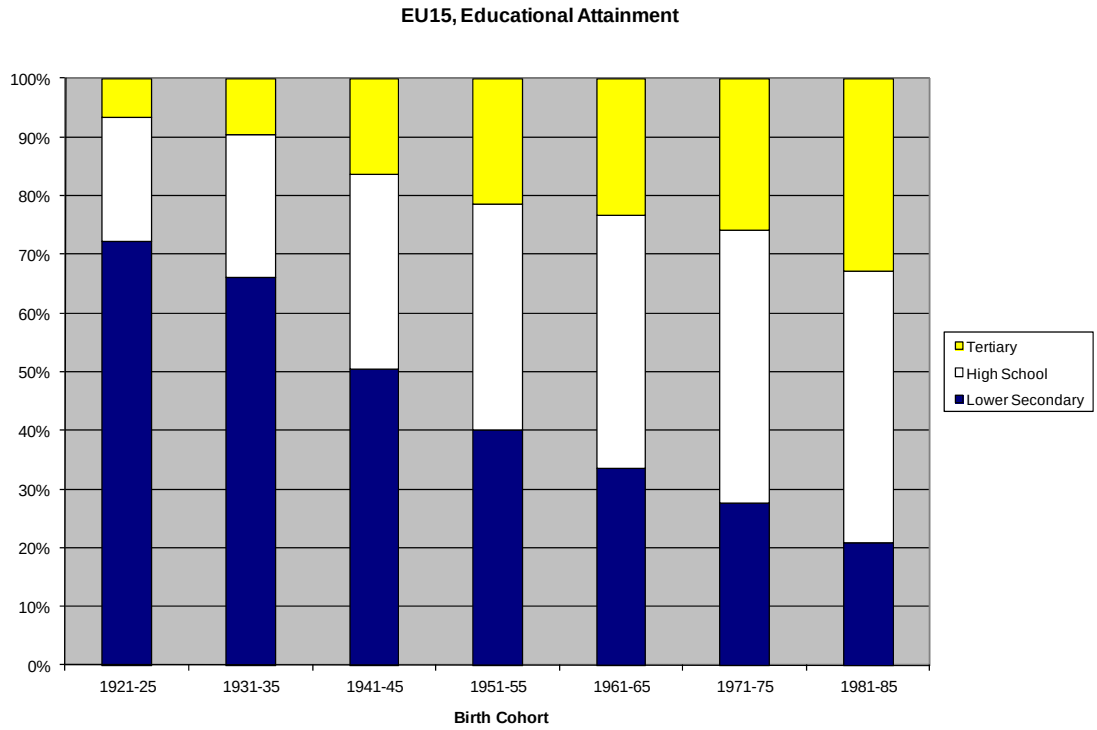
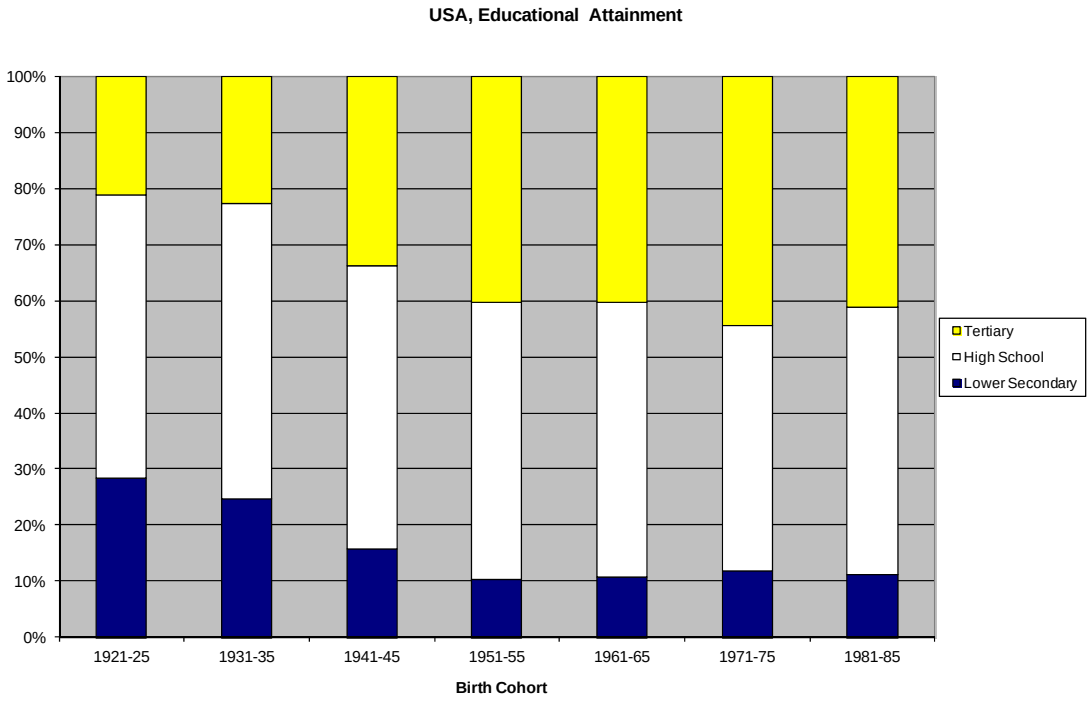


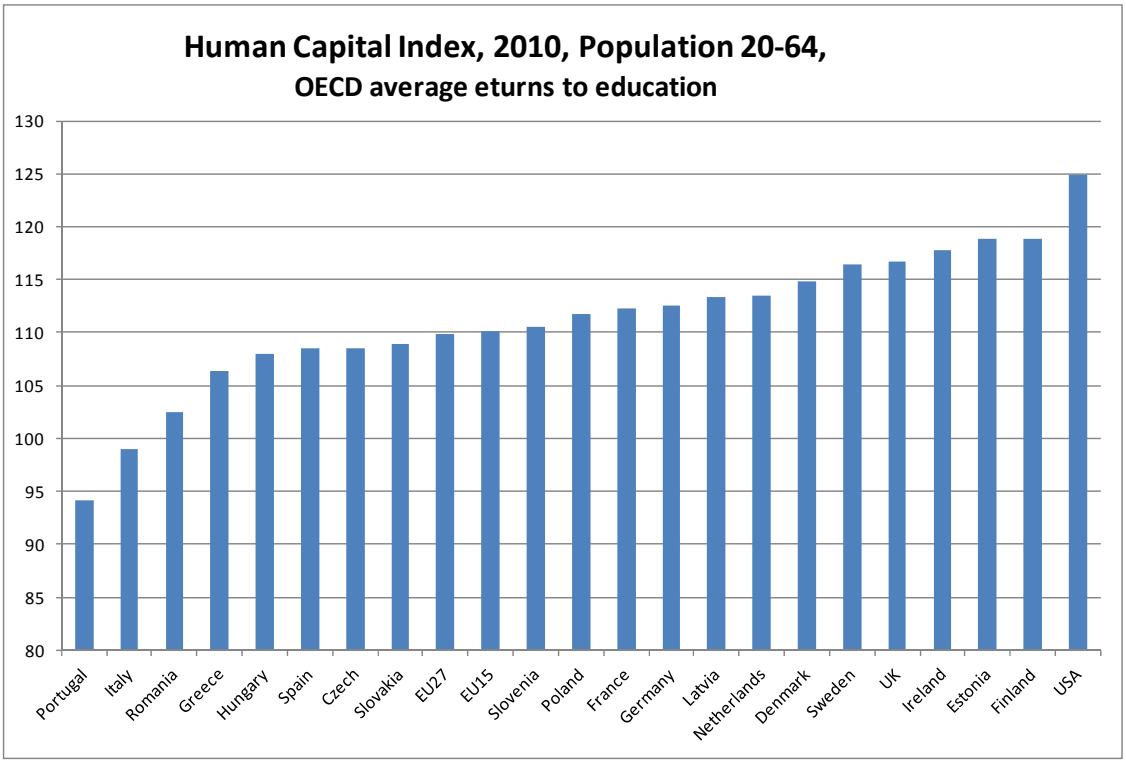
Figure 6: Educational Attainment of the Population, US, Successive birth cohorts



This investment in education in recent decades in the EU has been unevenly distributed across its members. (Appendix 1 gives similar data for a sample of EU members showing some of the diversity in educational experience across the EU.) Figure 7 shows the indices for human capital for individual EU member states for 2010. These indices are derived using the OECD average rate of returns to education rather than the country specific data. This is

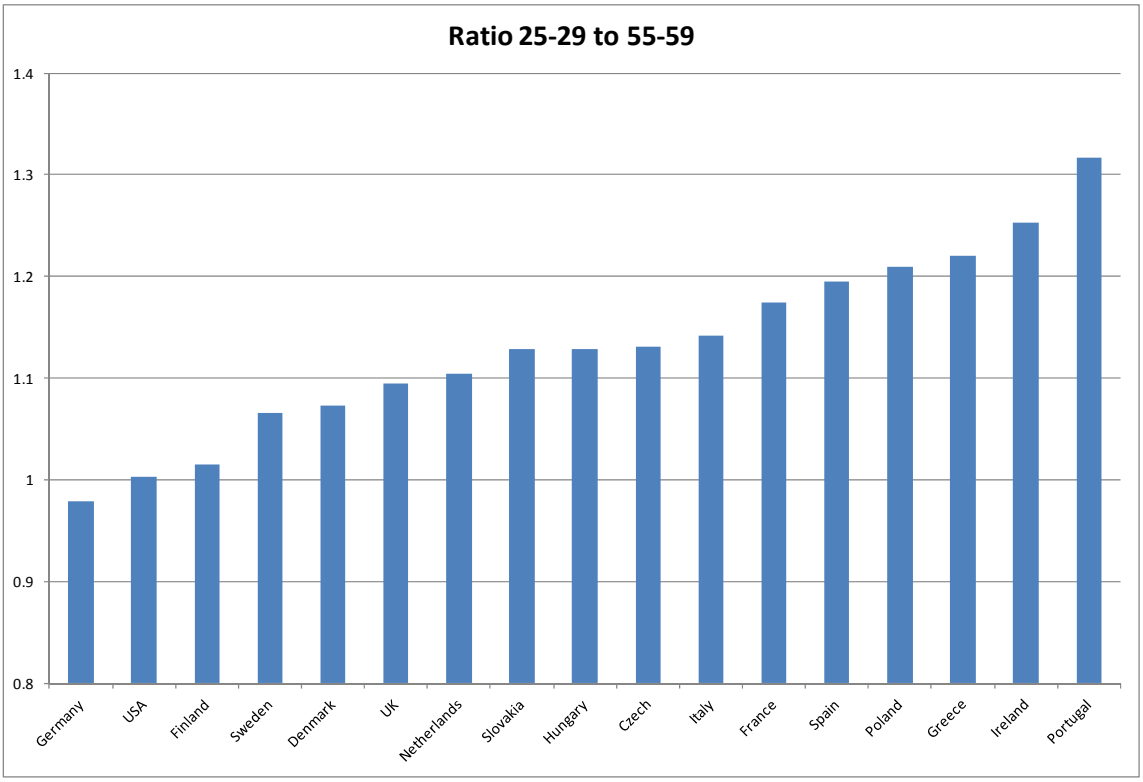
because the country specific data are only available for a subset of countries. This Figure shows the USA as having the highest level of education followed by Finland, Estonia, Ireland, the UK and Sweden. Clustered at the bottom are Portugal, Italy, Romania and Greece. As discussed above there are problems with comparing such data. However, it is quite striking that the newer member states tend to have higher than average levels of educational attainment whereas some of the countries in the southern half of Europe tend to have lower levels of education. This partly reflects historical differences where northern Europe from Russia through to the UK invested in education after the Second World War, whereas Southern Europe (including Ireland) came later to this pattern of behaviour.

Figure 7: Index of Human Capital, 2010 for population aged 20-64



To the extent that the private returns to education reflect the productivity of individuals, the changes over time in the index for a country should reflect changes in the productivity of labour. Using data for 2010, Figure 8 shows the ratio of the human capital index for 25-29 year olds relative to that for 55-59 year olds. In this case country specific rates of return for different levels of education are used. Thus in the case of Germany the level of education of the 25-29 year old cohort was very similar in 2010 to that of the 55-59 year old cohort as reflected in a ratio of the two indices close to unity. This reflected the fact that Germany, like the US, Finland and Sweden already had good educational systems when the 55-59 year olds graduated from school or university and that there has been little change in this high level of educational attainment over the last 30 years. The implication of this is that relatively little of the growth in these economies is directly attributable to changes in the educational attainment of their populations. For Germany Koman and Marin, 1997 suggest that the biggest effect on growth of the post-war improvement in the German educational system occurred in the 1970s.

Figure 8: Investment in Human Capital. Ratio of indices for 25-29 year olds to 55-59 year olds, 2010



By contrast, investment in education in Portugal, Ireland, Poland, Greece and Spain has been much more recent. This means that the growth in the economy in recent years will have benefitted from the effect of this investment. It also means that, even without any additional investment in education in these countries, the carryover effect of past investment will continue to impact on growth for some time to come. This has implications for any economic recovery. The fact that in Spain and Portugal the average educational attainment of the population remains below average means that there is more scope for further investment in human capital to enhance future growth in those economies than is the case for most other EU economies. If such investment were to take place it would be expected to affect those economies in the next decade rather than the current decade.

How Investment in Human Capital can affect the Economy

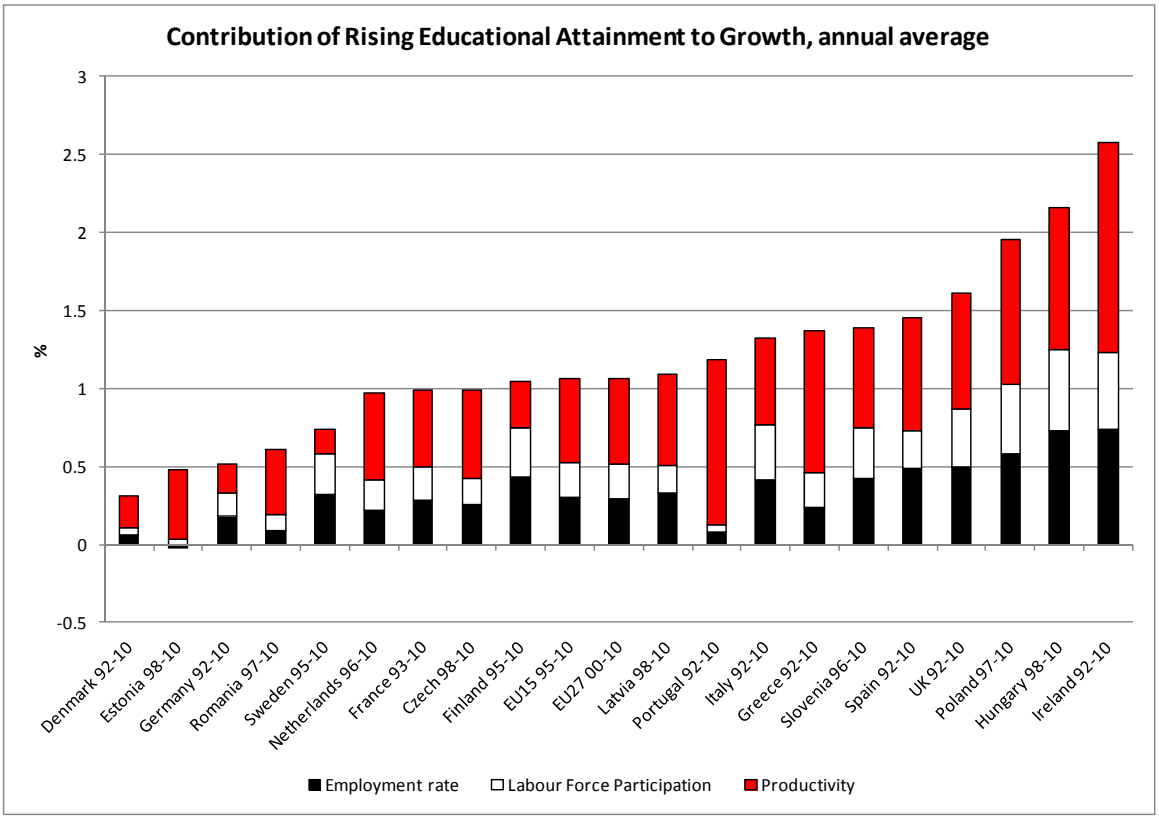
So far attention in this paper has been focused on the likelihood that investment in human capital will enhance growth through raising the productivity of the population and of the labour force. This increase in productivity is itself facilitated through two mechanisms: a higher level of human capital itself facilitates the adoption of new technologies (Nelson and Phelps, 1966) and higher levels of human capital directly enhance labour productivity (Murphy and Siedschlag, 2011). However, there are two other channels through which investment in human capital can indirectly affect growth.

For nearly all EU countries the labour force participation rate is much higher for those who complete high school than for those with only a lower secondary level of education. The participation rate is even higher for those with third level education. The effect of education

on labour force participation occurs primarily through its impact on the female labour force. For example, because higher educational attainment increases productivity and, hence, potential earnings, it enhances the financial returns from working relative to the costs of child care. Thus the upgrading in the educational attainment of the population over the last forty years has been an important factor in increasing the size of the labour force and, hence, of employment.

In addition, especially for unskilled males, for whatever reason the participation rate tends to be lower than for other males. Thus the conversion of a significant share of the population, who would in a previous age have not completed high school, into high school graduates today (or third level graduates) has also raised the labour force through raising participation rates.

Figure 9: Contribution of rising Educational Attainment to Growth



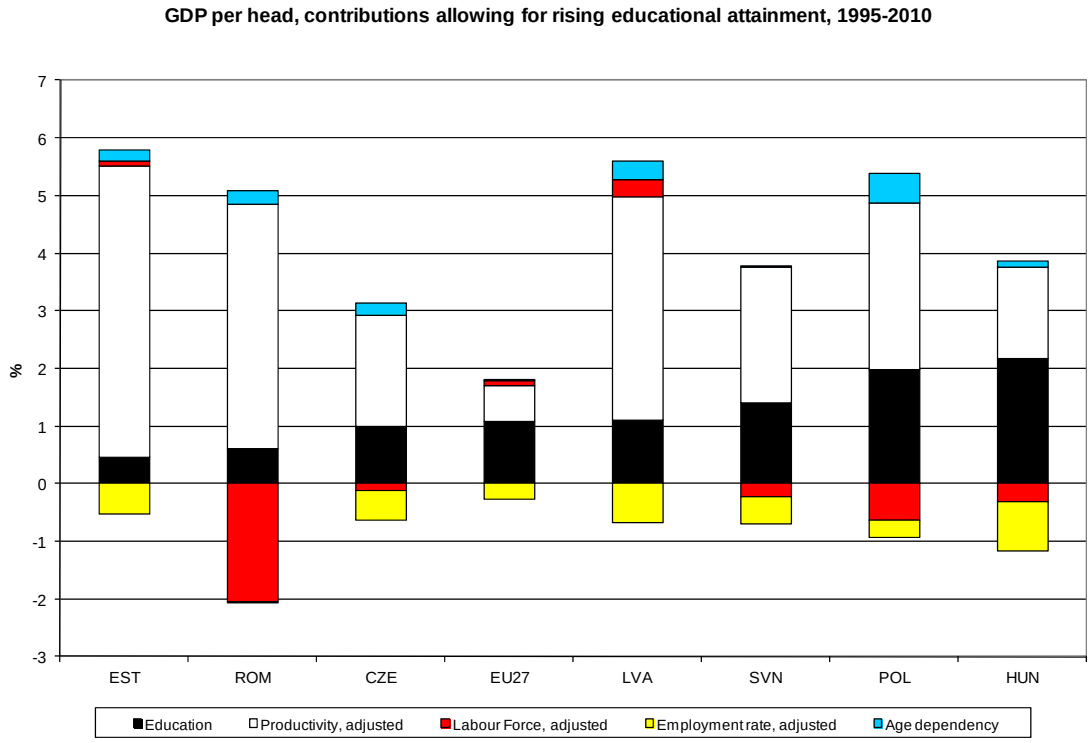
The effect of this increase in potential labour supply as a result of past investment in education, ceteris paribus, would have reduced the returns to education. However, with the changing position of the EU within the world economy, the composition of exports of EU goods and services has tended to shift towards sectors with a higher human capital input. In turn this has seen a substantial increase in the demand for skilled (highly educated) labour relative to unskilled. Thus the observed change in returns to education has not in any way offset the effect of enhanced education in increasing labour supply. As this enhanced supply of labour has been productively employed in the EU economy over the last twenty years it has made a significant additional contribution to the growth in total output.

The third channel through which enhanced educational attainment has affected the economy is through making a significant share of the EU labour force, which would previously have been difficult to employ, into employees with good jobs and good earnings. The data from all the EU members indicates that the unemployment rate for those who have not completed high school is always substantially higher than for the rest of the labour force. When potential earnings are low due to the low productivity of a worker with limited education the gap between earnings in employment and income from welfare is narrowed. In turn, this increases the probability of the individuals concerned spending much of their working career in unemployment. Thus the effect of rising educational attainment is, ceteris paribus, to reduce the level of unemployment and increase productive employment.

The effects of rising educational attainment on labour force participation are estimated through applying the 2010 labour force participation rates to the 2010 population assuming that the breakdown by educational attainment was as it had been in 1995. This suggests that in the absence of the improvement in the educational attainment of the population, the labour force in all countries would have been substantially lower in 2010 than was actually the case. Assuming that the effect on the annual average percentage increase in the labour force would have resulted in a similar percentage increase in employment this can be translated into an effect on the average growth rate over the period. Figure 9 shows the estimated effect on average growth in a range of countries arising from this channel.

A similar approach is taken to estimating the indirect effect of rising human capital on unemployment (and employment). The 2010 unemployment rates by level of education for each country are applied to the 1995 educational composition to derive a “reduction” in unemployment as a result of the higher level of education. The quantification of this effect is also shown in Figure 9.

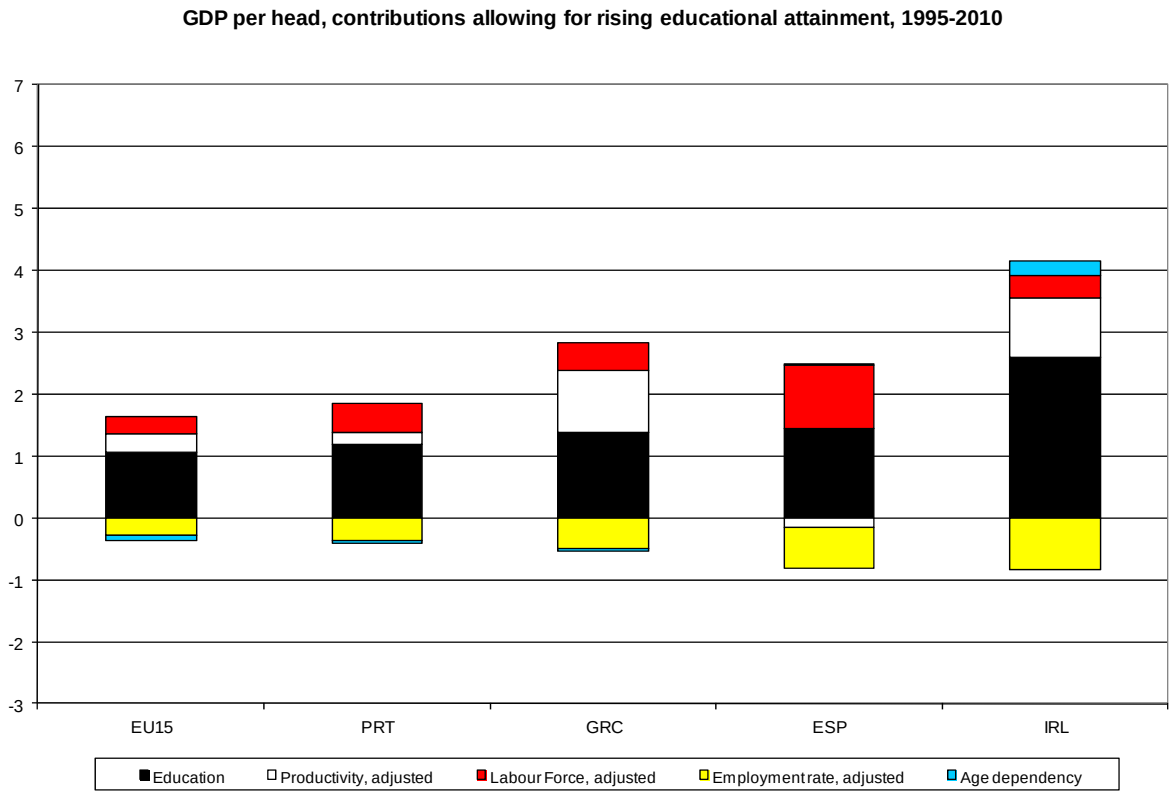
Figure 10:



In addition, Figure 9 also shows the direct effect on productivity (and growth) from rising educational attainment. This is measured as the average annual percentage increase in the country specific human capital index. When taken together these estimates a cumulative impact on the average growth rate in Ireland, Hungary, Poland and the UK of over two percentage points a year. The biggest effect comes from the productivity effect with significant additional contributions through the other channels. For most countries in the EU the effect of rising educational attainment contributed at least one percentage point a year to the growth rate over the period. The smallest impact is in the case of the countries that had good educational systems for a number of decades: Germany, Denmark, Estonia and Sweden.

Figure 10 shows an adjusted decomposition of the factors contributing to growth in GDP per head for some of the new member states. In the case of productivity, the labour force and the employment rate the estimated impact of education is subtracted out and the cumulative impact of education is shown as a separate contribution to the average annual change in GDP per head. Even after this adjustment the biggest contributor to the growth in GDP per head (and hence in convergence) has been the growth in output per head. In Latvia, Estonia and Romania the growth in productivity contributed more than 3 percentage points a year while it was around 2 per cent a year in Poland and Slovenia. This high rate of growth in productivity reflects the fact that these economies are coming from behind and can move rapidly to frontier technologies. However, as Rodrik, 2011 suggests, this process is not inevitable; in many economies in the developing world institutional failure or a range of other factors may prevent such a convergence process.

Figure 11:



In Figure 11 a similar decomposition is shown for what were the former "cohesion" countries within the EU 15 – Greece, Ireland, Portugal and Spain. In the case of these four economies rising educational attainment has been the single most important factor in the growth in GDP per head. The contribution ranges from just over one percentage point for Portugal to around 2.5 percentage points for Ireland. However, when allowance is made for increasing human capital, changes in productivity of labour made no contribution to growth in output per person in Portugal and Spain and a contribution of under one percentage point a year in Ireland and Greece. Because the end date is 2010 when unemployment was at a peak in these countries there was a significant negative effect on growth from the employment rate. In long run equilibrium this negative impact should disappear but there would also be changes in the other variables.

Figure 12:

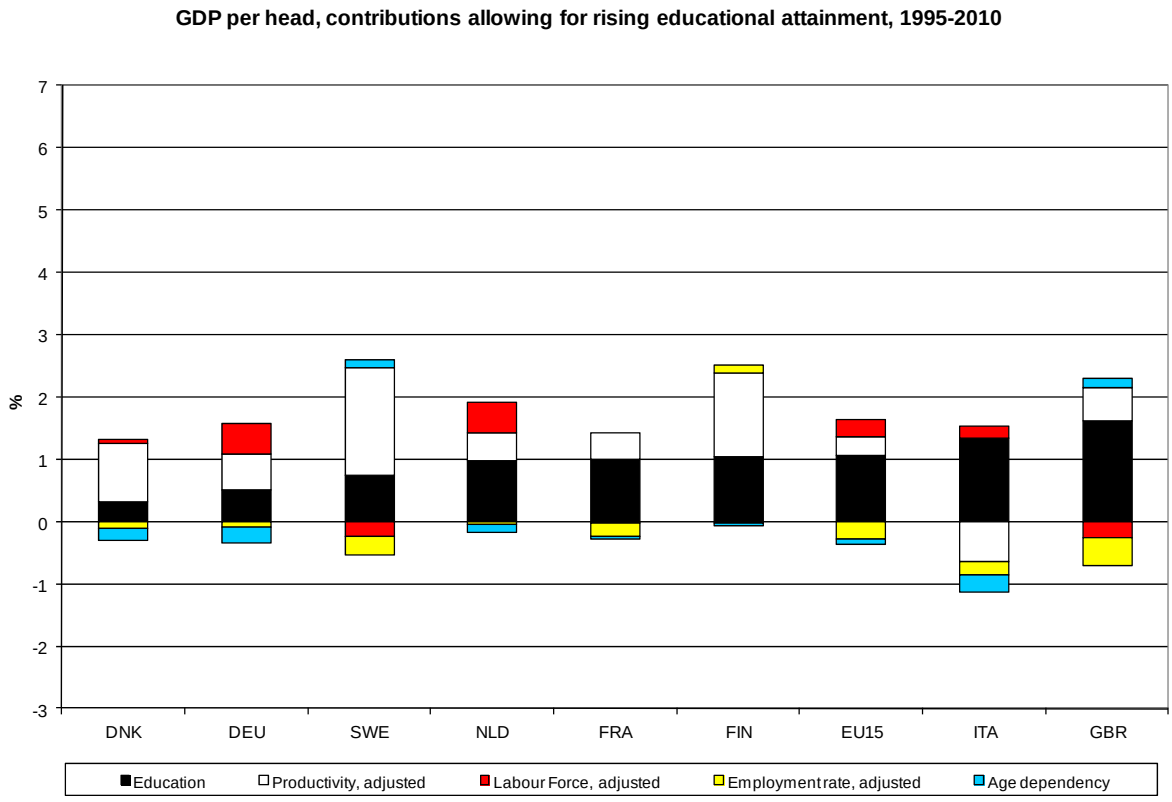


Figure 12 shows a similar breakdown for 8 of the rest of the original EU 15. Here it is interesting that for all but Denmark, Sweden and Germany rising educational attainment accounted for around one percentage point a year of the growth in GDP per head. The three Scandinavian countries, Finland, Sweden and Denmark showed an average annual increase in output per person employed of one to two per cent. For the others this productivity effect was quite low and negative in the case of Italy.

In summary, the rising educational attainment of the EU population over the period 1995-2010 contributed around one percentage point a year to the growth rate. This experience was quite general across EU members. The exceptions were the countries where the level of education was already very good in the 1950s and the 1960s leaving less room for improvement.

5. Undertaking Necessary Adjustment

After the start of the EMU the issue of the balance of payments of individual member states fell from policy-makers' oversight. While both Ireland and Spain largely complied with the requirements of the Stability and Growth Pact (SGP) before the crisis, they have seen a critical deterioration in their public finances when the recession hit. The SGP was no guarantee that all was well in those economies. What most clearly signalled the growing internal problems in those economies was the growth of their balance of payments deficits over the course of the last decade. Blanchard, as early as 2001, identified this as a problem for Spain and, writing in 2007, he showed that even with rational and well-informed markets

(no bubbles), governments of individual member states in EMU should care about balance of payments deficits (Blanchard, 2001 and 2007). With the benefit of hindsight it is clear that property bubbles were growing in both Spain and Ireland, bubbles which markets (and governments) did not anticipate. The possibility of such bubbles occurring through irrational or unexplainable action by individual economic agents further strengthens Blanchard's arguments.

Table 1: Previous Large Adjustments

		Balance of payments		Exports	Imports	GDP	Effective
		as % of GDP					Exchange rate
Country	Years	Initial	Change	Change	Change	%	%
Austria	1980-85	-4.5	3.4	3.4	0.1	7.4	5.3
Finland	1989-93	-5.0	3.5	8.4	2.0	-9.5	-24.8
UK	1989-94	-4.9	3.9	2.8	-0.4	6.1	-8.8
Belgium	1980-85	-3.9	4.3	13.4	9.3	4.8	-15.1
Denmark	1986-90	-5.5	5.9	4.1	-1.8	2.3	8.2
Portugal	1982-86	-14.5	13.0	6.6	-7.5	4.9	-44.5
Ireland	1981-87	-13.3	13.1	9.3	-9.2	15.2	-0.3

While membership of EMU made it easier to finance such deficits, non-membership did not prevent the growth of very large deficits in other member state such as Estonia, Latvia, Bulgaria, Hungary and Romania. Where these deficits were funded by direct investment the countries were less vulnerable to sudden reversals (von Hagen and Siedschlag, 2010). However, where the capital inflow occurred through the banking system or through portfolio investment there was greater vulnerability to sudden shocks.

Initially relatively little public attention was devoted to this sign of growing imbalances. Some governments relied on the fact that the foreign liabilities being incurred as a counterpart to the balance of payments deficits were private sector liabilities. This lack of concern was strengthened by the absence of exchange risk in the case of Spain and Ireland. There was an illusion that such private sector liabilities could never become the responsibility of domestic governments. However, when the crisis hit, where these liabilities belonged to a domestically owned banking system, it proved impossible for the domestic government to avoid all responsibility for these debts. Ireland was the most notable example where the private sector liabilities turned into public sector liabilities. Other countries that have seen this occur on a much smaller scale include the UK, Spain, and even a surplus country, Germany.

For some countries with very large balance of payments deficits, such as Estonia and Hungary, the liabilities were the responsibility of foreign owned banks. As a result, these countries did not have to take responsibility for these private sector liabilities when the crisis hit as ultimate responsibility lay with the foreign owners of the banks.

Whether or not the counterpart to the balance of payments deficits across the EU was a rise in government indebtedness or in private sector indebtedness, the deficits signalled dangers ahead. As the deficits continued to rise, as a consequence of (and allowing) very rapid domestic growth, especially in the building sector, this was unsustainable. With the advent of the crisis, even where the balance of payments deficits are not the counterpart to large government borrowing, they still need to be tackled as they are no longer fundable in a risk-averse world.

This pattern of occasional large balance of payments deficits in individual European countries necessitating serious economic adjustment at the height of the crisis is not new. In Table 1 a number of examples of major imbalances that have occurred in the past are illustrated. The table shows the balance of payments deficits at their peak and also the subsequent change as the problem was addressed. The two biggest previous crises considered in Table 1 are those of Portugal and Ireland in the 1980s. The proximate manner of redressing these imbalances was either or both of an increase in the export share of GDP or a decrease in the import share.

As shown in Table 1, only in the Irish and the Portuguese cases did a large reduction in imports contribute to the adjustment. Even in those two cases the increase in the export share was close to the reduction in the import share. In all the other cases, because the adjustment took place through the allocation of more resources to producing exports, the adjustment was accompanied by continuing growth in the economies. Unlike today, the individual countries making substantial adjustments were doing so against the backdrop of continuing growth in their trading partners. The one exception to this was the case of Finland in the 1989-93 period. The Finnish problems were aggravated by the economic collapse in a major trading partner, the Soviet Union, and the Finnish crisis also involved a financial collapse.

In some, but not all of these cases of adjustment domestic fiscal action was accompanied by a substantial depreciation in the effective exchange rate. This was particularly marked in the case of the Portuguese adjustment and the Finnish adjustment. However, in the case of the Irish adjustment the fall in the effective exchange rate was quite moderate. An exchange rate change facilitated adjustment but was not essential.

Table 2: The Current Crisis – Economic adjustment and the Balance of Payments

		Balance of payments		Exports		Imports	GDP	Exchange rate
		as % of GDP						Effective
Country	Years	Initial	Change	Initial	Change	Change	%	%
Portugal	08-10	-12.6	2.8	32	-1.5	-4.4	-1.2	-1.4
Greece	08-10	-16.3	4.6	23	-2.5	-6.9	-6.4	-0.5
Ireland	07-10	-5.5	4.8	80	22.4	12.5	-11.8	1.2
Spain	07-10	-10	5.5	27	-0.6	-5.2	-3.0	0.7
Hungary	08-10	-6.9	8.6	82	4.8	-2.0	-5.6	-8.7
Romania	07-10	-13.6	9.5	29	6.5	-2.0	-1.5	-20.1
Lithuania	07-09	-15.1	17.7	54	0.5	-11.4	-12.2	3.7
Estonia	07-09	-17.2	21.7	68	-2.9	-19.6	-18.3	3.6
Bulgaria	07-10	-25.2	24.3	59	-1.7	-19.5	0.5	1.7
Latvia	07-09	-22.3	30.9	42	1.5	-17.0	-21.4	3.2

Turning to the current crisis in EU economies, Table 2 shows similar data to Table 1 for those economies with large and unsustainable balance of payments deficits. In the Table they are ranked in order of the size of the reductions in the balance of payments deficits that have already occurred. The largest deficits were experienced in 2007 or 2008 in a range of new member states – Latvia, Estonia, Bulgaria, Lithuania and Romania. However, these deficits have been largely eliminated within a very tight time scale. With the exception of Romania, the vast bulk of the adjustment occurred through a dramatic reduction in the import share of GDP rather than through a rise in the export share. Also there was very little change in the effective exchange rate with the same exception, Romania. In most cases (other than Romania) there was also a very big fall in GDP. Adjusting through an increase in exports takes much longer, but would potentially have a much less negative impact on GDP.

The mechanism to bring about the very rapid and large adjustment in the Baltic republics was, first and foremost, a collapse in domestic investment demand. In turn, this created major fiscal problems which were addressed with fiscal tightening. The combined effect was a drastic fall in output.

In the case of Portugal and Greece the deficits in 2008 were very large. While some adjustment had taken place by 2010, there was still a long way to go. In both cases the bulk of the adjustment that did take place was through a reduction in the import share of GDP. In both cases the export share of GDP is quite low, so that a very large percentage increase in exports would be required to close the deficit. Such a huge reallocation of resources could take some considerable time, leaving a cut in imports through domestic deflationary action the main mechanism for adjustment.

In the case of Ireland the bulk of the adjustment in the balance of payments had been completed by 2010. This partly reflected the fact that the initial deficit was smaller than in

the case of the other countries. In the Irish case the main mechanism appears from the table to be a rise in the export share of GDP. This proved possible because exports already constitute a very large share of GDP so that the percentage increase in volume needed to make the adjustment was relatively low and, hence, achievable in a relatively short time scale. However, the dramatic reduction in the value of GDP here masks a major reduction in import demand as a result of the dramatic reduction in domestic demand.

Table 3: The Current Crisis – Economic Adjustment, Investment and Unemployment

		GDP				
		Growth	Investment share of GDP			Unemployment rate
Country	Years	%	Start	End	change	change
Portugal	08-10	-1.2	22.5	19.0	-3.5	3.3
Greece	08-10	-6.4	19.1	14.7	-4.4	0.1
Ireland	07-10	-11.8	26.4	11.3	-15.1	9.1
Spain	07-10	-3.0	30.7	22.5	-8.2	11.8
Hungary	08-10	-5.6	20.6	17.7	-2.9	3.4
Romania	07-10	-1.5	30.2	22.7	-7.5	0.9
Lithuania	07-09	-12.2	28.3	17.1	-11.2	9.4
Estonia	07-09	-18.3	34.4	21.6	-12.9	9.1
Bulgaria	07-10	0.5	28.7	23.5	-5.2	3.3
Latvia	07-09	-21.4	33.7	21.5	-12.2	11.1

Generally, where a balance of payments adjustment takes place through a cut in imports this must, in turn, be driven by a fall in domestic demand and, hence, a fall in GDP. This is a painful process. If the adjustment can be achieved through higher exports it is much more likely to be accompanied by growth in GDP.

Table 3 gives more details of how the adjustment process is playing out within the EU deficit countries. It shows the investment share at the beginning of the crises. This suggests a sharp divide between the countries where the imbalances reflected an exceptionally large investment share of GDP, and related property bubble, and countries where investment was not abnormal. In the former camp were Ireland, Spain, Romania, Lithuania, Estonia, Bulgaria and Latvia. With the exception of Bulgaria, the investment share has fallen dramatically over the period 2007-10. This collapse in the investment share has generally not been due to direct fiscal action but rather to a collapse in the bubble. This has, in turn, had very adverse consequences for the public finances.

The effect of the collapse in a property market bubble is that the investment share of GDP falls precipitously. This can and does take place over a limited space of time. In turn, with the fall in domestic use of funds, it results in a substantial increase in the private sector

surplus of funds (or a reduction in its deficit). This is the capital account counterpart to the reduction in the current account deficit resulting from the collapse in domestic demand.

A second consequence of an adjustment through a bursting property market bubble is that the output of the building sector falls dramatically. Because this sector is generally low productivity and quite employment intensive it results in a big increase in unemployment. In five of the economies experiencing an adjustment through this mechanism (a collapse in investment) the rise in the unemployment rate exceeded 9 percentage points over the period 2007-10. The rise in the other three economies (Greece, Portugal and Hungary was much lower.)

A third consequence of an adjustment through a bursting property market bubble is that it can lead to a financial collapse. This is what happened in Ireland (and in Finland in the early 1990s). While Spain has escaped this outcome, it has, nonetheless, seen significant problems in the financial sector. Where there is a financial collapse, as in Ireland, this greatly magnifies the costs of adjustment. In the case of Ireland the support for the banking system has directly added forty percentage points to the debt GDP ratio, with all that that entails in the burden of future debt interest payments (FitzGerald and Kearney, 2011). This contrasts with the case of Estonia. Because the banking sector in Estonia is foreign owned, the financial costs of the collapse in investment demand did not directly affect the local economy. This has made it possible for the economy to move on rapidly from the collapse in investment, unlike Ireland.

In the case of the other countries (Portugal, Greece and Hungary) with more normal investment shares yet large deficits, the adjustment process (towards balance on the current account) is more complex.[3] Instead of a collapse in investment demand triggering the adjustment, direct fiscal action is the only way to bring it about. This must involve a generalised reduction in consumption as well as investment. Instead of the costs of the adjustment being concentrated on the unemployed who previously worked in the building and related sectors, as in Ireland, Spain and Estonia, the costs of adjustment are likely to shared much more broadly by the population as a whole.[4] Adjusting through cutting public expenditure or raising taxes also tends to take longer than the forced adjustment through a bubble bursting.

Those countries that had exceptionally high levels of investment have seen a collapse in investment demand triggering a big fall in imports and a rapid adjustment in the balance of payments. For them the necessary adjustment in the balance of payments has been accomplished or is on the way to being accomplished. What are left are the legacy effects of the collapse on the public finances (and, in the case of Ireland, on the financial system). In the other countries the adjustment has some considerable way to go. While, given time,

[3] Obviously it is not necessary to restore the current account to balance to ensure sustainability. However, in the case of these countries there is clearly a significant further distance to travel.

[4] In the case of Ireland, Spain and Estonia, the population as a whole are also suffering a major loss of real income as a result of the second round effects of the crisis – the catastrophic effect on the public finances of the property market bust.

some of it may be accomplished by rising exports this will be difficult. With a relatively small tradable sector, relatively inflexible domestic costs and relatively low human capital (Portugal) adjustment through a rising export share would take some considerable time.

The alternative is to reduce imports through domestic fiscal action. Such a course of action will, through the multiplier effect of public expenditure and taxation, have to significantly reduce domestic consumption. This is likely to be a longer process, with continuing pain as living standards are reduced slowly.

6. Returning to Growth

Returning the EU economy to growth requires a number of tasks: restoring order to the public finances, restoring competitiveness to those economies with chronic balance of payments deficits, developing a resilient banking system and labour market changes to match supply and demand for unskilled labour in the longer term.

Restoring order to the public finances

A key priority for policy is to return the public finances in a range of EU members to a sustainable path. This is a sine qua non for future growth and it will require sustained fiscal tightening in countries such as Ireland, Greece, Spain and Portugal. For other countries, such as Italy, the necessary adjustment is much more limited provided that the EU economy returns to growth. All of this would be much easier if there were a return to sustained growth in the EU economy. As discussed above, in previous decades quite large adjustments in the balance of payments (and the public finances) were made with less pain where they occurred against the backdrop of growth in trading partners.

In some economies the balance of payments problem has already been addressed but there is a long way to go to make the public finances sustainable (Ireland). In addressing the public finance crisis the balance of payments is likely to move into substantial surplus. In other economies, such as Portugal, the adjustment needed in the public finances, while still large, is less than it is for Ireland. However, there is still some distance to go before the balance of payments is restored to a sustainable path. All of these problems will be eased for economies, and eventually put behind them, by a return to growth. This Section of the paper addresses some of the lessons to be learned from the past experience of convergence.

Restoring Competitiveness

A second task will be to improve the competitiveness of the EU economy to enhance future growth. This will involve changes to ensure cost competitiveness across the EU as a whole and changes in individual economies which are experiencing major domestic imbalances which show up in balance of payments deficits.

While most of this task is a national responsibility there are areas of more general concern. The “Lisbon Agenda” called for major reforms to improve competiveness. In some areas policy may actually be hampering such a development. For example, the EU energy sector faces a massive investment task if it is to deliver energy in line with law. Citigroup, 2010, estimate that the investment needs of the energy sector in some of the key EU member

states (UK, Spain, Italy, Germany, and France) will amount to one trillion euro over the coming decade. This figure was derived before the decision was made earlier this year to close the German nuclear stations. This estimate is broadly consistent with von Hirschhausen, 2011. The additional investment in the UK alone to meet the renewables requirements could amount to 0.6 per cent of GDP each year for the decade of which approximately half may be needed to meet environmental targets.

While a substantial part of this new investment is inescapable if the lights are to remain on in the EU, much of it is also a consequence of EU rules on renewables. What is not clear is how these latter renewable targets increase the welfare of the community, even taking account of the environmental benefits. In many cases the same environmental benefits could be achieved at dramatically lower cost through other technologies (Helm, 2009 and McIlveen, 2010). For the EU as a whole it will be important to ensure that the important targets on reducing greenhouse gases are met at a minimum cost. If investment in renewables is cost effective then it should go ahead (as it is for Ireland, Diffney, et al., 2009). However, if the environmental objectives can be met at substantially lower cost then the targets should be re-examined.

As discussed above, the current crisis has so far seen adjustment in many of the economies with large balance of payments deficits occurring through a reduction in imports brought about by a collapse in domestic demand. While such a contraction in output can, if sufficiently large, restore balance it comes at the cost of a considerable loss of output. An alternative strategy is to reduce domestic costs relative to competitors so that exports grow more rapidly. Such an approach is the only one which will protect growth and ensure that the other imbalance – in the labour market – is ironed out within a reasonable space of time.

However, for those economies that are in EMU restoring competitiveness can only be secured by reducing domestic costs. This tends to be a time consuming process. In addition, even with a restoration of competitiveness it takes time for the productive capacity of the economy to be rebuilt through investment. Thus even with a rapid adjustment a recovery in exports will take some considerable time. With the huge pressures for rapid adjustment in those economies that are heavily indebted this leaves little alternative than to adjust through cutting domestic demand as an instrument for cutting imports.

In addition, with relatively inflexible labour markets in some economies the necessary adjustment in domestic costs is taking some considerable time. At one end of the spectrum are the Baltic states where domestic competitiveness has been improved quite rapidly. At the other are Spain and Portugal where the response of domestic costs to the crisis has proved sluggish.

Developing a Resilient and Competitive Banking System

The Cecchini report, which provided the blueprint for the Single Market, quantified major economic benefits from a more integrated EU financial system. While progress over the 15 years since the Single Market began has been slow, it was, nonetheless, real. The effect of the current financial crisis has been to fragment the EU banking system. Whereas before the

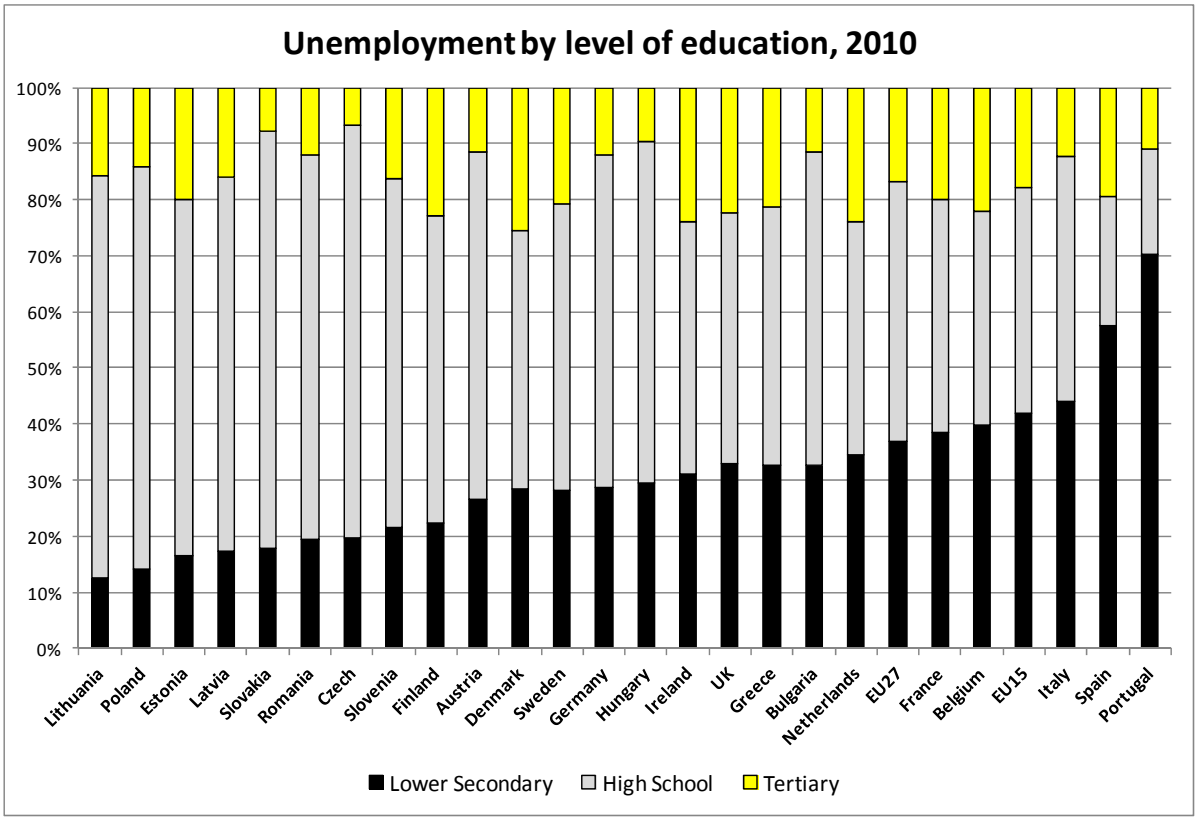
crisis there had been a gradual move towards a more integrated EU banking system, this has now been dramatically reversed. With each country responsible for the solvency of its own banks there has been a rapid return towards a system of national banks. A major consequence of this is a fall off in competition. The decision to recapitalise the EU banks over a nine month period will significantly aggravate this tendency. There are big gains for shareholders from deleveraging and this process could pose major problems for some of the New Member States who do not have national banks. Also a failure to raise adequate capital will potentially leave relevant governments responsible for any shortfall.

Barrell, et al., 2011, show that a purely national banking system in the EU would see a substantially lower level of output than one where there is a system of EU-wide banks. This would arise because, instead of risks being shared over a large and diversified banking system, each national banking system would reflect the local risks of the local economy (and any related lack of liquidity). By contrast, the US has continued to move away from the Glass-Stiegel era where out-of-state banking was not allowed. An important impetus for this was the reduction in risk consequent on more regionally diversified banks. It also has resulted in significant efficiency gains. Even with the recent financial upheavals in the US there is no suggestion that the trend towards an integrated US banking system should be reversed.

The development of a less competitive national banking system in the EU may not affect large multinational companies, which raise funds directly from financial markets and have access to many different banks across the range of countries in which they operate. However, it is likely to have a negative impact on the cost of funds for smaller companies and the household sector. In turn this will negatively impact growth.

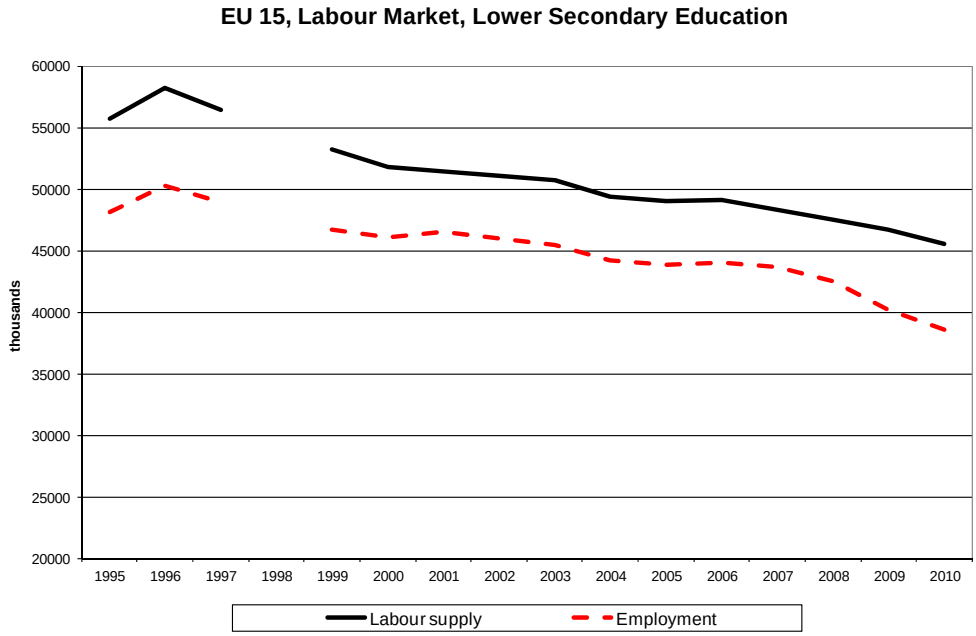
Reversing this process will be important for the growth of the EU in future years. Any return to a more integrated EU banking system is only likely to proceed if there are major changes in how the banking system is regulated. An EU wide banking system will need an EU-wide regulatory system rather than the current system with individual national regulation and responsibility.

Figure 13: Share of Unemployed by Level of Education



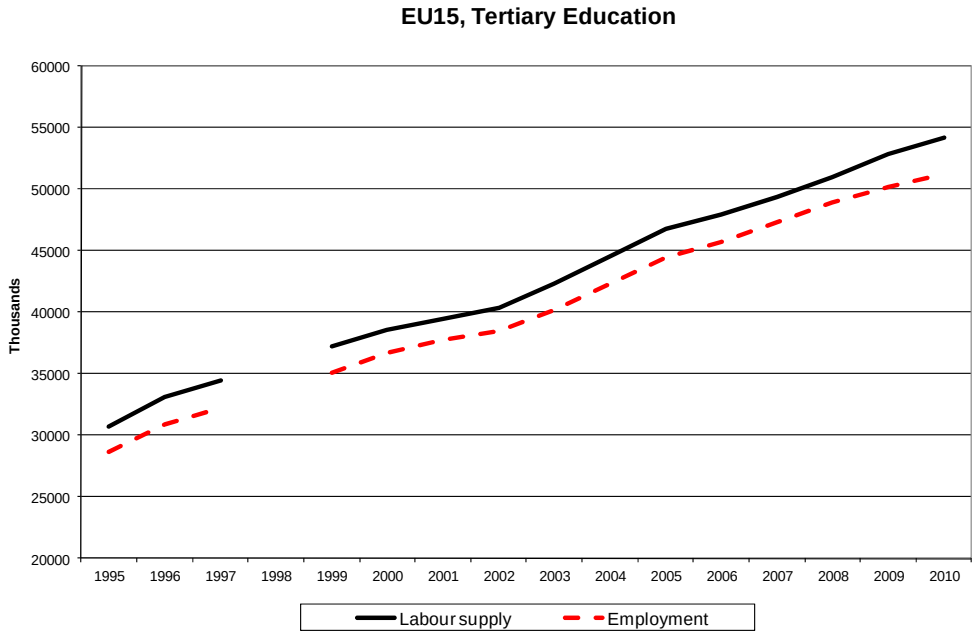
The experience of convergence in living standards in the EU over the last quarter of a century has highlighted the significance of investment in human capital. Darvas and Pisani-Ferry, 2011, make the point that the EU2020 agenda is still relevant. "Education, research and the increase in participation and employment rates are perfectly sensible objectives in the current context…". As shown in Figure 8, because of the fact that the educational attainment of the population in many member states has only improved gradually over the last twenty five years there is still considerable benefit to be reaped in the coming decade (in terms of increased potential output); as less well educated workers retire and are replaced by more productive better educated workers there will be a further growth in productivity and in the productive labour force across a range of countries.

Figure 14: Labour Force and Employment in the EU, Lower Secondary Education



In the case of some of the countries in southern Europe, even today their education systems are failing to produce adequate numbers of high school and third level graduates. This is particularly the case for Portugal. If it raised the throughput of skilled persons through their education system towards the EU average, this would see substantial benefits accruing well into the next decade. However, the benefits of any such policy take some considerable time to mature.

Figure 15: Labour Force and Employment in the EU, Tertiary Education



The effect of the current recession has been to dramatically increase the unemployment rate in the EU. However, the increase in unemployment has not been evenly distributed with very good performances in the German and the UK labour market contrasting with dramatic increases in unemployment in those countries that have seen a collapse in their building and construction sectors consequent on a property market bust. However, the distribution of increase in unemployment within the EU is not only uneven, but the share of the unemployed who have limited education also varies across countries. Because the average education of workers in the building and construction sector is quite low, those economies that have seen a collapse in that sector have also seen a disproportionate rise in the unemployed with limited education.

Figure13 shows the educational attainment of the unemployed across the EU member states. The share with lower secondary education is exceptionally high in Portugal and Spain. In the case of Portugal it reflects the relatively low average educational attainment. However, in Spain it also reflects the very serious loss of employment in building and construction[5]. What is perhaps surprising is that the share of unskilled in the numbers unemployed is relatively low in Ireland, Estonia and Latvia, which all saw a dramatic fall in the investment share of GDP. In the case of Ireland this may reflect differential emigration by non-Irish unemployed building workers.

Whatever the causes of the rise in unemployment, the evidence suggests that those who are unemployed with limited education will find it most difficult to get back to work, even in a recovering economy (Kelly, McGuinness and O'Connell, 2011). Because of the concentration of such unemployed workers in a number o member states this may make the task of returning to full employment in the recovery phase more difficult.

Figure 14 shows the trend in employment and labour supply in the EU over the last 15 years for those with only lower secondary education. The trend in both supply and demand has been steadily downwards. However, the recession has seen demand fall even more rapidly than supply. Thus in an economic recovery there is unlikely to be any increase in demand for this category of labour. Figure 15 shows the steady upward trend in the supply and demand for skilled labour. Even in the economic downturn demand for this category of labour continued to rise.

Much will depend on the elasticity of substitution between skilled and unskilled labour in individual economies. If it is very low as it is in Ireland (Bergin and Kearney, 2006), then it will be more difficult to see employment for unskilled workers increasing. With a Leontief production technology, where skilled and unskilled workers are employed in fixed proportions, it would require substantial growth in total employment to ensure that substantial numbers of unskilled workers got jobs. With unskilled workers constituting a small share of total employment unskilled wage rates would have to fall dramatically relative to skilled wage rates in order to improve the competitiveness of the economy sufficiently to

[5] Spain may also be affected by substantial immigration of workers for the building and construction sector in the boom years.

employ all the unemployed unskilled workers (along with even more skilled workers). However, the higher the elasticity of substitution between skilled and unskilled labour the easier the economy will adjust to employing unemployed unskilled workers.

An alternative strategy is to reduce the supply of unskilled workers. In the long run, in an economy such as Portugal, this would be best achieved by reducing the output from the school system of young people with only lower secondary education and increasing the share completing tertiary education. While it would take a generation to achieve its full impact on the economy there is no real alternative. A less effective strategy is likely to be retraining unemployed workers with limited education, especially where they constitute a large share of the unemployed. Nonetheless, it would be likely to produce a faster pay back than waiting for a generation of new young graduates.

7. Conclusions

A sine qua non for sustainability and recovery in the most troubled EU economies is a return to sustained growth in the EU as a whole. However, tackling serious domestic imbalances cannot await a return to growth. This task will only be completed when growth is assured and it would also be greatly facilitated by increased flexibility in wage rates so that adjustment could take place through increased exports rather than reduced imports.

The experience of the last twenty years shows that convergence has actually happened, even if in a rather uneven form. Past investment in human capital holds out the prospect for further dividends in the coming decade. This is true for most of the troubled economies. However, realising this potential will depend on tackling a range of obstacles. Further investment in human capital is desirable in some economies, especially in southern Europe.

The crisis has left a serious legacy of unemployed workers. In some of the most troubled economies a substantial proportion of the unemployed have limited education and this will pose a barrier to re-employment even in an economic recovery. Making the labour market work better is going to prove a challenge in those countries where unemployment is especially high.

References

Barrell, R., Fic, T., FitzGerald, J., Orazgani, A. and Whitworth, R., 2011, "The Banking Sector and Recovery in the EU Economy", *National Institute Economic Review*, No. 216, April 2011, pp.R41-R52.

Bergin, A., and I. Kearney, 2007. "Human Capital Accumulation in an Open Labour Market: Ireland in the 1990s", *Economic Modelling*, November.

Carneiro, P. and S. Lee, 2011, "Trends in Quality-Adjusted Skill Premia in the United States, 1960-2000", American Economic Review, To Convergence and Beyond? Human Capital, Economic Adjustment and a Return to Growth Vol. 101, October, pp. 2309-2349.

Citigroup Financial Markets, 2010, "The €1trn Euro Decade – Revisited", 29th September 2010.

Darvas, Z. and J. Pisani-Ferry, 2011, "Europe's Growth Emergency", Bruegel Policy Contribution, Issue 2011/13, October.

Blanchard, O., 2001, “Country adjustments within the euro area: lessons after two years”. In *Defining a Macroeconomic Framework for the Euro Area*, London: CEPR.

Blanchard, O., 2007, “Current account deficits in rich countries”, NBER Working paper No. 12925.

Diffney, S., J. Fitz Gerald, S. Lyons, and L. Malaguzzi Valeri, 2009. “Investment in Electricity Infrastructure in a Small Isolated Market: The Case of Ireland”, Oxford Review of Economic Policy, 25, No. 3, pp. 469-487.

Helm, D., 2009. “EU Energy and Environmental Policy: Options for the Future” in L. Tsoukalis (ed.), “The EU in a world in transition: Fit for what purpose?”, Policy Network.

Kelly, Elish, McGuinness, Seamus and O'Connell, Philip J, 2011, “What Can Active Labour Market Policies Do?”, Dublin: ESRI, ESRI Economic Renewal 001

Koman, R. and D. Marin (1997), Human capital and macroeconomic growth: Austria and Germany, 1960-92, London: Centre for Economic Policy Research Discussion Paper No. 1551.OECD, 1999, Employment Outlook, OECD, Paris.

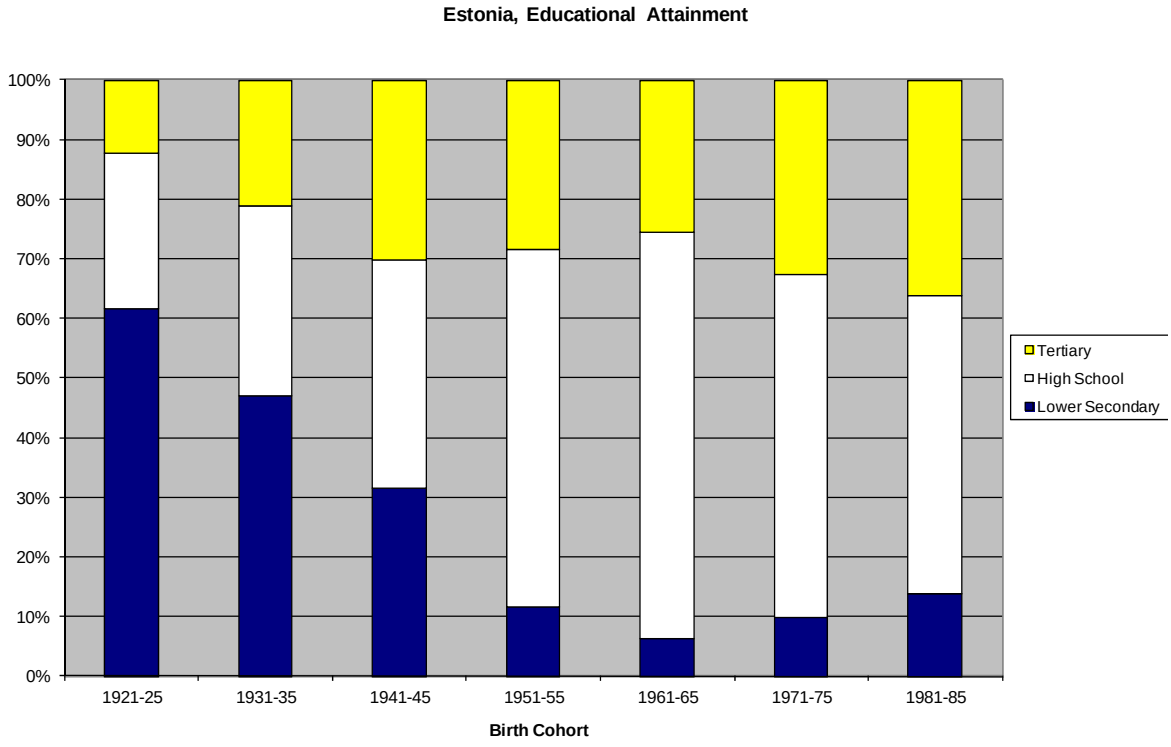
McIlveen, R., 2010. “Cutting the Cost of Cutting Carbon” in S. Less (ed.), *Greener, Cheaper*, London: Policy Exchange.

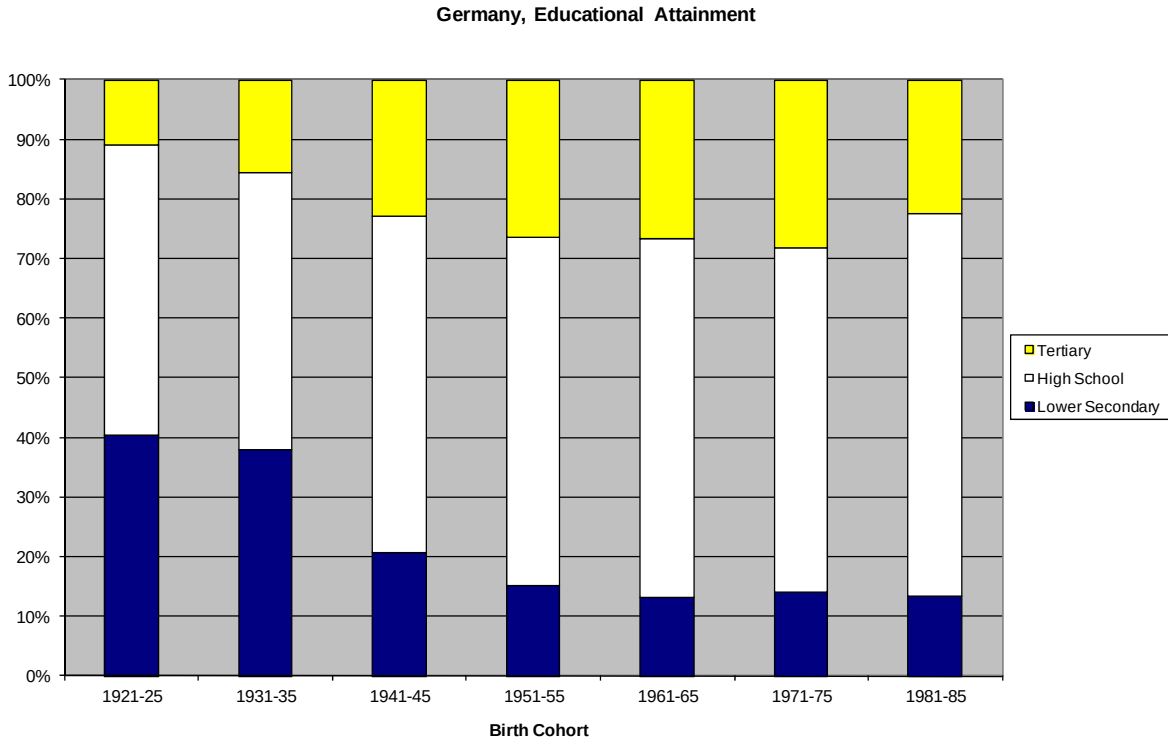
Murphy, G. and I. Siedschlag, 2011, “Human Capital and Growth of Information and Communication Technology-Intensive Industries: Empirical Evidence from Open Economies”, *Regional Studies,* Published online 7 April, 2011. pp1-22.

Von Hagen , J. and I. Siedschlag, 2010, “Changing Capital flows: Experience from Central and Eastern Europe”, in M. Kawai and M.B. Lambert, *Managing Capital Flows: The Search fcor a Framework*, Edward Elgar, Cheltenham, UK, pp. 192-213.

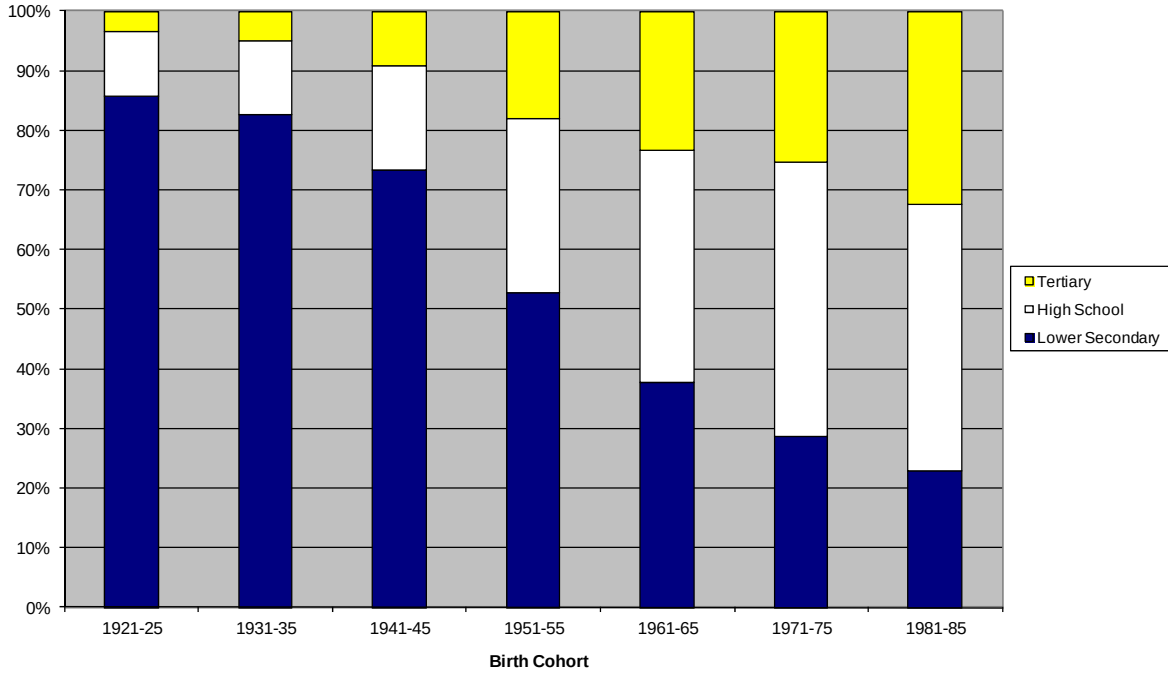
Von Hirschhausen, C., 2011, “Financing Trans-European Energy Infrastructures – Past, Present and Perspectives”, Notre Europe, Policy Paper no. 48.

Appendix 1: Educational Attainment for a Range of Countries

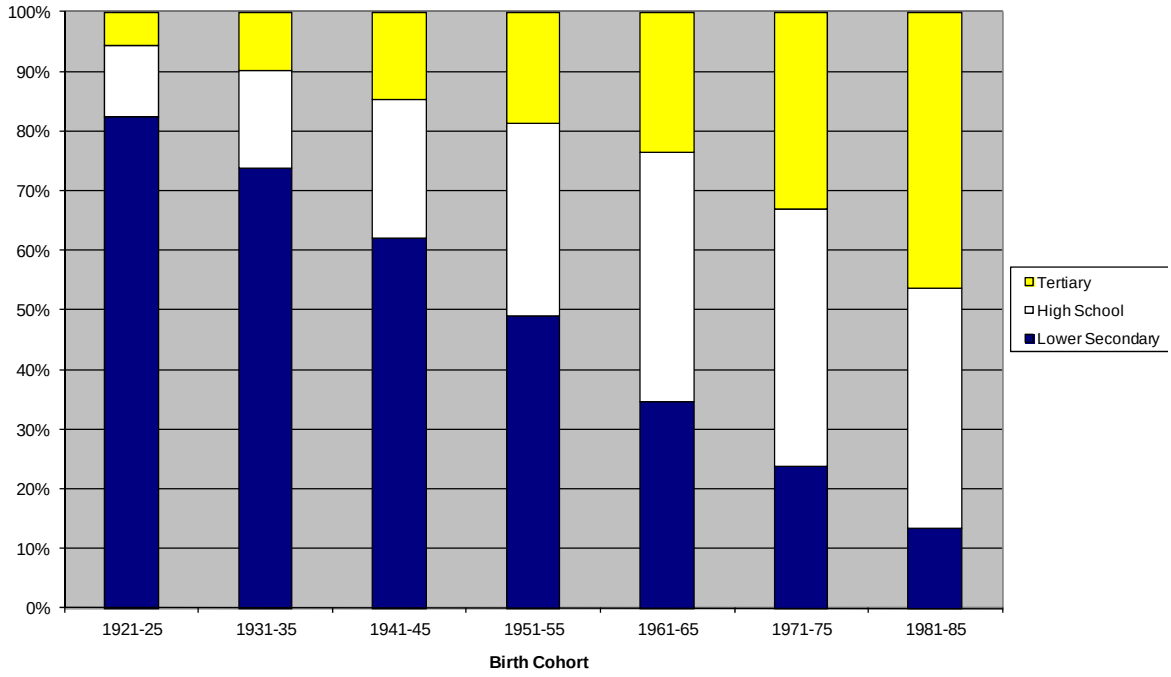




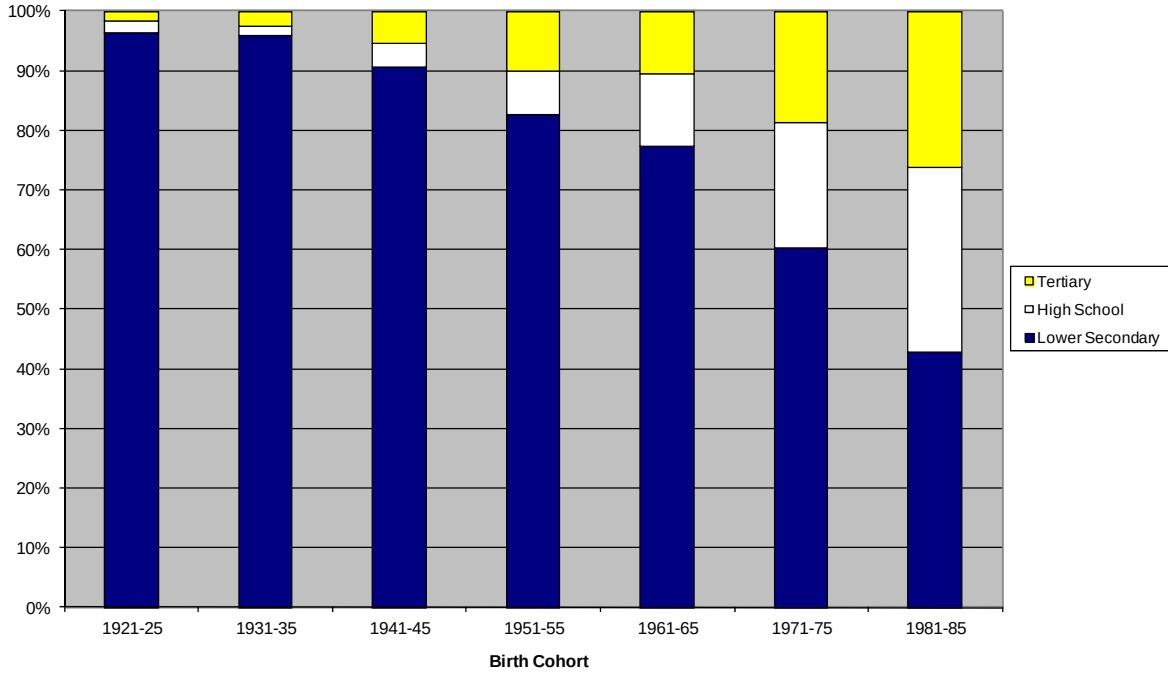
Greece, Educational Attainment



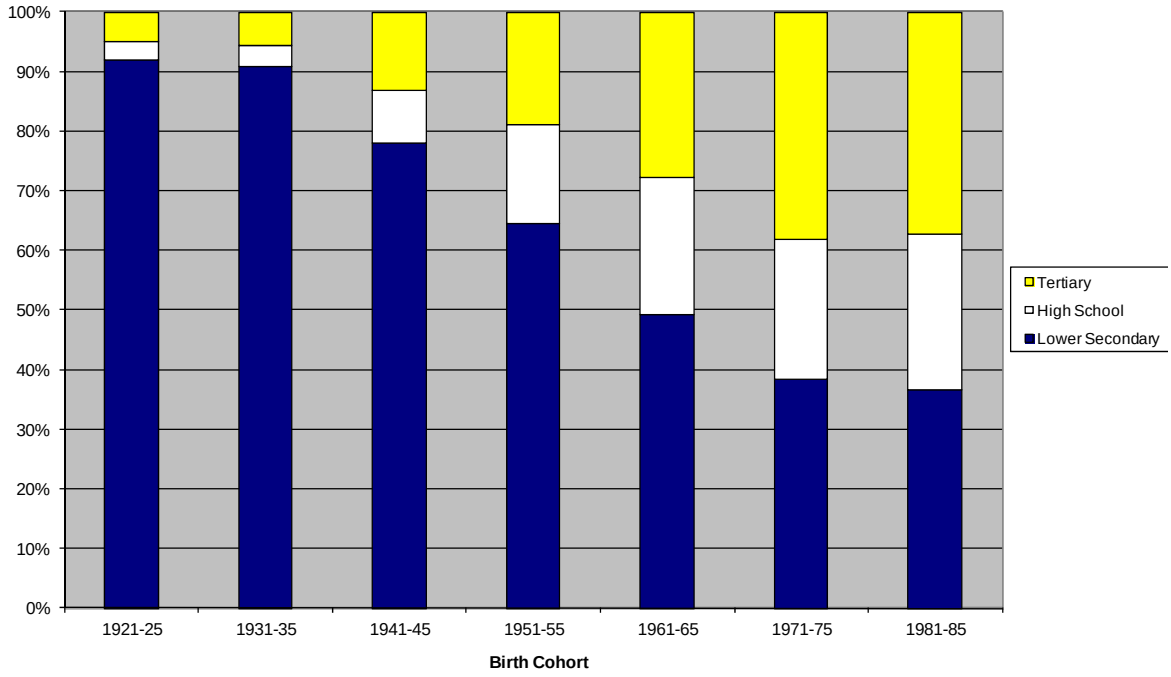
Ireland, Educational Attainment



Portugal, Educational Attainment



Spain, Educational Attainment



Year	Number	Title/Author(s) ESRI Authors/Co-authors *Italicised*
2011		
	418	The Origins of the Common Travel Area between Ireland and the United Kingdom and its Fate in an Era of Governmental Concern about Undocumented Migration and International Terrorism *Elizabeth Meehan*
	417	Telecommunications Consumers: A Behavioural Economic Analysis *Pete Lunn*
	416	Optimal interconnection and renewable targets in North-West Europe *Muireann A. Lynch, Mark J. O'Malley* and *Richard S.J. Tol*
	415	Restoring Credibility in Policy Making in Ireland *John FitzGerald*
	414	The Impact of Changes in Educational Attainment on Life Expectancy in Ireland *John FitzGerald, David Byrne* and *Nusa Znuderl*
	413	Poverty Traps and Climate Change *Richard S.J. Tol*
	412	UK Tourists, The Great Recession and Irish Tourism Policy *Niamh Callaghan* and *Richard S.J. Tol*
	411	Disasters and Development: Natural Disasters, Credit Constraints and Economic Growth Thomas K.J. McDermott, Frank Barry, *Richard S.J. Tol*
	410	"One Dummy Won't Get it: The Impact of Training Programme Type and Duration on the Employment Chances of the Unemployed in Ireland" *Seamus McGuinness, Philip J. O'Connell and Elish Kelly*
	409	Carrots without Sticks: The Impacts of Job Search Assistance in a Regime with Minimal Monitoring and Sanctions *Seamus McGuinness, Philip J. O'Connell and Elish Kelly*

For earlier *Working Papers* see

http://www.esri.ie/publications/search_for_a_working_pape/search_results/index.xml