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# We Don't Need No Education? The Case for Expanding Higher Education

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## Foreword

This report makes a powerful case for further expanding higher education.

One of its most striking findings is just how much we have come to rely on the expansion of education to prop up economic growth – and that the UK’s already delicate figures in recent years would have been more fragile still without it.

Despite this, the popular notion that “too many go to university” is rooted in the view that we churn out more graduates than befits our economy, and that public money is wasted on low-value courses.

As this paper acknowledges, we do need to tidy up some of the rough edges that lead to poor outcomes in some instances, and there are lower-level skills gaps in our economy that do not require higher education. But neither of these mean that we have reached “peak grad”.

The first reason is that we still don’t have enough highly skilled individuals to fill many vacancies today, for instance in professional occupations.

The second reason – and this is arguably the report’s most important message – is that we cannot just think about skills demand in a static way; we must also plan for a future economy that will look very different to the one we currently occupy. The share of jobs that are high-skilled is forecast to grow. As emerging technologies disrupt markets, high value will lie in roles that are less routine and can pair cognitive with complex non-cognitive skills. And as we continue to mature as a knowledge economy, more jobs will be generated in sectors that disproportionately employ graduates.

High-innovation economies, like South Korea, Japan and Canada, understand this and have boosted higher education; participation rates in these countries are already between 60 per cent and 70 per cent. We cannot afford for policy to remain steeped solely in today’s challenges, and our ambition should be to join them.

Getting there, as this report explains, will not be without its challenges. For instance, school attainment would need to improve and more would need to be done to widen access for disadvantaged learners. New courses would also need to align well with changes in our economy. But with the right policies, all these challenges are surmountable – and we should be confident and proactive in meeting them.

**Lord Johnson**

**President’s Professorial Fellow, King’s College London, and Former Minister of State for Universities**

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## Executive Summary

The government appears increasingly sceptical of the value of higher education (HE) and looks set to call a halt to the 40-year expansion of student numbers. This would undo a central plank of the skills consensus of recent decades. It wants to emphasise “skills” and technical routes into the labour market instead, under the erroneous assumption that there is a clear divide between these and the training and education offered in HE institutions.

The funding earmarked for the government’s skills agenda, while welcome, will not even fully restore the cuts made after 2010. More fundamentally, however, its turn against HE is based on a static view of the economy’s skills needs and would be a mistake. The country faces a set of profound economic challenges in the years ahead that will require many more highly skilled workers possessing a combination of the technical and “soft” skills that HE is best able to provide. Squeezing HE participation, therefore, represents an unambitious skills agenda that will leave Britons unprepared for the economy of the future.

Using “growth accounting” analysis to tease out the underlying drivers of economic growth, we demonstrate how the expansion of HE over the past generation has become a progressively more important source of prosperity and the mainstay of economic growth since the global financial crisis. Without the policy of educational expansion, the UK economy would be significantly smaller than it is now.

Looking ahead, our analysis suggests that if seven in ten young people completed HE, this would significantly raise the rate of productivity growth and boost the size of the economy by almost 5 per cent over the next generation compared to allowing educational attainment to stagnate. As well as meaning higher incomes for individuals, this would also generate substantial extra taxes for public services.

The effectiveness of our education system depends on how well it meets the needs of the emerging economy. If educational attainment remains at its current levels, the augurs are not good. Analysis shows there are already substantial deficits in high-skill occupations, which will get worse in future without action.

What kinds of skill will be needed? The impact of technology on the economy and labour market presents challenges for the education system beyond mere numbers. To thrive alongside machines and AI, workers will need attributes that enable them to complement rather than compete with the new technologies. They will increasingly require a combination of aptitudes such as critical thinking, communication and interpersonal skills, alongside technical knowledge, to prosper in the labour market of the future.

HE (level 4 and above) is the ideal way to provide such a breadth of skills. Far from reaching “peak grad”, as some in government argue, we will need many more workers with abilities acquired in HE settings. We must therefore embark on a multi-parliament drive to raise educational attainment substantially with an eye on the skills our workforce will need not today, but in 20 or 30 years’ time.

Therefore, we recommend expanding the proportion of young people entering HE from the current 53 per cent of the cohort to 60 per cent by the end of this decade, and 70 per cent by 2040. This would put the UK on a trajectory to catch up with the most highly skilled workforces in other Organisation for Economic Co-operation and Development (OECD) countries.

Expansion must, however, be well attuned to the needs of our economy. Some argue that our HE system today does not always achieve this because a minority of courses appear not to offer a positive financial benefit to students. But this should not blunt our ambition for three reasons. First, this view is based on the skills needs of the labour market of the 2010s, when what should really drive policy are the needs of our workforce in the 2030s and 2040s. Second, there are signs that better information about the opportunities that flow from different courses is starting to influence students’ choices of degree course towards ones more likely to offer strong returns. More can be done to reform courses that don’t build valuable skills. Finally, wage returns are only one part of the value provided by HE and are too narrow a basis for shaping HE policy. Some courses create substantial social value, justifying public subsidy, while others offer significant private non-financial rewards that may explain students’ choices.

Aiming for a 70 per cent target would galvanise efforts to tackle barriers to educational attainment and access. Low school attainment, which is still pervasive, would need to be significantly improved for such a target to be achieved. Non-traditional routes would also need to be improved, including through sound lifelong-learning policies. Entrance to HE must remain rigorous and challenging but measures could be employed to test whether ostensibly underqualified candidates are nonetheless ready to enter HE. Finally, more would need to be done to make the decision to attend HE attractive to disadvantaged students, including by improving access initiatives and by addressing financial barriers. These challenges can all be overcome. But the first step is to raise our ambition for skills policy and the workforce of the future.

## Introduction

In 1999, the Labour government set a goal of getting 50 per cent of young people into higher education (HE), a target which, contrary to common misperception, covered the full range of higher-level courses of qualification level 4 and above and not just conventional degrees. Even before this, governments recognised the value of expanding HE, not least during the Major years when participation rose rapidly. Labour's goal has now been met and exceeded. More and more young people aspire to HE, with applications last year at an all-time high.

Yet the political mood is souring over further HE expansion. A Conservative former universities minister has warned his party has developed a “uniphobia”,<sup>1</sup> while a former Conservative party leader has complained that too much emphasis is put on academic versus non-academic training.<sup>2</sup> Think tanks close to the government claim many students are being “sold a false promise”<sup>3</sup> and “getting a bad deal”.<sup>4</sup> And key advisors note that far more students in red-wall seats study technical subjects at underfunded further education (FE) colleges than go to university.<sup>5</sup>

The government's 2019 general-election manifesto mentioned HE only in passing, with a vow to “tackle the problem of low-quality courses”.<sup>6</sup> Last year's skills white paper cast doubt on universities as the main vehicle for higher-level skills formation, arguing that in many cases a college course or apprenticeship offers better outcomes.<sup>7</sup>

The growing reticence is now hardening into a shift in policy that looks set to herald a halt to, and possible reversal of, the 40-year long expansion of HE. In its long-awaited response to the Augar review, the government announced changes to student-loan repayment that load substantial additional costs on lower- to middle-earning graduates (while cutting repayment for the highest earners), which is bound to make it less appealing for students to follow less remunerative courses.<sup>8</sup>

Consultations on grade floors and controls on student numbers are also underway. The freeze on student fees until 2025 at a time when inflation is at a 30-year high will slash the real cost of the tuition fee to £6,600 in 2012–2013 prices, damaging the quality of student education.<sup>9</sup> All these things signal the government's cold feet about HE and its desire to curb participation.<sup>10</sup>

Some reappraisal of how the market for HE operates is a justifiable response to concerns about the affordability and labour-market value of some degrees.<sup>11</sup> The best available analysis of labour-market outcomes from HE over the past decade suggests that a significant minority of courses appear to offer no or limited economic benefit to either the students taking them or the taxpayer subsidising them. It is also true that the technical and vocational qualifications offered by FE and through apprenticeships,

which the government now champions, are a critical part of a successful skills agenda. The move to return some of the funding for FE that was cut in the 2010s is therefore welcome.

But, through its current approach, the government is setting up a false choice between HE and technical, vocational education. HE comes in many forms, and much of it is both practically focused and an excellent preparation for the labour market, boosting incomes and growth. It is important that there are good alternatives to HE available for those who do not choose this path, and renewed funding for FE is welcome. A focus on providing many more high-quality apprenticeships and other vocational options outside university settings would diversify the options for educational attainment. But the two forms of education need not be in opposition – both academic GCSEs and technical PhDs co-exist in the same education system, for example.

The government's reforms risk going in the wrong direction, doing real harm to a critical source of UK prosperity in the years ahead at a time when economic growth will face several headwinds.

## **The Economic Context**

The debate about the proportion of national resources to devote to HE takes place against a darkening economic backdrop. The UK's unprecedented productivity slowdown – which has seen very weak growth in GDP per hour for more than a decade – is the worst since the dawn of the industrial revolution. Closely linked to this is the almost 20-year stagnation in real wages, now set to be exacerbated by the highest inflation rate in at least three decades.

This is sparking an unprecedented squeeze on living standards that will hit the poorest hardest.<sup>12</sup> Subpar GDP growth since the global financial crisis (GFC) has been compounded by the twin economic shocks of Brexit and Covid, which the Office for Budget Responsibility estimates to have reduced the potential of the UK economy by 4 per cent and 2 per cent respectively. The Trade and Cooperation Agreement signed with the EU has begun to transform our existing economic model, leading to a drop in trade with Europe and, the government hopes, in time an expansion in trade with the rest of the world.

The economic travails of the recent past are one part of the context for HE policy, but so too are the developments we can expect down the track. The technology revolution is radically changing the economy and labour market. Whole sectors of the economy, both services and manufacturing, will feel the impact. The application of new technologies offers enormous opportunities through its creation of new industries, as well as its radical transformation of existing ones. But exploiting these opportunities will put huge demands on our skills and innovation system.

Moreover, the massive societal challenge of achieving net-zero carbon emissions by 2050 entails decarbonising large parts of the economy and society, which will have a profound impact on the shape of

the economy and the demand for different skills. The scale of the shift that is required has been compared to the impact of the first industrial revolution in the 18th century. This colossal task is achievable, and successive UK governments have made creditable progress to date. But much more profound changes lie ahead for business, society and the labour market as we adapt.

Education and skills policy is at the centre of the challenge of reviving prosperity growth in the context of recent stagnation and future tests. Success in the global race to the top will increasingly revolve around countries' ability to develop and deploy their "human capital" – the skills, education and qualities of their people.

As the chancellor argued in his recent Mais Lecture: "Providing our people with a world class education is one of government's greatest responsibilities ... Education is the most powerful weapon we have in our fight to level up."<sup>13</sup> He is right. But can that responsibility be discharged given his government's approach to HE?

Our peer economies are busy expanding their HE sectors, and the UK is not world-leading in the proportion of its school leavers (53 per cent) going to university. The technologically advanced economies of Ireland, Canada, South Korea and Japan all have participation rates well above ours at around 60 per cent or higher, and there are 12 Organisation for Economic Co-operation and Development (OECD) member nations besides the UK with rates above 50 per cent. Germany, a country often lauded by politicians for its supposedly greater focus on technical skills and vocational routes into the labour market, is significantly expanding student numbers.<sup>14</sup>

Expanding HE is also the key to inclusive growth. Increasing student numbers and founding new universities and affiliated colleges in left-behind regions could reduce spatial disparities in growth and productivity, and break the cycle of intergenerational disadvantage. Levelling up is a central part of the government's agenda, for which it has big plans to boost transport, research and development, and infrastructure spending in areas beset by structural economic problems. But interventions to improve the capital stock and foster innovation in these areas also require a complementary investment in skills in order to be effective.

This paper examines the economic case for HE. What exactly is the link between education and prosperity? Have we gone too far with the expansion of HE? What kinds of skills do we need to address the current and future challenges we face, and do we need more graduates as a result? If other forms of technical-skills training are also needed to plug immediate gaps at lower levels, does it make sense to think about the relationship between these and HE as a zero-sum game when they speak to different challenges?

We begin by analysing the contribution of skills to economic growth in recent years and what different levels of policy ambition imply for economic growth in the 2030s and 2040s. We then move from the

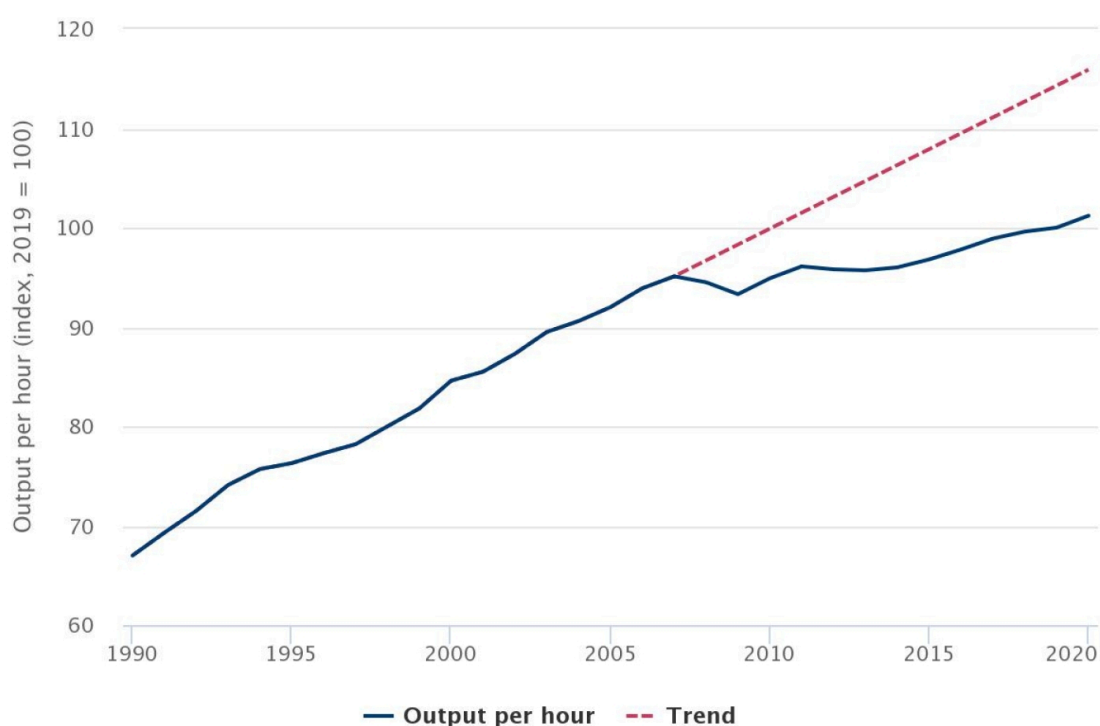


macroeconomic to the microeconomic to explore exactly what kinds of skills are in growing demand across the economy and the role of HE in supplying them.

## Higher Education and Economic Growth

The UK economy has grossly underperformed since the GFC, leaving us significantly poorer than we would have been had productivity increased in line with its long-term trend (see Figure 1). There are numerous factors behind the economic stagnation of the past 14 years and many of them are global in scale.<sup>15</sup> But some are more within the grasp of domestic policy.

**Figure 1 – Output per hour – actual compared with trend**



Highcharts.com

Source: ONS. Note: “Trend” here is an extrapolation of 1990-2007 (pre-GFC) average growth.

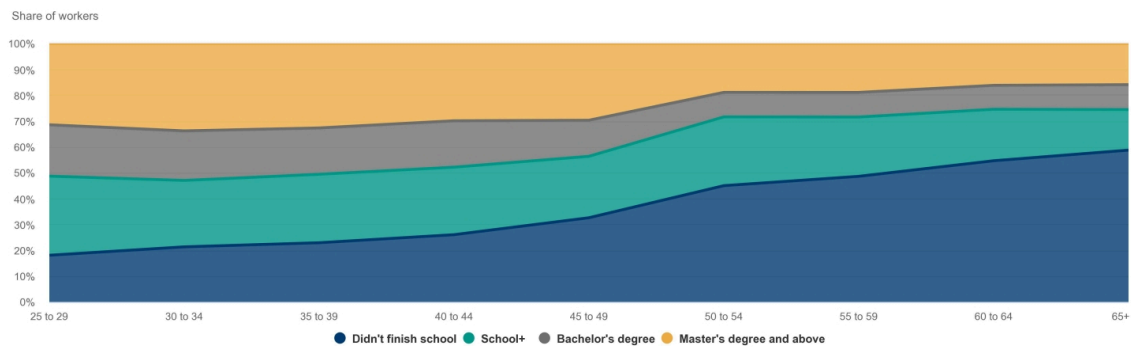
Economists tend to think of economic output, or GDP, as being the result of combining three different inputs: capital, labour and technology (or “know-how”). Economic growth depends on increasing the inputs of these three factors, as Chancellor Rishi Sunak recently noted.<sup>16</sup> We can already see in the data that capital investment has been unusually weak for many years, particularly in the wake of the Brexit referendum. But by using the technique of “growth accounting” it is possible to undertake a more systematic analysis to diagnose the relative importance of the three factors in explaining the economic slowdown of recent years.

This section employs growth accounting to decompose growth into separate components of human capital, physical capital and a “residual” (total-factor productivity, or TFP) in order to compare their

contribution and understand what role education has played in generating prosperity.<sup>17</sup> This analysis allows us not only to see what the contribution to economic growth from the expansion of HE has been over the past generation, but also to assess the possible implications for future growth of different HE strategies from here onwards.

How is the human-capital input to economic output calculated? The stock of human capital in the economy depends upon the number of workers and the hours they spend at work, as well as their education level and workforce experience. The number of workers and their hours capture the raw quantity of labour inputs, while education and experience can be thought of as a measure of the “quality” of the workforce. The impact of education on the stock of human capital is captured by the wage premiums seen in the labour market for people with different qualifications.

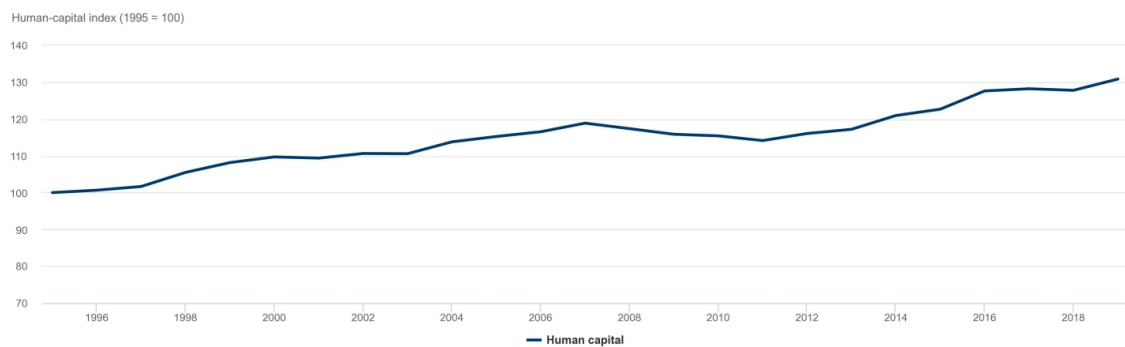
**Figure 2 – Distribution of educational attainment per age group for workers in 2020**



Source: TBI calculations using Labour Force Survey data. Note: For this chart, we used data on years of education which was then mapped to the corresponding qualification level. This mapping is not perfect.

Since the rapid expansion of HE began in the 1990s, it has had a stark effect on the average skill level among the workforce (Figure 2).<sup>18</sup> As less well-educated workers have retired and younger workers entered the labour force, often with many more years of education, and the workforce has expanded, the total “stock” of human capital in the UK has risen strongly (Figure 3). The expansion of HE over the past 30 years has revolutionised the workforce in a way that is often overlooked.

**Figure 3 – Educational attainment has driven strong growth in human capital**



Source: TBI calculations using Labour Force Survey and ONS data

### Without the Education Boom, Our Economy Would Barely Have Grown in Recent Years

What contribution has this made to economic growth? In this analysis we decompose the contributions to growth from different inputs from 1997 to 2019, the last year before the pandemic (Figure 4).

Dividing the period into the years before and after the GFC allows us to see where responsibility for the slowdown in growth lies. In the 12 years before the GFC, annual growth in GDP per capita averaged a healthy 2.4 per cent, comprised of broadly equal contributions from physical capital (0.8 per cent), human capital (0.9 per cent) and TFP (0.7 per cent).

Between 2008 and 2019, by contrast, per capita GDP growth averaged just 0.6 per cent annually. But the contributions of the three inputs to that growth were markedly different. Anaemic investment meant that capital contributed just 0.3 per cent to growth each year, while TFP accounted for a negative contribution (-0.2 per cent). But human capital continued to make a strong positive contribution to economic growth throughout the period, lifting the economy by 0.5 per cent, accounting for almost all of the overall growth rate. Our analysis of the period between 1997 and 2019 shows that the UK economy has become progressively more reliant on human capital to drive growth, with this trend accelerating in the decade or so since the GFC.

**Figure 4 – Growth decomposition, 1997 to 2019**

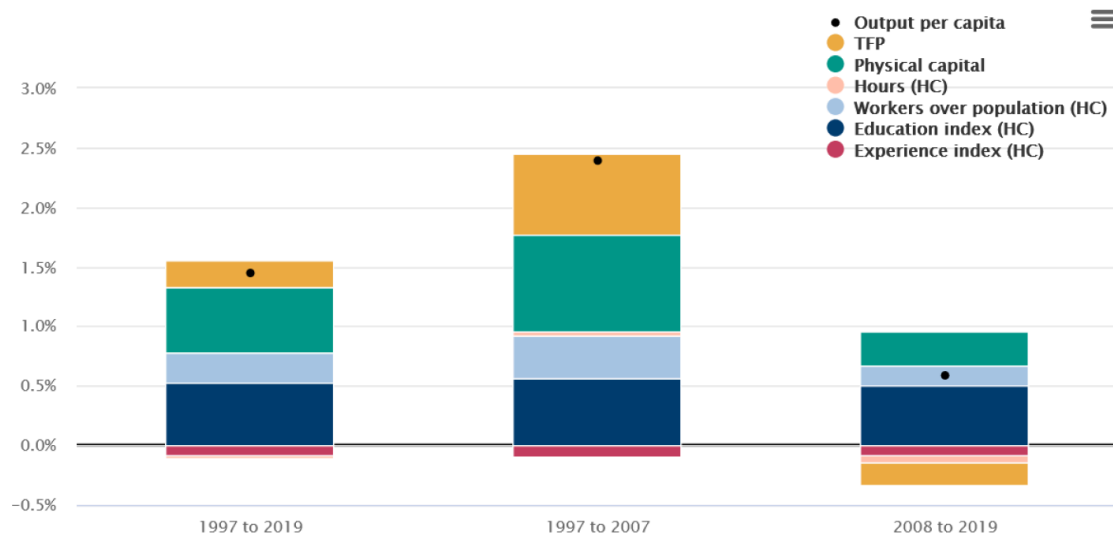
	Annual growth in GDP per capita	Decomposition		
		Physical capital	Human capital	Total-factor productivity
1997–2019	1.45%	0.54%	0.68%	0.23%
Pre-GFC 1997–2007	2.39%	0.82%	0.90%	0.68%
Post-GFC 2008–2019	0.58%	0.29%	0.47%	-0.19%

Source: TBI calculations using Labour Force Survey and ONS data

As outlined in Figure 4, GDP per capita growth since the GFC has remained stubbornly below its long-run trend, averaging just 0.6 per cent over the period from 2008 to 2019 – a quarter of the pre-crisis growth rate. But without the contribution of a growing stock of human capital, the growth slowdown would have been even greater. Strip away this contribution and we would have experienced a paltry growth rate of just 0.1 per cent between 2008 and 2019.

But how much of this growth can be attributed specifically to the role of education, rather than other elements of human capital such as a growing workforce? Decomposing human capital into its constituent factors – education, experience, hours worked and numbers employed – shows that education levels and the size of the labour force have been the two most important contributors to human-capital growth in recent decades (Figure 5). Prior to the financial crisis, education accounted for well over half of its growth, and since then it has accounted for all of it. On top of this, education’s contribution to growth in the underlying potential of the economy exhibited remarkable resilience during recessions. This is an impressive and underappreciated legacy of successive governments’ focus on expanding HE.

**Figure 5 – Growth decomposition by period**



Source: TBI calculations using Labour Force Survey and ONS data. Note: HC refers to human capital.

### Fully Grown? Human Capital, Growth and the US Experience

In an influential book in 2020, US economist Dietrich Vollrath used growth-accounting analysis to diagnose some of the causes of the productivity-growth slowdown that has been taking place in the US economy since the early years of the 21st century. He shows that the human-capital (per capita) index for the US grew strongly at a rate of 1-1.5 per cent from the mid-1960s to the end of the century. He estimates that this added perhaps 1 per cent to economic growth each year on average – a huge contribution to rising prosperity.

But after 2000, the effect stagnated as the impact of the workforce’s massive educational upgrade petered out, and human capital has since made a mildly negative contribution to economic growth in the US. Vollrath shows that the pace of productivity growth has also slowed for other reasons – such as the changing shape of the economy, away from manufacturing and towards services, within which he argues productivity gains are inherently harder to achieve. But the dominant effect stems from the end of the human-capital revolution.

Our analysis demonstrates that the same story does not (yet) hold for the UK economy, and that human-capital accumulation has continued at a healthy rate through the first two decades of the 21st century. This suggests that the UK’s poor growth performance in recent years is more likely attributable to sluggish innovation and investment in physical (or intangible) capital.

But the growth-accounting results presented in this paper also show that without increased ambition, the UK is on track to see the growth impact of educational attainment begin to peter out, as it appears to have done in the US.

The implications of this analysis are clear: although our economy has performed unimpressively over the past 14 years, it would have been in far worse shape had it not been for the boost to human capital from better education driven by the expansion of HE over the past few decades.

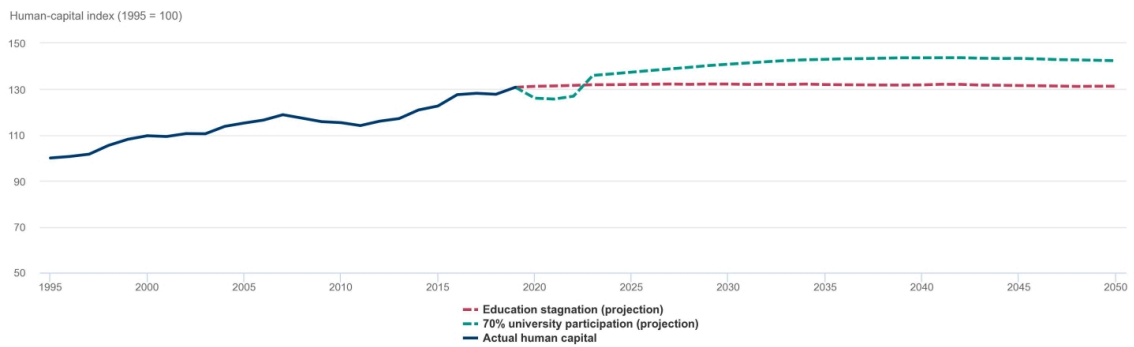
### **The Potential for Education to Propel Future Growth**

The analysis above shows how important the policy focus on producing better-educated young people has been in the recent past. What about the future? As older people with below-average education retire and leave the labour force, this will mean the skill level of the workforce will continue to climb for a number of years yet, supporting economic growth.

But that trend is weakening and will wane rapidly from the end of the decade. Education growth is increasingly dependent on the retirement of those with below-average education rather than the inflow of better-educated young workers. This means that as less well-educated cohorts retire, education growth will inevitably decline unless the educational attainment of the young is pushed upwards. As a result of this dynamic, the education tailwind to economic growth of recent years will abate if the average education level of new entrants to the workforce stagnates at its current level, with roughly half of the cohort gaining degree-level education but a still significant minority leaving formal education at 16 or 18.

By contrast, if policy were to increase average education levels to achieve 70 per cent participation in HE for each new cohort, the human-capital stock would continue to grow strongly in the years ahead, ending up 8.5 per cent bigger by 2050 than in the stagnation scenario.

**Figure 6 – Human-capital growth with expanded HE**

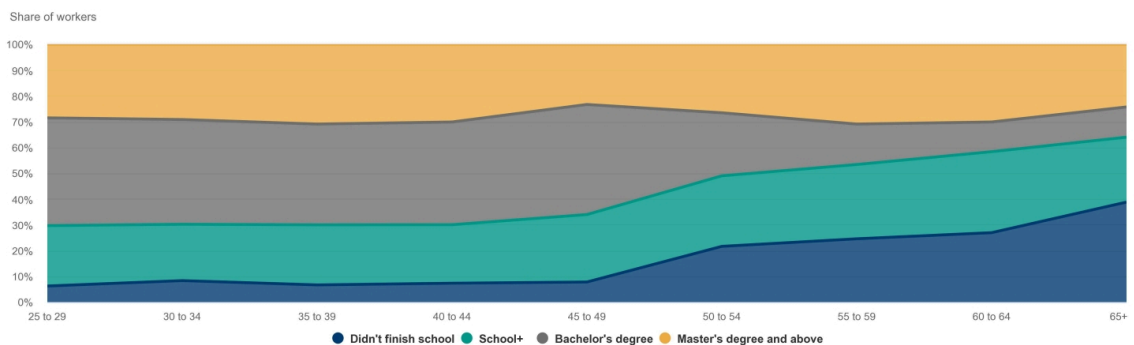


Source: TBI calculations using Labour Force Survey and ONS data. Note: Even in the expanded HE scenario, human capital declines a bit after 2040. This is explained by two factors. First, the experience and hours components of HC exhibit negative growth rates (their 2008–2019 average growth rates are weakly negative). Second, education growth gradually declines following this one-off jump in university participation (as most poorly educated cohorts retire). Hence, there comes a time when education growth fails to compensate for these negative growth rates.

While it is uncertain what the growth contribution of other inputs is likely to be in the years ahead, the estimated impact of a higher university-participation rate is independent of the future growth path of other inputs.

Increasing HE participation to 70 per cent would unleash a further shift in the educational attainment of new entrants to the workforce that gradually moves through the entire workforce over time. Figure 7 illustrates the education-age distribution of the 2040 workforce in the scenario where there is an immediate increase to 70 per cent HE participation from 2022 onwards.

**Figure 7 – Educational attainment by age group for the 2040 workforce**



Source: TBI calculations based on Labour Force Survey data

To gain an impression of the effects of a more ambitious skills strategy, we estimate the likely impact of the growth in potential output under these two scenarios for the evolution of human capital.<sup>19</sup> To do this, we assume that physical capital, TFP, working hours and the experience index change at their 1997–2019



average growth rates. Population grows according to Office for National Statistics (ONS) projections, and employment rates are assumed to remain unchanged from their current level.<sup>20</sup>

The results are sobering. Between now and 2050, if there were to be no further increase in educational attainment for new cohorts, this would result in human-capital growth of just 0.01 per cent per year on average.<sup>21</sup> Based on past trends in the other components this would lead us to expect a meagre 0.78 per cent annual growth in output per capita – around half the average growth rate between 1997 and 2019.

Under the 70 per cent HE participation scenario, growth is materially stronger, averaging 0.94 per cent per year. This may seem like a small difference, but over time it would cumulate to a significant impact on prosperity, with the economy being around 4.5 per cent larger by 2050 and tax receipts in 2050 some £57bn higher, in today's prices, as a result.

It may of course be the case that other contributors to growth – the capital stock or technological know-how – will take on a bigger driving role in the years ahead than they have over the past 25 years. But whether or not that happens, if we stop raising education levels we will blunt an obvious and tangible route to a faster rate of economic growth.

Overall, the conclusions in this section are compelling. Human-capital development has been a critical driver of our economic growth for many years, including as a mainstay of growth since the GFC. Without successive governments' policy over the past generation of rapidly expanding HE, it is reasonable to imagine that our economy would be significantly smaller than it is today. But we cannot take that past growth contribution for granted. If average educational attainment stagnates in the years ahead – or if the harm done to educational attainment by Covid disruption is not repaired – a key driver of economic growth will weaken. Consequently, a pro-growth skills policy needs to focus on significantly raising, rather than lowering, our national ambition for education attainment.

Growth accounting cannot tell us with certainty what the effect of further expansion of education would be on the economy. It is indicative of its importance as a driver of prosperity and serves to illustrate why a policy move by the government towards curbing the growth of HE would be unwise.

But the effectiveness of additional years of education will depend not just on the amount of education we equip our young people with, but also on how well the training meets the needs of the modern economy. We will need an ever more skilled workforce, but of what type of skills? Is HE the right vehicle to provide them? The next section looks in closer detail at the evolving microeconomic demands of the economy and what they tell us about the role of HE.

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## The UK Labour Market and the Need for Higher-Level Skills

As the previous section shows, education is a critical driver of growth. It is also one ingredient of growth over which policy has very direct control. From a macroeconomic perspective, then, we can say that a more skilled workforce will help to sustain prosperity growth in the years ahead. But what kinds of skills does our economy require? In this section we move from the macroeconomic perspective to a microeconomic one, analysing both current and future demand for different types of skills.

### Current Skills Bottlenecks

Official data show there is already evidence of substantial deficits in high-skill occupations. The government-commissioned Employer Skills Survey (ESS) allows us to identify the types of skills bottlenecks that exist in different parts of the labour market, all of which highlight a lack of appropriate high-skilled individuals (defined as people with level 4 qualifications and above) in our workforce.

The first of these bottleneck types, “skills shortage vacancies” (SSVs), relates to jobs employers find hard to fill because they cannot find applicants with the right skills, experience or qualifications. The ESS shows that SSVs exist in all three of the broad one-digit Standard Occupational Classification (SOC2010) categories associated with high-skilled workers: “managers, directors and senior officials”, “professionals” and “associate professionals”.

The prevalence of SSVs in these roles is substantial: **in 2019, there were 210,800 SSVs in total across all occupations and 73,400 of these SSVs were in occupational categories typically associated with high skill levels.** Although this is not the only part of the labour market suffering from deficits, the fact that there are so many SSVs in high-skill occupations suggests there is already significant unmet demand for high-skilled employees across the labour market.

While SSVs measure skill shortages among job applicants, the second category of bottlenecks, “skills gaps”, relates to current workers. An employer is deemed to have a skills gap when a worker does not have all the skills they need to be fully proficient at their job. Prominent skills gaps also exist in all three of the SOC categories associated with high-skilled workers.

**In total, 292,900 current workers are not fully proficient across the three occupational bands typically associated with high skill levels.**

The ESS findings are supported by other analyses that show widespread underqualification. For instance, the OECD has calculated that around a quarter of UK workers were underqualified for their jobs in 2015.<sup>22</sup> In other words, these individuals were working in roles that typically required higher-level qualifications than they possessed. The rate of underqualification in the UK was also one of the highest when compared to those of OECD peers.

There is also some overqualification (workers possessing skills above the level needed to do their job). In some cases, overqualification simply arises from a misalignment in the type, rather than the level, of some courses and vacancies – which can be corrected in future.<sup>23</sup> In other cases, skills mismatch is part of the natural rhythm of a labour market in flux – for example, because people move jobs, roles change and information asymmetries hinder matching. It may also be that some workers initially accept jobs that require less education than they possess, but subsequently move into more senior roles that befit their skills.<sup>24</sup>

Seen through a static prism, though, overqualification might still be taken as evidence that we have already reached “peak grad”, and that further HE expansion would be a wasteful misallocation of resources (despite current evidence of low and falling investment in training by firms).<sup>25</sup> But when taking a more dynamic view of a global economy where a more highly skilled labour force is increasingly pivotal to countries’ ability to compete, such a workforce is an asset.

### Future Demand for High Skills

This suggests our education system is not currently providing enough of the right kind of high-skilled workers. Policymakers need to consider how to plug these short-term deficits. But they also need to keep a close eye on the skills needs of tomorrow’s economy. Without action now, skills gaps will become a major drag on our economic performance in the future.

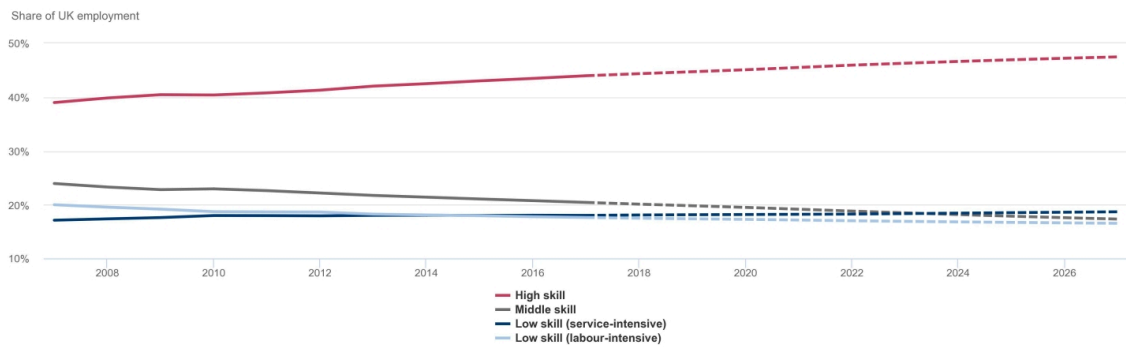
The Learning and Work Institute estimates that by 2030 there could be as many as 5.1 million low-skilled people chasing 2 million low-skilled jobs; 12.7 million people with intermediate skills chasing 9.5 million jobs; and 17.4 million high-skilled jobs with only 14.8 million high-skilled workers to fill them.

**On this basis, and in the absence of further action, England potentially faces a deficit of high skills in 2030, amounting to around 2.6 million people.**<sup>26</sup>

Official forecasts from the government-commissioned Working Futures analyses, which draw on Labour Force Survey data, also show that demand for high skill levels – where we already face shortages – will increase significantly in the future.<sup>27</sup>

Figure 8, which outlines changing skills demands between 2007 and 2017 (showing a marked rise in employment shares of occupational groups associated with high skills, such as professional, director and senior-official occupations), also incorporates the Working Futures skills forecast for 2017 to 2027. The projections derive from multisectoral, multiregional econometric models, based on official data. The forecasts suggest that the occupational structure of employment will continue to tilt more heavily towards high-skilled occupations.

**Figure 8 – Occupational trends (% shares), 2007–2027**



Source: DfE, “Working Futures”, 2021

What kinds of jobs are designated as “high skill”, and what sort of qualifications do they require? Figure 9, which splits Figure 8’s categories into the next level of their constituent parts, further underlines just how much more these occupations are associated with higher levels of qualification than other groups. In the 11 job categories typically associated with higher-level skills, 68 per cent of workers in those occupations possess HE qualifications of level 4 or above (among the rest of the workforce, the figure is 24 per cent).

**Figure 9 – Highest qualification by occupation group, 2017**



Source: DfE, “Working Futures”, 2021. Note: RQF refers to the Regulated Qualifications Framework.

But the need for high skills is not only about future growth in demand. It is important to consider replacement demand, too. Current workers will at some point vacate their roles due to retirement, family formation, career moves, mortality or other reasons. This means that not only will we need high-skilled workers to meet expanding demand in growth areas, but also to fill existing high-skilled roles when they are vacated by the high-skilled older workers who currently hold them. As a result, replacement demand will further reinforce overall demand for high skills.

With the economy already facing skills shortages in many areas and particularly of high skills, and with demand for high skills set to increase in future, now is clearly not the time to abandon ambitions for a substantially more highly educated workforce. Instead, we must invest more in education. But what kind of high skills are needed and what role does HE have in their provision?

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## Why HE Expansion Is Key to Building the Skills Needed in the Labour Market of the Future

The previous sections set out why we need more high-skilled workers to meet the requirements of the kind of jobs set to grow in number in the future. This section explores the types of high skills that will be required and the implications for which educational setting is best suited to their provision.

It is very important to be clear that most universities are not the academic ivory towers imagined by some. They offer a wide range of higher-level options spanning both academic and vocational areas, and both degree-level and non-degree courses. For example, in 2016–2017, 32 per cent of all level 4 and 5 students were taught in universities. More than half of degree courses at newer, technical universities such as Oxford Brookes are professionally accredited.<sup>28</sup>

The critical distinction between universities and other learning institutions is breadth, as well as the opportunity to proceed to greater depth if required. HE is very good at supplementing the technical skills that can be acquired in other educational settings with additional skills-sets, particularly the non-cognitive skills (for example, social and emotional skills, communication, planning and teamwork) that are growing steadily in importance.<sup>29</sup>

The ability to combine these two types of skills – technical and non-cognitive – is critical to success in the future labour market. This is due to changes in the labour market which mean that in increasingly sophisticated manufacturing and services industries, value is more and more being created by combining labour with knowledge assets such as computer systems and intellectual property.<sup>30</sup>

### Technological Change and the Labour Market of the Future

Two main effects of the application of technology to the labour market have been identified. The first is what is known as “skills-biased technological change”, a process in which technology increases the productivity of high-skilled workers, which raises demand for them relative to workers with lower skills.<sup>31</sup> Skills-biased technological change therefore raises the urgency of human-capital strategies geared towards producing high-skilled workers.

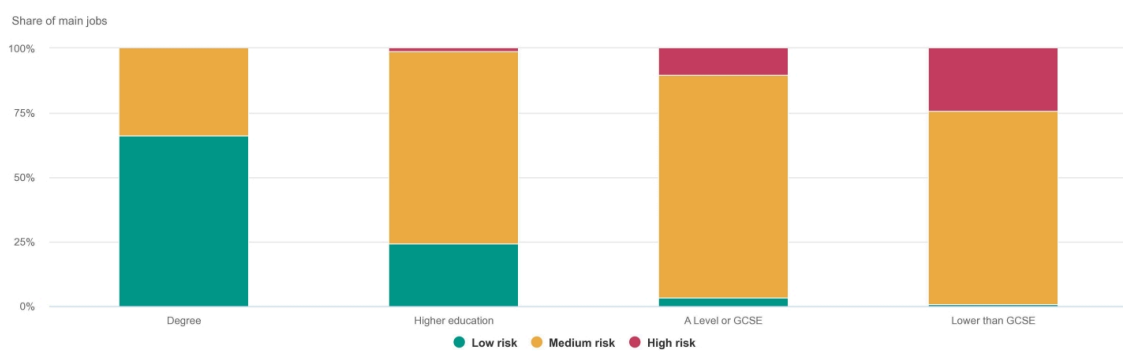
The second effect revolves around tasks rather than jobs, and suggests that technology displaces jobs that involve a lot of routine tasks and increases those involving non-routine tasks (as these are more difficult to automate). Since non-routine tasks are a feature of jobs at both the upper and lower end of the skills spectrum (management consultants and care workers, for example), so-called “routine-biased

technological change” polarises the labour market by raising demand for both low *and* high skills at the same time, at the expense of those mid-skill jobs characterised by routine tasks.<sup>32</sup> The value of HE in a labour market characterised by routine-biased technological change stems from the breadth of skills that graduates build, compared to settings that tend to build narrower sets of technical skills which make these workers’ roles more vulnerable to automation.

Like most advanced countries, the UK seems to have experienced a combination of both these effects. However, it is an asymmetric polarisation in which jobs have grown at both ends of the labour market, but with a marked overall trend towards an upgrading of skills demand and the growth of high-skilled jobs being dominant.<sup>33</sup> The most up-to-date analysis from the Resolution Foundation suggests that most sectors are upgrading their skills requirements right across the board, producing rising demand for high-skilled workers and stagnant or declining demand for both mid- and low-skilled jobs.<sup>34</sup> The Working Futures data presented in Figure 8 bears this out, showing sharply rising demand for high skills, falling demand for mid skills and, within the lower skills bracket, a moderate rise in the share of jobs requiring interpersonal skills – “low skill (service-intensive)” – at the expense of those that don’t.

ONS analysis shows that the roles of people with lower qualifications are far more prone to automation than those with higher-level qualifications. Of the 1.5 million people who are at high risk of automation, 59.8 per cent are not qualified to level 2 and 39 per cent are only qualified to levels 2 or 3. Conversely, 87 per cent of low-risk jobs were held by people with degrees.<sup>35</sup>

**Figure 10 – Proportion of main jobs at risk of automation by education level, 2017**



Source: ONS. Note: Degree defined as level 6; higher education defined as levels 4 and 5.

These shifts are being driven by the changing organisation of work.<sup>36</sup> The application of technology, particularly IT, to most areas of business as well as the public sector has allowed flatter management structures that mean work is increasingly organised into semi-autonomous teams, rather than organised hierarchically as before. These developments place a premium on workers whose skill advantage lies in their ability to work in small groups to absorb, analyse and communicate ever-changing knowledge, rather than on technical know-how alone.



The impact of technology on the labour market appears, therefore, to be twofold. The first and most obvious effect is to generally raise the value of being able to work with increasingly sophisticated machines and computer systems. But another is to erode the importance of many basic, codifiable skills at all levels while raising the value of many general, co-specific skills – the ability to cooperate with others and learn new techniques in a continually changing environment – particularly at a higher level.

The upshot is that workers with a combination of high-level technical and non-cognitive skills are far more likely to possess attributes that complement machines and AI than be displaced by them. These workers will be more productive and adaptive as a result, and the transferable skills they acquire may help guard against job and skill redundancy later in their careers. What is the evidence for HE's role in providing this combination of skills?

### **HE's Ability to Meet Skills Needs**

The most obvious indication of the strong labour-market value of workers with HE is the fact that employers are prepared to pay a premium for them. Strong employer demand for HE graduates is reflected in a significant and durable wage premium. According to Institute for Fiscal Studies (IFS) estimates, over their working lives, men can expect to be £130,000 better off on average by going to university, and the figure for women is £100,000. This figure considers taxes, student-loan repayments and foregone earnings.<sup>37</sup>

But how do we know that this wage premium reflects tangible value rather than mere “signalling”? As universities are selective, some critics suggest that most of the value of HE attendance comes from demonstrating a worker's pre-existing abilities, rather than developing these abilities. If so, expanding HE further would simply fuel a costly and futile educational “arms race” that would not enhance human capital.

The signalling argument is intrinsically difficult to evaluate, but many studies have tried to quantify the benefit of extra years of education to employers. These employ different econometric techniques and arrive at varying conclusions. However, a recent meta study suggests the signalling effect is likely to be relatively modest and certainly not significant enough to justify ceasing further investment in education.<sup>38</sup> Experts also suggest that in parts of the education system where signalling may be a tangible problem, good policy solutions are available to minimise its impact – for example by improving student and employer information and making grading more rigorous.<sup>39</sup>

The graduate premium is likely to remain strong, even as the labour market continues to evolve. Research by the European Commission shows that in future, while workers will typically need to build at least a moderate level of digital skills, problem-solving will become one of the most important cognitive skills, and the strongest overall demand from employers will be for non-cognitive skills of the sort best

acquired in an HE environment.<sup>40</sup> Research by McKinsey suggests there will be less need for manual skills and basic cognitive skills, and more for technological, social and emotional, and high-order cognitive skills.<sup>41</sup>

According to the World Economic Forum,<sup>42</sup> social skills such as persuasion and emotional intelligence will be in higher demand than narrow technical skills such as equipment operation. And the OECD<sup>43</sup> shows that, aside from their industry-specific capabilities, more people will need to build “catch-all” skills such as digital, problem-solving, and social and emotional skills.

The available evidence suggests that graduates are well-equipped to meet these demands. A recent McKinsey study<sup>44</sup> identified 56 core transferable skills that workers in all sectors would benefit from building in an increasingly automated, digital economy. Each of these foundational skills pertained to one of four broader categories:

- cognitive (for example, communication, critical thinking and adaptability)
- digital (for instance, digital literacy, data analysis and statistics)
- interpersonal (including empathy, negotiation and collaboration)
- self-leadership (for instance, entrepreneurship, persistence and self-motivation)

Higher proficiency in these areas was associated with a stronger likelihood of being employed, being satisfied in the job and earning more. And people with a university degree had higher average proficiency scores across the 56 skills than those without, which suggests that higher-educated individuals are better positioned to grasp the opportunities that lie in the future of work.

As well as changing the nature of the domestic workforce, technological change is making the labour market more global. Pandemic-induced changes to the labour market have sparked fears that white-collar, professional jobs, once seen as immune to being offshored, are increasingly migratable from rich countries to lower-cost locations.<sup>45</sup> TBI analysis suggests that such “anywhere jobs” account for 18 per cent of employment in the UK – 5.9 million workers in total. With jobs becoming less local, doubling down on the non-cognitive social and digital skills that HE provides is becoming even more essential to our ability to compete.<sup>46</sup> Indeed, deepening the pool of skilled HE graduates here may also help the UK attract businesses employing white-collar labour from other countries that fail to invest in graduate skills.

The government’s post-Brexit plans also underscore the role of graduates in the economy of the future. Its aim is to readjust our trade focus from the EU onto emerging global markets. The rapid rise of a global middle class with significantly increased spending power is fuelling demand for business and professional services, which are increasingly driving global trade. The UK is one of the most services-intensive of all the advanced economies and enjoys a strong comparative advantage in high-end services sectors, where our exports are twice the global average.

These sectors are heavy recruiters of graduates. For example, 60 per cent of workers in financial services are in high-skilled positions compared with 40 per cent in the economy overall.<sup>47</sup> In manufacturing, industry analysis shows our comparative advantage lies in the most advanced engineering sectors, which are predominantly staffed by graduate engineers.<sup>48</sup> Squeezing HE funding and participation rates will therefore threaten the government's ambitions for Global Britain.

### **Net Zero and the Demand for High Skills**

Reaching net-zero emissions by the 2050 target entails decarbonising large parts of the economy and re-equipping the labour market with new, greener skills. New jobs will be created, but significant upskilling and reskilling of existing jobs will also be necessary.

The Climate Change Committee estimates that overall, 300,000 jobs will be created from decarbonisation by 2050.<sup>49</sup> The skill requirements of these jobs will vary. Some will be mid-skill jobs, for example retrofitting home heating. But there will also be many that are high-skilled. These jobs will require not just STEM skills but data, project-management, leadership and change-management, and communication proficiencies, all of which are graduate-level skills.<sup>50</sup> Indeed, three-quarters of manufacturers see extra provision of skills of level 4 and above as critical for the success of the green transition (yet less than half believe the UK's education and training system is fit to deliver these).<sup>51</sup>

Net zero will also affect existing and emerging jobs by making them more complex, and thereby changing the skills required to perform them.<sup>52</sup> Analysis of tasks, rather than occupations or industries, shows that around 17 per cent of UK jobs are currently directly or indirectly "green", and hence are set to grow in number as the economy decarbonises.

The majority of these jobs (12 per cent of total UK jobs) are already held by people with degrees, or are likely to require them to have a degree. This is because the jobs are more complex and involve more non-routine analytical tasks than non-green jobs, as they are concentrated in occupations that are intensive in abstract skills, such as management or business and financial operations.<sup>53</sup> Net zero, in other words, presents a critical labour-market challenge that heightens the importance of graduate skills in existing jobs, and those yet to be created.

## Would More Graduates Add the Same Value?

This paper has set out evidence of the critical importance of expanding HE for the country's future prosperity. Much of that evidence suggests that society benefits from strong positive returns to the average degree course, in particular, and that chief among the beneficiaries is the graduate themselves. That in turn implies that there are substantial benefits to be had from the further expansion of HE.

These insights are based upon outcomes observed for the average graduate. But there is a final question that needs answering: would additional students, attracted to an expanded HE sector, generate such significant returns? In other words, can we be sure that all HE courses are delivering a broad set of relevant skills?

While our HE system is successful at delivering graduates with valuable skills, it still falls short in many respects as some courses lack traction in the labour market. IFS analysis (Figure 11) shows that around one in five graduates do not derive a net lifetime financial gain (the change in earnings associated with a course once loan repayments, taxes, prior attainment and socioeconomic background are factored in). Average returns to courses also vary significantly from negative to around £500,000 over a working lifetime, and the public subsidy (in the form of teaching grants and unrepaid student loans) is disproportionately high for some courses.<sup>54</sup>

This evidence of variation in outcomes has been cited by some as evidence that the expansion of HE has gone as far as it should, if not further, and that would-be graduates should instead pursue lower-level technical options. Influential think tanks claim students are being misled about returns,<sup>55</sup> while key government appointees have spoken about the need to “rebalance the system from higher to technical education”.<sup>56</sup>

The problem of poor returns for some courses cannot be dismissed lightly, nor can the presence of skills gaps in middling technical roles. However, there are three reasons why such reasoning is faulty. First, the zero-sum logic that underpins it makes little sense. High-level skills deficits in professional occupations and skills gaps in middling technical roles are two separate problems, each of which requires a bespoke solution. If a minority of students are doing low-value degrees, the right response is to nudge them towards better-value ones – not to downscale HE and divert would-be graduates to technical courses to which they are unlikely to be suited.

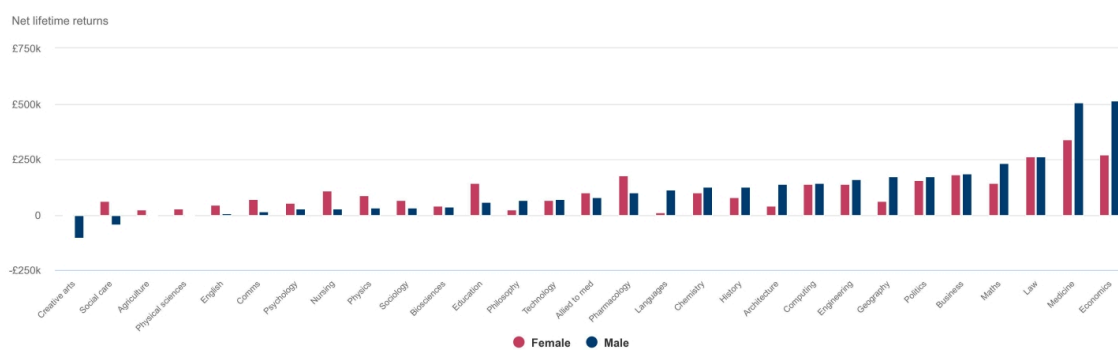
Second, estimates of private financial returns for graduates in their 20s are far from a full reflection of the total social return on which we should assess the value of HE. Private financial returns comprise just one type of benefit, but various non-pecuniary private benefits are also strongly associated with graduate status, including better health, greater social engagement, intergenerational mobility, lower propensity to commit crime and higher levels of entrepreneurial activity. In addition, some courses that tend to

offer lower financial returns to the individual have substantial social value – nursing is one example. The student-loan write-offs associated with these careers should be seen as conscious investments in key public roles.

As well as non-financial returns, graduates generate financial benefits for their employers. Their skills raise the returns to capital investment, boosting profits as well as wages. While hard to estimate, these wider economic benefits are a critical part of the social return to HE that justifies public subsidy and which is underplayed by a narrow focus on wages. Of course, HE institutions still need to ensure they incorporate a wider range of labour-market friendly skills in each course (digital skills in arts degrees, for example). But this does not detract from the fact that education is an important investment, and not just in a narrow financial sense. <sup>57</sup>

Third, even if we were to judge the utility of a course on private financial value alone, it is not obviously the case that the marginal student is likely to take up the type of “low-returns” course often derided by critics of HE expansion. Perhaps because of concerns aired repeatedly over the past few years about graduate prospects in parts of the HE market, demand is shifting. Courses with the lowest apparent financial returns <sup>58</sup> are becoming less popular, while the opposite is true for more lucrative options. Figure 12 compares the respective shares of acceptances through the Universities and Colleges Admissions Service (UCAS) in creative arts, the course identified by IFS analysis as offering the lowest financial returns, and three of the four degrees offering the highest returns (economics, law and business studies – the fourth being medicine, which has restricted supply).

**Figure 11 – Financial returns to HE by subject (mean)**

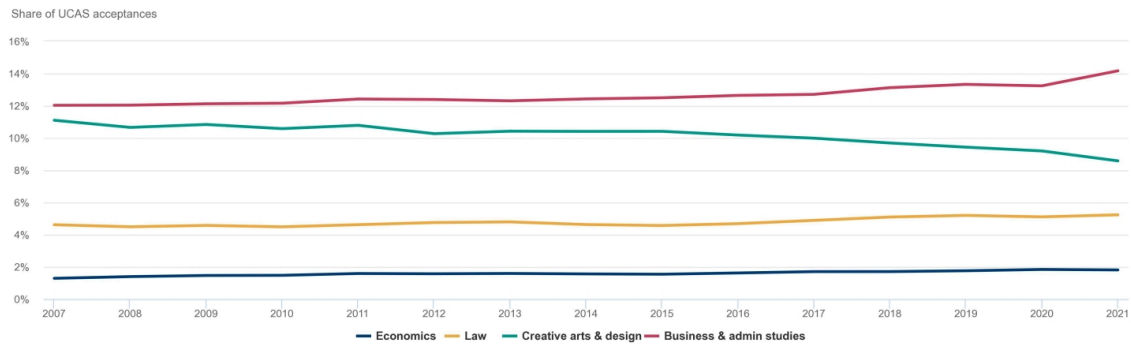


Source: Institute for Fiscal Studies

While the share of UCAS acceptances in creative arts has diminished in the past decade-and-a-half, the acceptances for the other three degrees have risen steadily during that time. If segments of the HE sector have offered a bad deal for some students in the past then this is starting to change, for instance because there is now better information on financial returns to applicants and those who are motivated by such returns are acting accordingly. The result is that while the number of accepted applicants through UCAS has surged, from 413,000 in 2007 to 562,000 in 2021, <sup>59</sup> the proportion of students

going into the lowest-return subject areas has been declining. There is no reason why this should not continue as participation grows.

**Figure 12 – Share of yearly UCAS acceptances, undergraduate courses (2007–2021)**



Source: TBI calculations

In summary, ongoing labour-market trends point to the need for a widespread upskilling of current and future workers. Technical training and qualifications – provided through FE and apprenticeships – remain an important part of that task, and setting them up in tension with HE provision represents a false choice. But technical training is often no longer sufficient by itself, as such skills tend to erode over time and are prone to being made redundant by automation. To guard against this, these attributes need increasingly to be supplemented by the “softer” skills of teamwork, entrepreneurship and critical thinking, as well as embedded in a high level of general education that enables the worker to pick up new skills and techniques as their job and the economy change.

These are best provided by HE institutions. There is little reason for concern about waning graduate returns to an expanded HE sector, and substantial evidence that they offer the skills we need, pushing further and faster along a pathway that has contributed substantially to UK prosperity over the past 30 years. Far from curbing HE, we therefore need a concerted push to expand it much further.

## Conclusion and Recommendations

Our country needs more graduates. The unprecedented slowdown in growth and productivity over the past decade or more, which has sapped living standards, would have been worse still had education not rescued an element of growth. It has, after all, been the only consistent driver while other potential contributors have ground to a near halt.

As older people with below-average education retire, the level of skills in our workforce will continue to rise and therefore boost growth, at least for a while. But this trend is fading quickly and if the average education level of new workers stagnates, economic growth risks being even more meagre than its current rate. By increasing the proportion of young people who stay in education longer, we have a chance to avoid this glum scenario.

How do we know that HE, specifically, is the way to go? There is already clear evidence of deficits in high-skilled occupations, and demand for high-level skills will only grow as technology transforms the economy and helps it to mature into one that is more knowledge-rich. By splicing complex analytical skills with non-cognitive ones, HE harnesses the aptitudes that meet those demands.

**We should, therefore, aim to raise participation in HE at levels 4 and above to 60 per cent by the end of this decade and 70 per cent by 2040.** Such a goal is achievable, and would allow the UK to catch up with the most dynamic and highly educated economies, such as South Korea.<sup>60</sup> This would make a significant difference to the level of prosperity over the next generation.

Achieving a 70 per cent participation rate would be a major undertaking, spanning multiple parliaments and requiring action to tackle several barriers that would otherwise frustrate such a goal.

- One such obstacle is poor school attainment, which is still all too pervasive among recent school leavers; for instance, 13 per cent of people aged 19–24 (621,270 individuals) still do not even have a level 2 qualification. Clearly, it makes no sense to extend HE to pupils who have not yet developed the skills required to manage its additional demands. A 70 per cent goal would, therefore, need to be paired with the policies and resources to improve school and pupil improvement, and diversify routes into HE that are currently too narrow, allowing a wider range of students to benefit from HE.
- Non-traditional routes into HE would also need to be improved. HE must, of course, remain rigorous and challenging, which means watering down expectations is not an option. But introducing a grade floor to access student finance, as the government is proposing, is too blunt an instrument. Other measures, including aptitude tests, could instead be employed to test whether ostensibly underqualified candidates are nonetheless ready for HE. And for those who fall short, government should consider supporting more bridging options to bring them up to speed.

- The government would also need to monitor the effect of recent moves to recalibrate student-loan repayments to ensure more debt-averse candidates have not been inadvertently discouraged from pursuing HE. And there is more that can be done to make the decision attractive to students from lower-income backgrounds, including reintroducing maintenance grants.
- More generally, access-widening initiatives should be closely scrutinised, and where necessary adapted, to ensure they are tackling underparticipation in disadvantaged areas.

There are, of course, reasonable arguments to be had about the precise form that HE should take, the courses people choose, the fairest way to apportion the cost between state, individual and society, and the systems that knit together different institutions. Some of these questions will be the focus of our future work. But what is beyond doubt is that turning away from HE now would be a grave mistake for the future prosperity of the UK. Radicalism and much greater ambition are required. Graduate education is, in short, not a luxury but a necessity.

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## Technical Appendix

[Download the Technical Appendix on growth accounting here.](#)

*Charts created with Highcharts unless otherwise credited.*



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## Footnotes

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  15. ^ For a good overview of the competing explanations: <https://www.inet.ox.ac.uk/publications/no-2021-12-why-is-productivity-slowing-down>
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  17. ^ See methodological appendix for a full description of this method.
  18. ^ It should be noted, however, that higher qualification levels do not equate to skills.
  19. ^ As a proxy for the latter, we use 2019 figures for 18- to 23-year-olds.
  20. ^ The precise assumptions have a negligible impact on the comparison between the scenarios, hence our conclusions are not dependent on them. See the Annex for full details on methodology.
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