

Embargoed until 00.01am on Monday 23 January 2023

# ReWAGE

## Evidence Paper

### How to address skills shortages at the intermediate skills level

*Published January 2023*

## How to address skills shortages at the intermediate skills level

### ReWAGE Evidence Paper

#### 1. Introduction

Intermediate level skills, of a type held by the modern technician, have long been regarded as a driver of productivity and national competitive advantage. They provide the skills that are seen to be a key constituent of a high skill, high value economy. Historically both the demand for, and supply of, intermediate level skills has been regarded as deficient compared with relatively high productivity countries such as Germany. Constrained supply has also meant that companies looking to enter high value product markets have struggled to obtain the intermediate level skills they require. The evidence to support the statements made above is examined in detail below. First the role of intermediate levels – and what they are in practice – is considered, followed by an examination of the evidence about the level of demand, both nationally and internationally, and the degree of skills mismatch. Finally, consideration is given to how the supply side has responded to meeting intermediate level skills demand. The conclusion is that demand for intermediate level skills is modest but skills shortages and gaps are evident. A supply side that increasingly pushes the costs of training on to employers and workers or trainees, in a labour market where policy makers have sought to increase labour market mobility is unlikely to do much to resolve skill mismatches.

#### 2. Recommendations

The evidence provided above points to the following policy interventions which might be used to stimulate intermediate level skills training.

1. Empower individual workers to undertake training to update and reskill as necessary. Initiatives such as Individual Learning Accounts provide a means of achieving this goal. The evaluation evidence is largely positive on the capacity of learning accounts to increase training volumes other things being equal.
2. Empowering individuals to undertake training will need to be supported by adult careers guidance – available to people in work as well as those out of work – to identify training which will provide them with a degree of resilience in an uncertain labour market.
3. Guidance also needs to be provided to employers about the skills their workforces need to acquire to meet future changes in the demand for skills.
4. Employers need to be encouraged to engage in training of a type which confers benefits on businesses and individual workers. Providing programmes which meet the needs of those employers, such as SMEs, which tend to face particularly formidable barriers to training, need to be developed. Tax credits may provide one means of achieving this aim.

5. Apprenticeships provide an important means of delivering intermediate level skills. The costs of training apprentices to completion of their training need to be set at a realistic level if apprentice volumes need to be increased. At the moment the net cost to the employer of training an apprentice may be too high for some businesses to take the risk of investing in apprenticeships.

All of the above can take advantage of initiatives used by government at various times in the past to increase training volumes. There may have been some problems with the execution of some of those programmes, but many were innovative and the lessons learnt from their prior introduction provide a basis for their successful re-introduction. It is not always necessary to re-invent the wheel.

## BACKGROUND

### 3. The role of intermediate levels skills

The National Institute's matched plants series of studies, conducted between the 1970s and the early 2000s, revealed that establishments in countries such as Germany and the Netherlands were more efficient or productive because of their relative reliance upon skilled workers in the middle of the occupational hierarchy.<sup>1 2</sup> Why they needed more people with intermediate level skills stemmed in large measure from differing product market strategies. High productivity was driven by the production of relatively high value-added goods, typically using batch production techniques in medium-sized companies that relied heavily upon artisans. In contrast, the UK was more reliant upon the production of lower value-added goods, and increasingly services, which relied upon a relatively large cadre of management supervising the undertaking of relatively low skilled work by low skilled workers. This strategy was seen to lie at the root of the UK's low skills equilibrium problem, speculatively diagnosed at the end of the 1980s, whereby by a low level of skills demand and skills supply fed off one another.<sup>3</sup> If employers are to upgrade their product market strategies, then the evidence suggests that this change would increase the demand for skills. Mason's seminal analysis on the relationship between product market strategies and skill needs demonstrated that all else being equal, high levels of workforce skills were positively associated with high value-added product market

---

<sup>1</sup> Mason, G., van Ark, B. and Wagner, K. (1994), 'Productivity, product quality and workforce skills: food processing in four European countries', *National Institute Economic Review*, 147: 62–83.

<sup>2</sup> Intermediate level jobs can be defined with respect to the level of qualification typically required to gain entry. This suggests that a qualification at RQF levels 2 to 5 would typically be required to enter an intermediate level job (including, potentially, intermediate, advanced and higher-level apprenticeships).

<sup>3</sup> Finegold, D. and Soskice, D. (1999) 'The Failure of Training in Britain: Analysis and Prescription', *Oxford Review of Economic Policy*, 4(3): 21–53.

strategies, and high product strategies were positively associated with a high degree of exposure to foreign competition.<sup>4 5</sup>

Increasing the supply of skills is sometimes seen as a magic bullet that will stimulate productivity and employment growth and in doing so solve many longstanding weaknesses in the economy. However, if skills supply is to contribute to growth, then there needs to be a demand for productivity-enhancing skills in the first instance and, in the second, a skills system that can readily respond to the signals from the labour market. Arguably over time the skills system in England has become increasingly adept at responding to the various signals it receives about skill demand. This response has been achieved in large measure through the skills funding system whereby providers involved in the delivery of vocational education have become increasingly dependent upon learner numbers for their income. This demand-led system may be efficient in the way it matches supply to demand, but it also has the potential to reinforce a low skills equilibrium if skill demand is weak.

Notwithstanding the relative efficiency of the skills system, there are still concerns about the extent of skills mismatch. To some extent, skills mismatches (however defined) simply reflect operation of the labour market: skill demands change, but skills supply takes time to adapt which results in skill mismatches (reflected in, for example, differential occupational wage growth) to which the supply side responds. While a particular skills mismatch might clear over the long run, from a policy-making perspective they might not do so quickly enough.<sup>6</sup> Recent decades have seen many countries make substantial investments in their education and training systems – characterised often by the expansion of students in higher education, and which has tended to focus attention on the returns obtained. This focus has, in turn, focused attention on the extent of skill mismatches and how they might be rectified. In general, skill mismatches are seen to be a mix of skills not being sufficiently matched by either level and/or subject matter which results in, other things being equal, differing outcomes depending upon the nature of the mismatch: relatively high wage returns for those whose skills are in short supply, and less positive outcomes where skill demand is outstripped by supply.<sup>7</sup>

---

<sup>4</sup> Mason, G. (2004). *Enterprise Product Strategies and Employer Demand for Skills in Britain: Evidence from the Employers Skills Survey*. SKOPE Research Paper. ESRC Centre on Skills, Knowledge and Organisational Performance (SKOPE), University of Oxford.

<sup>5</sup> Knox, A. and Warhurst, C. (2018) 'Occupations, the missing link?: A new theoretical and methodological approach to product markets, skill and pay', *Work, Employment and Society*, 32(1): 150-186.

<sup>6</sup> Bosworth, D. (1993). 'Skill Shortages in Britain'. *Scottish Journal of Political Economy*, 40: 241-271.

<sup>7</sup> Gambin, L., Hogarth, T., Murphy, L., Spreadbury, K., Warhurst, C., Winterbotham, M. (2016) *Research to understand the extent, nature and impact of skills mismatches in the economy*, BIS Research Paper Number 265, London: Department for Business, Innovation and Skills.

There are clearly a range of methodological issues relating to the concepts of skills being at too high or low or in subject areas not matched to labour market demand.<sup>8</sup> At the risk of over-generalisation this debate has become focused around:

- the educational level at which skills are provided (possibly too much supply at tertiary level and not enough at intermediate level);
- subject or fields of study (potentially too much in liberal arts/social sciences and not enough in digital / STEM); and
- mode of delivery with too much classroom-based and not enough hands-on work-based training.<sup>9</sup>

The result, by and large, is the result of skill surpluses where people are qualified at too high a level and / or in subject areas where supply exceeds demand.<sup>10 11 12</sup> At the same time, there are shortage hotspots linked to specific occupations and sectors such as IT and construction typically at an intermediate level. The response of policy has been to seek increases in the provision of vocational education and training with a workplace-based element. This has seen the introduction of the Apprenticeship Levy, the development of T-Levels in further education (with their substantial work experience element), and degree level apprenticeships in higher education.

Reducing skill mismatches is seen to lie in developing more effective skills anticipation systems which encompass:

- reliable sources of information on emerging skill demands, which are communicated in ways appropriate to the needs of a wide range of potential users;
- systems being in place that allow vocational qualifications to be updated in a timely way in response to signals about emerging changes in demand (typically involving a variety of stakeholders at national and local levels);
- providing vocational qualifications where the subject content provides both learners with a sufficiently broad range of skills to weather any changes in skills demand, and employers with workers who can adapt to changes in technology and organisation, whilst still conferring specific occupational competences;
- ensuring that the delivery of skills and vocational qualifications is attractive to would-be learners and employers through, for instance, offering progression routes through the training system, providing modes of learning that suit learners and

---

<sup>8</sup> McGuinness, S., Pouliakas, K. and Redmond, P. (2018). 'Skill Mismatch: Concepts, Management and Policy Approaches'. *Journal of Economic Surveys*, 32: 985-1015.

<sup>9</sup> Brown, P., Lauder, H., & Ashton, D. (2011). *The Global Auction: The Broken Promises of Education, Jobs and Incomes*. Oxford: Oxford University Press.

<sup>10</sup> Brown, P., Lauder, H., & Ashton, D. (2011). *The Global Auction: The Broken Promises of Education, Jobs and Incomes*. Oxford: Oxford University Press

<sup>11</sup> Cedefop (2015). *Skills, qualifications and jobs in the EU: the making of a perfect match? Evidence from Cedefop's European skills and jobs survey*. Luxembourg: Publications Office.

<sup>12</sup> Green, F., Felstead, A., Gallie, D. (2016) 'Skills and work organisation in Britain: a quarter century of change' *Journal of Labour Market Research* 49, 121–132.

- employers, and being able to dispel any notions that vocational education and training is second class compared with general/academic education;
- giving training providers a degree of flexibility with respect to subject content and teaching methods so that supply can be tailored to local conditions;
  - funding systems that are able to adequately address potential market failures which result in supply not meeting demand;
  - having in place policies and programmes that support adults in updating their skills where faced with skills obsolescence.

#### 4. The demand for intermediate level skills

The interest in intermediate level skills is twofold. Firstly, these skills have been identified as ones that potentially have the role to contribute to productivity growth<sup>13</sup><sup>14</sup>, and second, some intermediate level skill jobs are ones that are considered to be particularly susceptible to automation.<sup>15</sup> They are susceptible to automation because of the tasks undertaken in these jobs are routine, in the sense that they follow a regular pattern even though the tasks carried out might be complicated, and therefore can be substituted by robots and AI routines of one kind or another. The evidence, however, suggests that the risk of automation may have been overstated. It is more likely to be low skilled jobs whose incumbents have little access to training that are most at risk of being substituted by machines and algorithms.<sup>16</sup><sup>17</sup> Notwithstanding this finding, there has been a clear message that intermediate level jobs, because of the presumed risk of automation, may be relatively insecure which, in turn, may affect careers guidance and thereby skills supply.

There is no generally accepted definition of what constitutes intermediate level skills. From an occupational perspective, this might include Technicians and Associate Professional jobs but it will also include Craft and Related Workers, and Plant and Machine Operatives.<sup>18</sup> There may also be clerical jobs which might constitute as intermediate level ones. Table 1 indicates that the Technician and Associate Professional jobs have grown substantially over recent decades, whilst the number of people employed in the other intermediate level occupations has shrunk. However,

---

<sup>13</sup> Mason, G., Rincon-Aznar, A. and Venturini, F. (2017) *Which skills contribute most to absorptive capacity, innovation and productivity performance? Evidence from the US and Western Europe* London: Centre for Learning and Life Chances in Knowledge Economies and Societies.

<sup>14</sup> Mason, G. (2012). *Science Technology and Engineering Technicians in the UK Economy*. London: Gatsby Foundation

<sup>15</sup> Autor, D., Levy, F. and Murnane, R. (2003). "The Skill-Content of Recent Technological Change: An Empirical Investigation", *Quarterly Journal of Economics*, 118: 1279-1333.

<sup>16</sup> Nedelkoska, L. and Quintini, G. (2018) *Automation, Skills Use and Training*. OECD Social Employment and Migration Working Paper No. 202.

<sup>17</sup> Pouliakas, K. (2018) 'Determinants of Automation Risk in the EU Labour Market: A Skills-Needs Approach'. *IZA Discussion Paper No. 11829*.

<sup>18</sup> These are the occupational titles used in the International Classification of Occupations 2008 (ISCO-08). ISCO has been used instead of the UK's Standard Occupational Classification (SOC) because international comparisons are provided in the paper.

because of the age profile of the people working in these jobs, there are typically high replacement demands resulting from imminent retirements meaning that there will be a substantial number of new job openings to be filled for the foreseeable future.<sup>19</sup> In summary, the evidence suggests that the demand for people to work in Associate Professional level jobs in the UK has grown relatively strongly over time but that the share of the overall workforce working in these jobs is relatively modest compared with other European economies (see Figure 1).

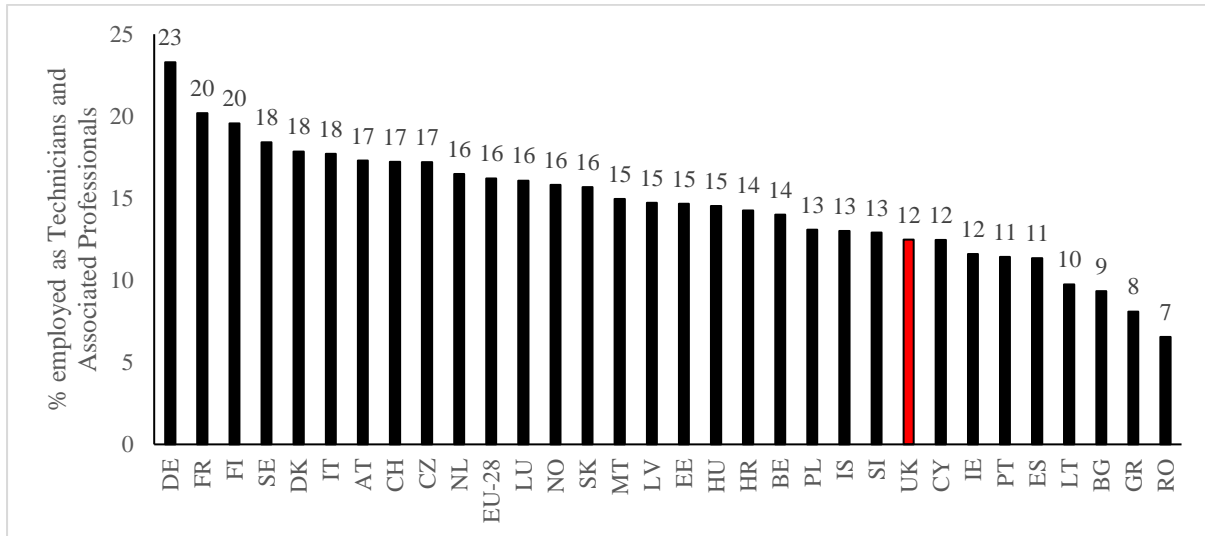
**Table 1: The Changing Occupational structure of Employment in the UK, 1992 to 2019**

	Share of employment 1992	Share of employment 2019	Percentage point change 1992- 2019	Employment growth 1992-2019 (000s)
Managers	14.0	11.7	-2.3	167
Professionals	14.8	26.8	11.9	4,674
Technicians and associate professionals	8.1	12.5	4.4	1,899
Clerical support workers	17.2	9.3	-7.9	-1,370
Service and sales workers	13.3	17.6	4.3	2,185
Skilled agricultural workers	1.2	1.1	-0.1	29
Craft and related trades workers	14.1	8.0	-6.1	-1,006
Plant and machine operators and assemblers	8.5	4.8	-3.7	-610
Elementary occupations	8.8	8.2	-0.6	371
All employment	100.0	100.0		6,339

Source: European Labour Force Survey

<sup>19</sup> Wilson, R. (2020) *Working Futures Projections of Future Skill Demand*. London: Department for Education.

**Figure 1: Share of employment accounted for by Technicians and Associate Professionals in Europe, 2019**



Source: European Labour Force Survey

Alongside the changes in the occupational distribution of employment, there have been substantial changes in the qualification levels of people working in intermediate qualifications. The percentage of people working in these jobs with tertiary level qualifications has increased for Technicians and Associate Professionals and, to a lesser extent, for Craft and Related Workers. In 2011, 40 per cent of people working as Technicians and Associate Professionals held a tertiary level qualification and in the space of eight years this figure had risen to 48 per cent. That said, intermediate level qualifications are still ones that most people in intermediate level jobs are likely to have attained.



**Table 2: Highest qualification held by those working in intermediate level jobs, 2011 and 2019**

Occupation	Highest qualification level			
	Lower secondary and lower	Upper secondary	Tertiary	Total
<b>2011</b>				
All employment	17.4	43.5	39.1	100
Technicians	13.4	46.7	39.9	100
Craft and related Skills	22.	66.5	11.5	100
Plant and machinery operators	20.7	62.8	16.5	100
<b>2019</b>				
All employment	14.6	39.3	46.1	100
Technicians	10.8	41.2	48.0	100
Craft and related Skills	20.7	62.8	16.5	100
Plant and machinery operators	34.5	52.9	12.6	100

Source: Labour Force Survey

Note: Changes in the ISCED classification from 2011 onwards means comparisons with earlier data are unreliable. 2019 has been used as a reference year in order to avoid the results being affected by the onset of the COVID-19 pandemic.

## 5. Skill shortages and intermediate level skills

Skills shortages tend to be relatively high for intermediate level jobs. Table 3 presents information on the share of hard-to-fill vacancies and skill shortage vacancies by occupation. Skill shortage vacancies are defined as ones that have proved hard to fill because applicants lack the skills, experience, or qualifications the employer requires. Technicians and Associate Professionals and Craft and Related occupations stand out because the share of vacancies, hard-to-fill vacancies, and skill shortage vacancies is greater than the share of employment accounted for by each occupation. Table 4 reveals that in the case of Technicians and Associate Professionals, the relatively high number of skill shortage vacancies is driven in large measure by the relative high number of vacancies. This is a set of occupations that has grown substantially over recent decades but the extent to which vacancies prove either hard-to-fill or result in skill shortage vacancies is around about the average of all occupations. In contrast, employment in Craft and Related occupations has been in decline and the extent to which vacancies prove hard to fill or result in skill shortage vacancies is much higher than for all other occupations. Tables 3 and 4 also provide information on the extent to which the existing workforce is considered proficient at their current job. In the case of the intermediate level occupations the level of skills gap is around the average. From a skills perspective the problem facing intermediate occupations is that of being able to recruit the skills employers required from the

external labour market. The findings outlined above are fairly consistent across time with similar results observable from at least the late 1990s.<sup>20</sup>

**Table 3: Share of employment and skill shortages by occupation, 2019 (%)**

	Occupation									Total
	Managers	Professionals	Technicians and Associate Professionals	Administrative/ clerical staff	Craft and related Workers	Caring, leisure and other services staff	Sales/customer service staff	Machine operatives	Elementary staff	
Employment	17.6	13.2	6.8	12.7	7.4	8.7	12.5	8.5	12.5	100
Number of vacancies	3.0	14.8	15.5	9.1	10.2	14.0	10.8	7.6	15.1	100
Number of hard-to-fill vacancies	2.4	17.7	13.0	4.2	16.2	17.1	6.2	9.8	13.5	100
Number of skill shortage vacancies	2.7	19.6	12.4	4.3	19.1	15.9	5.8	9.3	10.9	100
Number of staff with skills gaps	8.5	9.0	6.5	11.0	8.3	7.1	17.7	9.3	22.6	100

Source: Employer Skills Survey 2019

Note: Employment numbers are different to those in Table 1 as they are drawn from different sources using slightly different occupational classifications.

<sup>20</sup> Bosworth, D., Davies, R., Hogarth, T., Wilson, R. and Shury, J. (2000). *Employers Skills Survey: Statistical Report*. Nottingham: Department for Education and Employment.

**Table 4: Hard-to-fill and skill shortage vacancies as a percentage of employment and vacancies, 2019 (%)**

	Occupation									Total
	Managers	Professionals	Technicians and Associate professionals	Administrative/ clerical staff	Craft and related Skills	Caring, leisure and other services staff	Sales/customer service staff	Machine operatives	Elementary staff	
Vacancies as a share of employment	0.5	3.4	7.0	2.2	4.2	4.9	2.6	2.7	3.7	3.0
Hard-to-fill vacancies as a share of vacancies	29.6	44.5	31.1	17.1	59.4	45.4	21.1	47.7	33.1	37.1
Skill shortage vacancies as a share of vacancies	22.7	33.3	20.3	12.1	47.3	28.7	13.6	30.7	18.1	25.2
Skill gaps as a percentage of employment	2.2	3.1	4.4	4.0	5.1	3.8	6.5	5.0	8.3	4.6

Source: Employer Skills Survey 2019

The evidence outlined above suggests that shortages in relation to Technicians and Associated Professional stems from increasing levels of demand for people to work in this occupation suggesting that the supply side has not been able to keep pace with that demand. In relation to Craft and Related occupations, the evidence suggests that something more complicated may be taking place related to the declining number of people employed in these jobs and, possibly, as a consequence their attractiveness to those making the transition from the education system into work. At the same time, it is worth bearing in mind that the measures of skill mismatches provided in Tables 3 and 4 are relatively narrow. There is no way to verify, for example, whether employers were paying the going rate for the job, or why they would not take on someone with skills at a lower level and then train them to the standard required.

## **6. Underlying causes of shortages for intermediate level skills and the policy response**

Intermediate level jobs rely in large measure on people possessing skills which are typically supplied via the vocational education and training system in the further education sector (this is much is clear from Table 2 above). It is fair comment to suggest that further education has been the poor relation of higher education (cf. the

Kennedy Report in 1997 and the Wolf Review in 2011).<sup>21</sup> Across many countries the relatively high and increasing returns to qualifications obtained in higher education has led to substantial increases in higher education participation rates. By the 2000s, those who had the qualifications to enter higher education at the end of their secondary education tended to do so. It needs to be stated at the outset that higher education is not the enemy of further education. Further education can be readily defined as that part of the education system which typically provides qualifications associated with upper secondary education. In other words, qualifications at RQF levels 3 to 4 which provide access to higher education. As such further and higher education are complements. There is, however, a view that aside from the delivery of A-levels, further education provision has been somewhat neglected by policy makers. This neglect is something to which the Kennedy Review in 1997 drew attention, though the problem stretches back much further, at least to the Education Act of 1944. In particular, further education has historically struggled to offer an attractive vocational education and training alternative to A-levels, especially that which provides an alternative to classroom-based learning. The VET pathway through further education has often been regarded as one inferior to the general one leading to the award of A-levels and the opportunity to enter higher education.<sup>22 23</sup> This marginalisation has no doubt been reinforced by various reports and policy statements that have highlighted the shortcomings of VET provision in further education (cf. the Wolf Report, 2011) coupled with recurrent reforms, reorganisation of provision, and short-lived initiatives.<sup>24 25</sup>

Over time, the policy response has tended to prioritise apprenticeships as the best means to deliver skills at an intermediate level. This type of response is not confined to the UK or England but can be observed across Europe. The reasoning is that the relationship between the employer and the apprentice is guaranteed to bring about a heightened level of skills match. Given the history of apprenticeship training in the UK substantially increasing the number of apprentices was always likely to be a formidable challenge. Even the most potted history of apprenticeships in England reveals how difficult it has been to establish apprenticeships with anything like the veneration of, say, the dual systems found in German speaking countries. Even before the

---

<sup>21</sup> Kennedy Report (1997) *Learning Works Widening Participation in Further Education*. Coventry: Further Education Funding Council 1997; Wolf, A. (2011) *Review of Vocational Education*. London: DfE

<sup>22</sup> The Cedefop Opinion Poll survey on the population's views about the relative merits of vocational education compared with general education reported that 69 per cent of respondents thought that people with low levels of qualification attainment were directed towards vocational education in the UK (Cedefop, 2017). This is lower than the 75 per cent recorded on average across the European Union.

<sup>23</sup> Cedefop (2017). *Cedefop European public opinion survey on vocational education and training*. Luxembourg: Publications Office.

<sup>24</sup> Wolf, A. (2011) *The Wolf Review of Vocational Education*. London: Department for Education.

<sup>25</sup> Keep, E. (2006) 'State control of the English education and training system—playing with the biggest train set in the world', *Journal of Vocational Education & Training*, 58(1): 47-64.

establishment of publicly funded Modern Apprenticeships in 1994, when apprenticeship training was largely self-funded and self-governed by employers, participation rates tended to be relatively low (see Table 5). In particular during the 1970s and 1980s the apprenticeships systems, compared with that of Germany, appeared to be in serious decline.<sup>26 27</sup> This was also a period when the then government agency responsible for vocational training – the Manpower Services Commission (MSC) – seemed to become increasingly impatient with the apprenticeship system such that it directed investment into a parallel college-based vocational system which contributed more to the demise of apprenticeship system than the rapid contraction of the manufacturing sectors which was simultaneously taking place.<sup>28 29</sup>

**Table 5: Apprentices as a percentage of employees in Great Britain and Germany, 1990-1990**

Year	Great Britain		Germany	
	Industry*	Total	Industry*	Total
1900			7.67	2.99
1907	4.19	2.48	6.38	2.87
1925	5.02	2.54	7.64	3.18
1930			6.48	2.28
1951	3.22	1.87	7.87	4.75
1961	4.61	3.56	4.78	4.62
1971	4.05	3.28	4.99	4.89
1981	3.67	2.58	7.94	6.34
1990			7.39	6.08

Source: Broadberry and Mahoney (2004)

Note: Industry refers to: mining and quarrying, manufacturing, water sewerage and waste management, electricity and gas production, and construction.

Following the introduction of Modern Apprenticeships in 1994, the evidence suggests that initially much headway was made in establishing apprenticeships within the vocational education system. A survey of employers providing apprenticeship training

<sup>26</sup> Broadberry, S. and Mahoney, M. (2004) 'Britain's Productivity Gap with the United States and Europe: A Historical Perspective'. *National Institute Economic Review*.

<sup>27</sup> Broadberry, S. and Wagner, K. (1996) 'Human Capital and Productivity in the Manufacturing during the 20<sup>th</sup> Century: Britain, Germany and the United States' in N.F.R. Crafts and B. van Ark (eds) *Quantitative Aspects of Postwar European Economic Growth*. Cambridge: Cambridge University Press.

<sup>28</sup> Haxby, P. and Parkes, D. (1989) "Apprenticeship in the United Kingdom: From ITBs to YTS". *European Journal of Education*, Vol. 24, No. 2, pp. 167–181

<sup>29</sup> Gospel, H. (1995) 'The Decline of Apprenticeship Training in Britain', *Industrial Relations Journal*, 36(1): 32-44.

equivalent to RQF level 3 today found that that 77 per cent reported that they would have provided the training even if they had not received funding via Modern Apprenticeships.<sup>30</sup> Additionally, there were also qualitative gains with the evidence pointing towards apprenticeship training being more structured than the equivalents available, and more likely to be accredited by external bodies.<sup>31</sup>

Despite these positive outcomes, policy makers had concerns about the apparent trade-off between the quality and volume of provision. A cursory look back over the past two decades reveals a large number of official reviews with concomitant plans for reform and overhaul. In 2012, getting on for 20 years since Modern Apprenticeships were first introduced, the Richard Review of Apprenticeships seemed to suggest root and branch reform was required involving some simplification of what constituted an apprenticeship. One of the key recommendations of the Richard Review was the shift to occupation-focused apprenticeships that would provide a more thorough grounding in the skills and knowledge required to be competent in a skilled occupation. An increased emphasis on the role to be played by employers in establishing the content of an apprenticeship was also recommended, as was increased provision at RQF levels 3 and above. The intended impact of these reforms was to make apprenticeships more attractive to employers (given their role in the design of standards), improve their quality, and shift the focus of provision away from level 2 to higher levels of provision. Alongside these reforms were those introduced by government to ensure that there was a minimum level of off-the-job training.

The trade-offs between quantity and quality of skills provision via the apprenticeship route was apparent from the initial need to develop a critical mass of activity. In the early days of Modern Apprenticeships training providers were funded to deliver apprenticeships that could be used to accredit existing employees' skills or simply to train existing employees to the next level rather than, for instance, training young people recruited as apprentices. Building a critical mass of activity took time with the overall number of apprentices and the share of employers participating in the initiative remaining stubbornly modest over the early years. Between 2010/11 and 2018/19 an average of 4-5 per cent of Key Stage 4 leavers entered an apprenticeship. In 2018/19 an average of 9 per cent of 16–18-year-olds entered a sustained apprenticeship. In 2002/3 for example, there were 167,000 apprenticeship starts with around 5 per cent of employers reporting that they had an apprentice in 2002, down from around 10 per cent in 1999.<sup>32</sup> The numbers were subsequently built up over the 2000s reaching a peak of 509,000 starts in 2015/16. However, as will be explained in more detail below, the growth was largely accounted for by people aged 25 years and over, a substantial

---

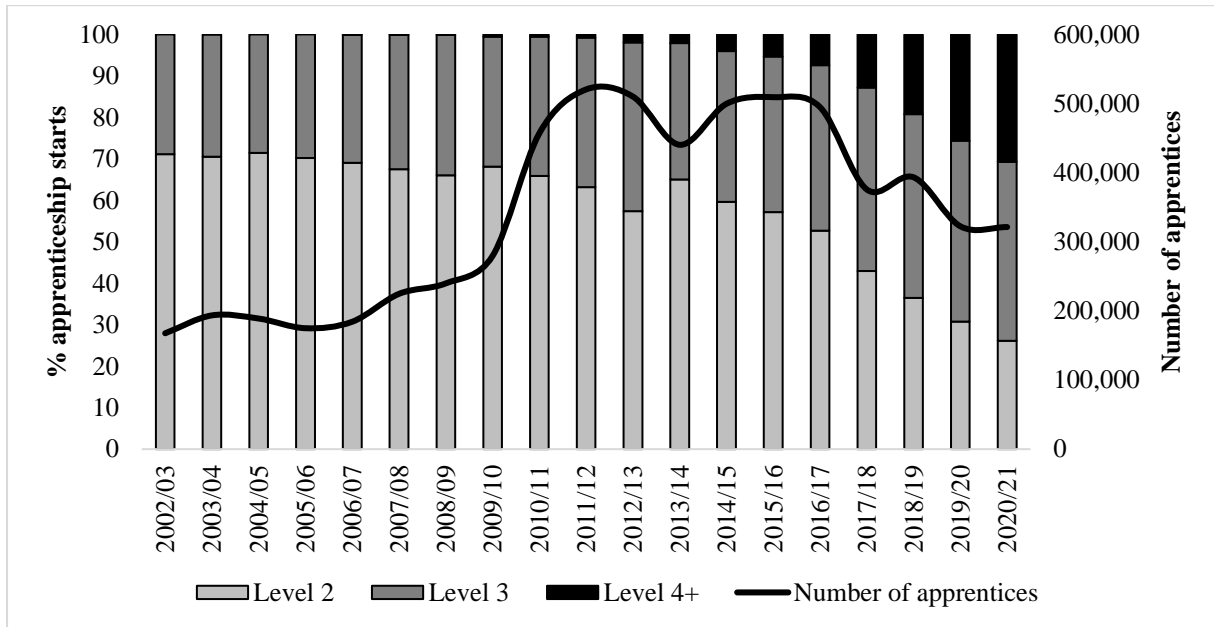
<sup>30</sup> Hasluck, C., Hogarth, T., Maguire, M. and Pitcher, J. (1996) *The Effect of Modern Apprenticeships on Employers' Training Practices and the Availability of NVQ Level 3 Training*, London: Department for Education and Employment.

<sup>31</sup> Economic Research Services (2000) *Evaluation of Modern Apprenticeships: 1998 Survey of Employers*, Department for Education and Employment.

<sup>32</sup> Spilsbury, D. (2003) *Learning and Training at Work Survey 2001*. London: DfES.

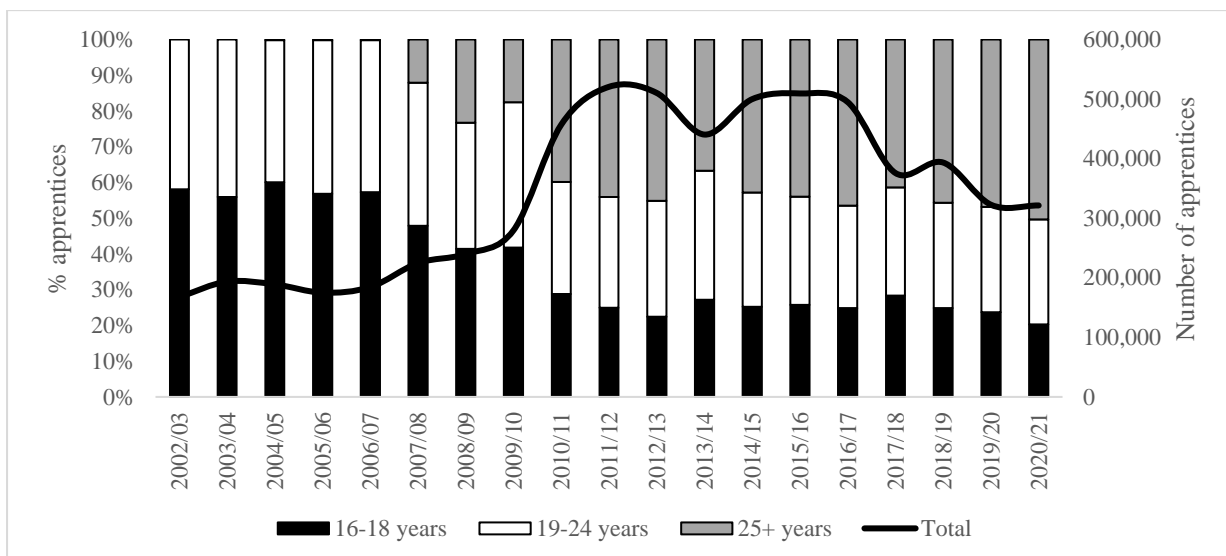
share of whom were likely to have been an existing employee rather than someone taken on as an apprentice. In addition, more recently, it also reflects an increase in the number of apprentices working towards completion of higher-level apprenticeships (i.e., at levels 4 and above). The number of starts at Level 3 has continued to increase too.

**Figure 2: Apprenticeship Starts by Level in England**



Source: DfE Apprenticeship and Traineeship Statistics

**Figure 3: Age of Apprentices at Start of Apprenticeship in England**



Source: DfE Apprenticeship and Traineeship Statistics

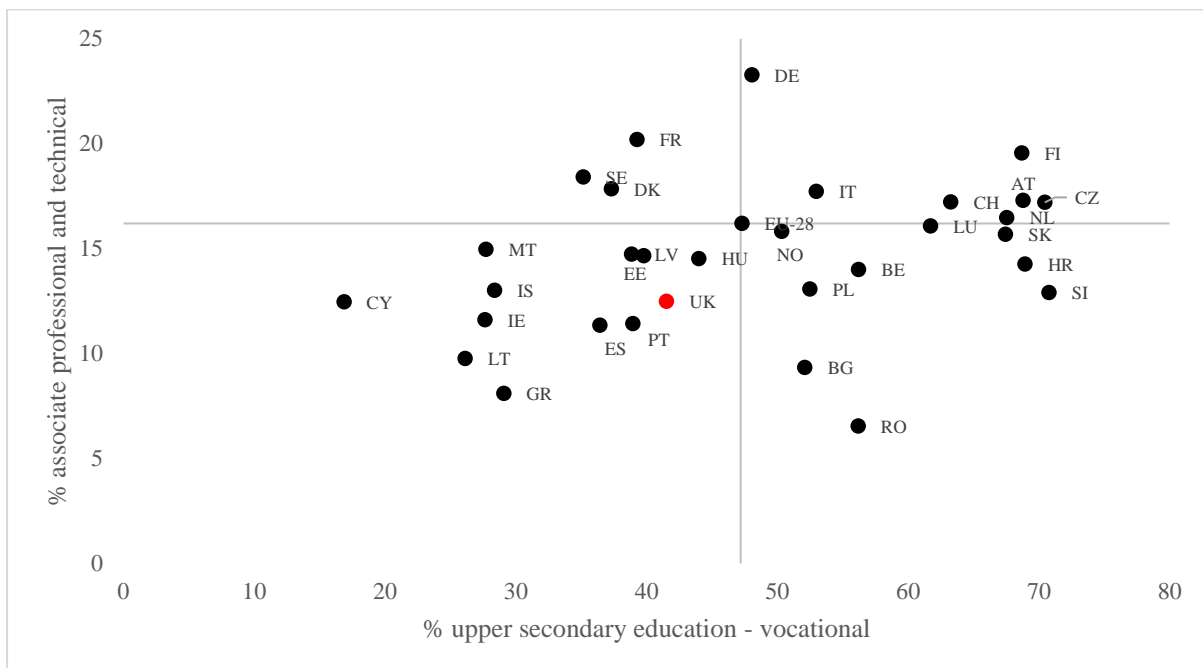
The introduction of the Apprenticeship Levy in 2017 was designed to simultaneously increase the volume of apprenticeship training and ensure that it was matched to skill needs in the labour market. In the period since the introduction of the Apprenticeship Levy the number of apprenticeship starts has declined (see Figures 2 and 3 above).

Employers, it would seem, have shown an increasing preference for taking on apprentices at higher levels – especially at RQF levels 5 and above – since the Levy was introduced.<sup>33</sup> Because apprenticeship standards at higher levels tend to have relatively high funding levels attached to them compared with lower-level ones, an employer’s levy contribution will fund relatively fewer apprentices at higher than lower levels.

## 7. Expanding Intermediate Level Skills Provision

A key issue is whether there is scope to boost the supply of intermediate level skills. The share of people in vocational education and training in upper secondary schools (i.e., further education) is relatively low in the UK compared with the rest of Europe (see Figure 4). This difference suggests that there is scope to increase the share to something similar to those countries that have relatively high levels of people employed in intermediate level jobs (such as Germany, Austria, Switzerland or Finland where there are also established apprenticeship systems).

**Figure 4: Participation in vocational education and training at upper secondary level and the share of those in employment in intermediate level jobs, 2019**



Source: European Labour Force Survey

In thinking about how to expand provision at the intermediate level within vocational education, there are two main options.:

- encourage greater take-up of apprenticeships/vocational education at an intermediate level;
- develop complements or alternatives to apprenticeships.

<sup>33</sup> Dickinson, P. and Hogarth, T. (2021) [The Benefits of Hindsight: Assessing the impact of apprenticeship reforms on employer behaviour](#). Report to Edge Foundation and Gatsby Foundation



Arguably, whichever approach is taken will require potentially more root and branch reforms so that a longer-lasting settlement is achieved than has been the case in the past. This reform, it will be suggested, revolves around establishing more effective governance of the training at the intermediate level.

There is potentially scope for an increase in the percentage of young people entering an apprenticeship. However, given the history of apprenticeships is it a reasonable expectation? To succeed here would require considerable efforts to encourage employers to take on more apprentices. One way to achieve it is to reduce the net cost to the employer of training an apprentice such that the productive contribution of an apprentice approximately covers the costs of their training. The apprenticeship system in Switzerland seems to have effectively achieved this goal, in part because a large amount of the apprentice's time is spent productively and apprentice wage rates are relatively low compared with those in England.<sup>34 35 36 37</sup> However, it is not just about participation levels per se. Looking at the history of the apprenticeship systems in, say, Germany and Switzerland it is clear that they are countries where, historically, relatively large shares of the population entered apprenticeships in the post-1945 period such that it appears an integral part of their social contract. Collective bargaining and wage compression in these countries are also as seen as important determinants of why employers appear to be relatively willing to take on apprentices.<sup>38</sup>

An alternative is to develop complements or alternatives to apprenticeships. The Netherlands, for instance, has an apprenticeship system (BBL, *Beroepsbegeleidende Leerweg*) which has faced periodic difficulties in finding enough employers to take on apprentices, especially during economic downturns. In response it developed classroom-based training with a substantial work experience element (around 20 per cent of time is spent in the workplace) – the BOL (*Beropesopleidende Leerweg*). This approach is seen to provide an alternative to the more traditional kind of apprenticeship which ensures that training takes place during periods of weak labour and training demand, and which provides comparable returns to the learner as from the BBL. T-levels essentially provide something similar to the BOL so may well be an effective means of developing improved supply at the intermediate level.

---

<sup>34</sup> London Economics. (2013) An international comparison of apprentice pay: Final Report. Report to the Low Pay Commission, London.

<sup>35</sup> A rough and ready estimate suggests that an apprentice will spend around 80 per cent of their time in productive activities – based on data provided in Moretti et al. (2018) and IFF Research (2020) – in both Switzerland and England. A lot of assumptions are required to derive this percentage.

<sup>36</sup> Moretti, L., Mayerl, M., Muehlemann, S., Schloegl, P. and Wolter, S.C. (2018) 'So similar and yet so different: A firm's net costs and post-training benefits from apprenticeship training in Austria and Switzerland.' *Evidence-based HRM: a Global Forum for Empirical Scholarship*, 7(2): 229-246.

<sup>37</sup> IFF Research (2020) *Apprenticeship Evaluation 2018-19: Learners*. London: DfE.

<sup>38</sup> Acemoglu, D. and Pischke, J-F. (1999). Beyond Becker: Training in Imperfect Labour Markets, *Economic Journal*, 109(453): F112-F142.

There is also a need to consider policies from the past. There was, once upon a time, substantial provision of sub-degree level qualifications which were, by and large, vocationally oriented. Higher National Diplomas (HND) seem to have fallen by the wayside over the years in part because of the change in status of polytechnics to universities and, in so doing, mimicking the more academically oriented provision of their pre-1992 counterparts and, in part because degrees became the standard qualification associated with higher education. The system has become one where there are a number of break points: at the end of compulsory secondary school (aged 16); at the end of upper secondary education (aged 18); and at the end of a bachelor's degree (aged c.21/22). Perhaps there is the possibility of introducing a further break at the point at which a sub-degree qualification would be obtained. Again T-levels may be able to develop provision at the sub-degree level.

Ultimately, there is a need to develop provision at the intermediate level which meets the differing needs of learners and employers, offers progression pathways, provides equality of esteem, and has sufficient flexibility so that the provision is not too narrowly focused on a specific occupation (thereby increasing the risk of skills obsolescence) and can provide flexibility of provision to tailor content to the needs of the learner or the local labour market. It suggests that:

- there needs be some means of linking the determination of training content to emerging skill needs across contiguous occupational areas in a timely fashion;
- ensuring that provision is not too occupation specific so that learners' skills are relatively broad-based, potentially allowing options to be taken to meet the needs of a specific occupation within a group of occupations;
- ensuring that relevant stakeholders are involved in curriculum design, including employers, training providers, employee representatives, etc.
- providing options/elective modules within courses to allow some tailoring of provision to learner needs and giving training providers some flexibility with respect to meeting local labour market needs;
- providing pathways that ultimately mean there are no cul-de-sacs effectively cutting-off access to higher education (even if this requires additional modules to be completed);
- a means of identifying emerging skill shortages and over-supply so that corrective action can be taken;
- finding a means for bolstering the prestige in which vocational qualifications are held through, for instance, providing registration with professional bodies.<sup>39</sup>

These points provide a basis for thinking about a long-term settlement of skills supply to intermediate level occupations.

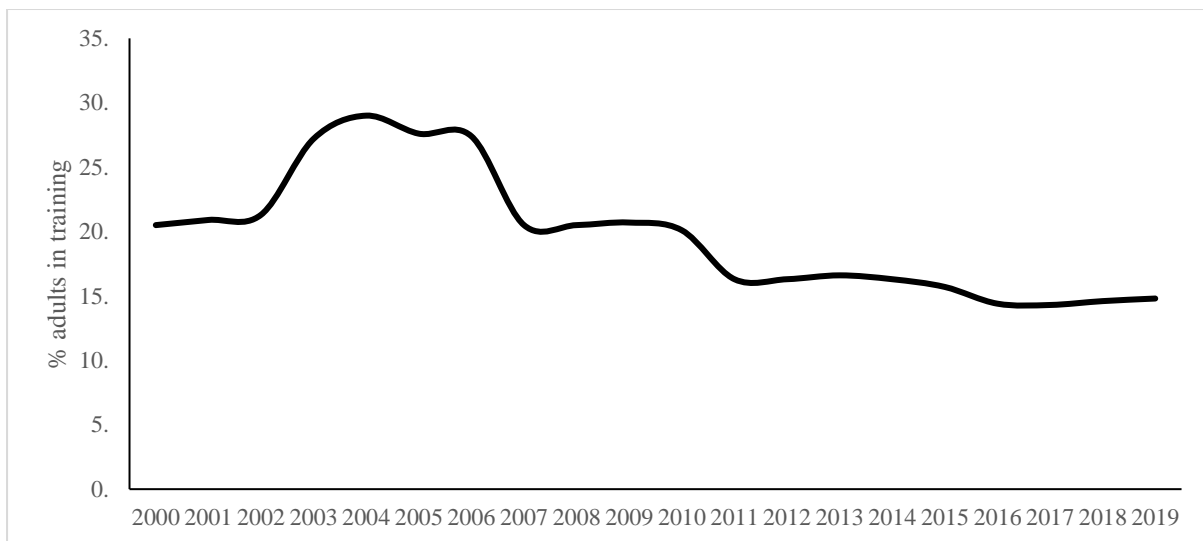
---

<sup>39</sup> Frontier Economics (2013) *The Economics of Registration Schemes*. London: Gatsby Foundation

## 8. Improving adult access to skills training

The foregoing has focused to some degree on how the initial vocational education and training system can meet the intermediate level skill needs of employers. An issue arises about the extent to which learners' needs, particularly those of adult learners, might be addressed. Evidence from the Labour Force Survey shows a long-term decline in the percentage of individuals who said they had engaged in training over the past four weeks (see Figure 5). However, this is a rather narrow definition of participation in training. The Adult Education Survey (AES) reveals that over time the percentage of employees in training of any kind has been more or less stable: from 57 per cent in 2007 to 59 per cent in 2016. It is also evident that the number of hours provided to those workers in employment, at around 121 hours, is near the European average of 118 hours, so it is not simply a case of training being of shorter duration compared with other countries. The Employers Skills Survey also reveals that the percentage of employers training over the 2010s has been static (at around 65% of employers), though it fell slightly in 2019 (to 61%). However, the share of Associate Professionals and Craft and Related Trades staff in receipt of training increased from 2015 to 2019. So, it not necessarily the case that a lack of training, per se, is the problem.

**Figure 5: Trends in participation in training, 2000-2019**



Source: Labour Force Survey

An alternative perspective might be that training needs to increase so that more people are equipped with the skills to enter intermediate level jobs or remain in them when faced with skills obsolescence. This approach means that training may need to be targeted at those currently not working in intermediate level jobs as well as ensuring that the skills of those in these jobs are kept up to date. If more training is required, then there are at least two issues that need to be addressed: (i) tackling the barriers that prevent more people being trained; and (ii) ensuring that training is targeted on the skills that are in demand. In relation to the first issue, the evidence suggests that cost is a key barrier. Evidence from the Employers Skills Survey suggests that

employers who would like to train more are unable to do so because of the cost of releasing staff to train is prohibitively high. In addition, evidence from the Adult Learning Survey suggests that individuals who say they would have liked to train or to have trained more, were also unable to do so because of the costs of training.

There are potential mechanisms in place that might provide the means to overcome the barriers to individuals training more, including the following:

- Bootcamps – where the aim is to help individuals adjust to the changing economy through training to upskill or reskill to allow them to transition from work in declining sectors and occupations to ones where there are new job openings. The bootcamps – which also involved a small number of technical skills courses – comprise intensive, short training programmes (around two to three months) designed to meet employers’ skills needs. Early evidence suggests that the bootcamps have been well received by a range of stakeholders and are associated with high completion rates.<sup>40</sup>
- The Lifelong Learning Entitlement (LLE) – which will provide individuals with a loan entitlement to the equivalent of four years of post-18 education to use over their lifetime. The LLE will help fund modules of courses at levels 4 to 6 regardless of whether they are provided in colleges or universities, as well as full years of study.
- The National Skill Fund – which provides funding to assist adults gain the skills that are sought by employers. The fund will help them improve their job prospects and support economic recovery. The government will invest £1.6 billion through the National Skills Fund in the next three years which will be used, amongst other things, to expand Skills Bootcamps and allow adults to obtain free training leading to their first RQF Level 3 qualification.

Over time, there has been a large number of measures that have sought to incentivise employers to train, including the Employer Training Pilots, Train to Gain, and the various collective measures which the now defunct UK Commission for Employment and Skills trialled. These measures would appear to have fallen by the wayside because of a mix of high deadweight (training was delivered that was not needed) or employer indifference (i.e., low levels of interest or participation in programmes).

An alternative might be to incentivise individuals to engage in training with a mix of funding and guidance (i.e., with training targeted on addressing skill shortages in the local labour market). The benefit of doing so is that it avoids the dilemma employers face when investing in skills about whether the person trained will remain with the company post-training, and it also potentially ties training to something the individual can see the merit of doing. Incentivising individuals to participate in training is an area where the UK has had a degree of success in the past. While the Individual Learning

---

<sup>40</sup> Williams, J., Newton, B., Allen, A., Lanceley, L., Garner, O., Cook, J. Clarke, V., Suarez, S., Neary, S., Blake, H., and Clark, L. (2021) *Skills Bootcamps Process Evaluation*. London: DfE.

Accounts introduced at the start of the 2000s needed to be promptly closed down due to fraudulent claims for funding, the kernel of the idea was recognised as an innovative one. It is also something that has been pursued in other countries with varying degrees of success.

## 9. Conclusion

The evidence suggests that there might be a need to encourage the development of intermediate levels skills development in the UK. In other countries, typically ones with relatively good productivity records, the percentage of employees working in intermediate level skilled jobs – as captured by the Technician and Associated Professional occupational group – is higher than in the UK. If the UK were to increase the share of employment in intermediate level skilled jobs there is the risk that doing so will be impeded by skill shortages. To tackle this problem there is a need to bolster the supply of intermediate level skills. Given current trends it is unlikely that apprenticeships alone will be able to deliver this so there is a need to find an alternative source of relatively high-quality skills supply. T-levels may well be able to deliver the volume of training supply required in combination with apprenticeships.

However, there is an opportunity here to also think about instilling more stability into the vocational education and training system by developing a system in which a variety of stakeholders have more buy-in, developing something which is resilient in the face of technological and other changes which affect the demand for skills, and designed to prove attractive to employers and would-be learners alike.

In relation to intermediate level skills demand the evidence above suggests that there are several areas where action might be required in order to address skill mismatches for people to work in intermediate level skilled jobs. These areas are:

- improving the provision of detailed information on the skills that are required to work in intermediate level skilled jobs both now and over the medium-term. More detailed information is also required as to why employers struggle to recruit workers to skilled intermediate level jobs;
- finding the means to stimulate the supply of skills which will meet demand through:
  - initial vocational education and training delivered to people in making their transition to the labour market;
  - continuing training to assist people avoid skills obsolescence.

Given that England's demand-led education and training system has developed over several decades (certainly since the Manpower Services Commission began to develop sizeable further education provision in the late 1970s), the scope for wholesale changes is limited.<sup>41</sup> It is more a question of how the UK or England can

---

<sup>41</sup> Keep, E. (2006) 'State control of the English education and training system—playing with the biggest train set in the world', *Journal of Vocational Education & Training*, 58(1): 47-64.

begin to nudge the system towards increased provision of skills to better meet intermediate level skill demands and reduce potential skill mismatches.

The scale of mismatches, or more precisely, skill shortages as reported by employers, is known along with some high-level information about the skills that are thought to be lacking in applicants for jobs or in those who are considered not fully proficient at their jobs. This information is all at a general level of aggregation. For example, information is lacking on why employers choose not to recruit an individual and the extent to which they are willing to take on someone who possesses skills lower than those ideally sought but which could be improved by employer provided training. There is also relatively little information indicating whether reported shortages are rooted in an organisation's human resource practices such as wage levels, workplace culture, high levels of labour turnover, etc. It may well be the case that a skills solution is being sought for something which is not really a skill problem but rooted in the quality of work and employment more broadly.<sup>42</sup> Better diagnosis of the causes of reported skill mismatches is needed.

There is also a degree of uncertainty about who should pay for skills training.<sup>43</sup> There are various programmes and initiatives which are designed to provide individuals, who meet certain criteria, with the skills they need (cf. Bootcamps, National Training Fund, etc.). Programmes such as apprenticeships also provide employers with the means to train their workers. There is a question about the extent to which policy could better target employers and their workforces to ensure that they are engaged in training. Train to Gain, which faced some problems in its execution, nonetheless had an innovative element insofar as it was meant to assist employer shift towards higher value-added product market strategies and simultaneously develop the skills to support that shift at the same time. This is not to say that Train to Gain should be resurrected, just that there may be a need in the first instance to find a means to stimulate employer demand for skills and training.

Not everything needs to be routed through employers. There is also a role for stimulating individuals' demand for skills and learning. Individual Learning Accounts (ILA), another policy that was innovative but which struggled in its execution, sought to encourage demand for learning by providing individuals with access to training that met certain criteria. It is interesting to note that the LLE policy has some features of the original ILA, and several European countries have implemented something similar. It may be that empowering individuals to invest in training through learning accounts

---

<sup>42</sup> Keep, E. and Mayhew, K. (2010) 'Moving beyond Skills as a Social and Economic Panacea', *Work, Employment and Society*, 24(3), 565–577.

<sup>43</sup> For a discussion of this issue: Hogarth, T. and Gambin, L. (2017) 'Who Pays for Skills? Differing perspectives on who should pay and why' in C. Warhurst, K. Mayhew, D. Finegold and J. Buchanan (eds) *Oxford Handbook of Skills & Training*. Oxford: Oxford University Press

or training vouchers may be an effective means of increasing skills supply.<sup>44</sup> If the above empowers employers and individuals to invest in skills and learning, there needs to be programmes and courses that will deliver the skills and learning. Much has been vested in apprenticeships. However, it has proved difficult to substantially increase the volume of apprenticeships over time. Alternatives are clearly needed. T-levels potentially provide an alternative means of initial vocational education and training to young people but are not necessarily suited to meeting skill needs at RQF level 2, or the ongoing skill needs of the adult workforce. In relation to adult education, if the state or the individual ends up paying for continuing vocational education and training, then skills need to be certificated / externally accredited to provide the individual with currency in a potentially more fluid labour market. There is a wide range of externally accredited courses that could potentially fulfil this role. This may simply require rebranding or restructuring of existing provision so that it clearly signals that an individual has completed an accredited course to update their skills. In other words, something that might have the prestige that is associated with completing an apprenticeship or, as is likely to be the case, completing a T-level.

Over the past 30 or so years policy makers have been innovative in trialling a number of initiatives to stimulate the demand for skills and find the means for the supply side to suitably respond. Some of these have been alluded to above and provide a basis for thinking about how to both increase the demand for skills and simultaneously match supply to it. Looking to the future and the actions which might stimulate both the demand for, and supply of, intermediate level skills, the following need to be addressed:

- how to incentivise employers to invest in the skills of intermediate level skills. Increasing the cost to the employer of providing intermediate level skills is unlikely to stimulate demand (as evidenced by the introduction of the Apprenticeship Levy);
- how to empower individuals to invest in skills (both those making the transition from education to work and adult workers) so that they can make decisions about the skills they need. Learning accounts or training vouchers have the potential to fill this role, but will need to be supported by careers guidance;
- intermediate level skills demand cannot simply be left to the market to determine. This will result in supply meeting short-term goals at the national or local labour market levels and, in so doing, run the risk of doing little to ensure supply is better matched to demand over the longer-term and may well contribute to skills obsolescence;
  - accordingly, there needs to be an industrial policy that seeks to stimulate the demand for certain kinds of skill and fund it; and

---

<sup>44</sup> Schwerdt, G., Messer, D., Woessmann, L and Wolter, S.C. (2012) 'The impact of an adult education voucher program: Evidence from a randomized field experiment', *Journal of Public Economics*, 96(7–8): 569-583.

- curricula need to be broad based to ensure that people possess the skills that allow them to acquire new skills and make labour market transitions where required (cf. T-shaped skill sets).

The irony, perhaps, is that many of the building blocks are already in place or have been tested in the past (such as Individual Learning accounts or pooling funding for training via a levy), it is just that their application to date has not necessarily resulted in the desired policy goals being met. The current danger is that a prolonged period of the economy being in the doldrums could mean that key investments in skills will not be made which will slow the pace of any recovery because skill shortages will constrain the productive capacity of businesses.

---

## About the Author

This policy brief was authored for ReWAGE by Professor Terence Hogarth, who leads a programme of research at IER on vocational education and training (VET), and a related programme on skill mismatches. Comments and suggestions were provided by Irena Grugulis (University of Leeds), Daniel Sandford Smith (Gatsby Foundation), and Chris Warhurst (University of Warwick).

This policy brief represents the views of the authors based on the available research. It is not intended to represent the views of all ReWAGE members.

## Funding

This evidence paper was commissioned and funded by the Gatsby Foundation. The views and opinions expressed in this report are those of the authors and do not necessarily state or reflect those of the Gatsby Foundation.

ReWAGE is part of an integrated research infrastructure funded in response to COVID-19 by the Economic and Social Research Council. The ESRC is part of UK Research and Innovation, a non-departmental public body funded by a grant-in-aid from the UK government. For more information visit [www.ukri.org](http://www.ukri.org)

## About ReWAGE

ReWAGE is an independent expert advisory group modelled on SAGE, which supports the government's strategic response to the recovery and renewal of work and employment in the UK as it tackles the impact of current challenges to the UK's productivity and prosperity.

For more information visit: <https://warwick.ac.uk/fac/soc/ier/rewage/>