

# People and Policy: A comparative study of apprenticeship across eight national contexts

wise

world innovation summit for education  
مؤتمر القمة العالمي للابتكار في التعليم

An Initiative of Qatar Foundation



Maia Chankseliani  
Ewart Keep  
Stephanie Wilde

RR.9.2017

People & Policy:  
A comparative study of  
apprenticeship across eight  
national contexts

Maia Chankseliani  
Ewart Keep  
Stephanie Wilde

---



# Contents

Foreword	v
Executive Summary	vi
Abbreviations & Acronyms	ix
List of Figures	xi
List of Tables	xii
List of Boxes	xiii
Introduction	15
<i>About the study</i>	17
<i>Country selection</i>	18
<i>Data availability on apprenticeship</i>	18
<i>Overview of sources, literature and data searches</i>	19
<i>Thematic analysis</i>	20
Chapter 1 — Setting the Scene	23
<i>Apprenticeship participation globally</i>	23
<i>Enrolment and completion rates in eight countries</i>	25
<i>Contextual factors in eight countries</i>	27
<i>The place of apprenticeship in the E&amp;T systems: linking the past with the present</i>	29
Chapter 2 — Demographic Profile of Apprentices	37
<i>Age</i>	37
<i>Gender</i>	39
<i>Ethnicity</i>	42
<i>Final thoughts</i>	44



<b>Chapter 3 — Incentives &amp; Disincentives for Engaging with Apprenticeship</b>	<b>47</b>
<i>Incentives for individuals to participate in apprenticeship</i>	48
<i>The appeal of learning through doing</i>	48
<i>Occupational and/or workplace socialization</i>	50
<i>The possibility of progression to employment or additional education</i>	51
<i>Learning while earning</i>	54
<i>Concluding remarks</i>	58
<i>Incentives for employers to engage with apprenticeship</i>	58
<i>Incentives for employers</i>	59
<i>Disincentives for employers</i>	61
<i>The value of collective efforts</i>	64
<i>How can governments enhance some of these incentives?</i>	67
<i>Concluding remarks</i>	70
<b>Chapter 4 — Policy &amp; Purpose</b>	<b>73</b>
<i>Where does apprenticeship sit within the broader spectrum of VET provision?</i>	73
<i>Who makes policy?</i>	78
<i>Dealing with the temporal dimension — apprenticeship as a relatively slow growing delivery mechanism</i>	80
<i>Quality versus quantity</i>	80
<i>Occupational reach and identity</i>	81
<i>Delivering policy ambition — the critical role of employers</i>	82
<i>Final thoughts</i>	83
<b>Conclusion</b>	<b>85</b>
<b>Glossary</b>	<b>90</b>
<b>Appendices</b>	<b>91</b>
<b>About the Authors</b>	<b>97</b>
<b>About Oxford University Department of Education</b>	<b>98</b>
<b>About WISE</b>	<b>199</b>
<b>Acknowledgments</b>	<b>100</b>
<b>References</b>	<b>101</b>

## Foreword

**P**oliticians often endorse apprenticeships as solutions to youth unemployment and sub-standard technical skills at some levels and in certain industries and trades. The policy rhetoric can be compelling. As conventional education comes under intense scrutiny as a delivery tool for relevant knowledge and skills, it has been tempting to cast apprenticeship as a panacea for the economic hardships of marginalized workers. With a long lineage of tradition with wide distinctions in practice within Europe and globally, apprenticeship plays a complex role with multiple actors: employers, government, and politicians.

This WISE report, from colleagues at Oxford University, presents eight country studies that help sort out the nuances of context and history of formal apprenticeships, and reflect a striking range of perspectives. Acute distinctions among apprenticeships exist in financing, institutional arrangements, and learning approaches even among neighboring countries. There is a wide range in quality. The report weighs both an individual's incentives for joining an apprenticeship and the risks for employers, while considering the case for occupational skills-building as a valued, collective good. The report explores the role of governments in sustaining incentives for all players, and raises key questions for policy makers in reconciling these tensions.

Apprenticeships, which rely largely on employers for their success, are inherently fragile and vulnerable to political and corporate pressures, as well as the rise of self-employment, the emergence of new skills, and mass higher education. The authors squarely address the tensions between business and government on how each views, finances and engages with apprenticeship. They acknowledge the difficulties of comparative research where data are hardly harmonized across these eight diverse countries. They raise questions: How can apprenticeships support more women and girls? What about ways to reach more ethnically diverse groups, and older workers? How can business be incentivized to shift toward more financing and engagement with government?

This report, viewed broadly, encourages a deeper search for ways to assist marginalized and less enfranchised groups. Particularly in our times of turmoil and disruption, apprenticeship has great potential for elaboration and for new solutions beyond being a long-standing tool for school-to-work transition, or in technical, vocational education and training (TVET). The key challenge for policy making, the report suggests, is to create incentives, highlight the social value of motivation that apprenticeships can provide, and to seek openings for action. This report encourages us to take a panoptic view, engage the art of the possible, and consider realistically what might be achieved rather than to chase the transformational.

Stavros N. Yiannouka  
CEO  
WISE

## Executive Summary

**This report presents the results of the analysis of apprenticeship in eight countries: Australia, Denmark, Egypt, England, Finland, Germany, India, and South Africa.** The study used documentary analysis as its central methodological approach, citing, summarizing, synthesizing, analyzing and critically reflecting on existing literature and data produced by international organizations, government agencies, universities, and research institutions.

Apprenticeship plays an important role in supporting young people in the transition between school and work. Countries with large, well-functioning apprenticeship systems generally have lower youth unemployment rates because of the relatively smooth school-to-work transition mechanism that such a system ensures, as well as a smaller sized cohort of NEETs.

This study makes a first-of-its kind attempt to compare participation in apprenticeship globally. Major problems are posed for international comparison by the unequal quantity and quality of data, both official and research, available. Data availability for apprenticeship internationally is more restricted and less reliable than for primary, secondary and tertiary (academic) education. In particular, comparable data are difficult to access, in part due to disparities in the definitions and measures employed by the international bodies when reporting on VET and apprenticeship. In addition, the terms used to define and refer to apprenticeship can disguise actual apprenticeship activity under a different name and vice versa.

There is a great diversity in apprenticeship organization, financing, institutional arrangements, and learning approaches in different countries. The apprentice demographic characteristics, as well as the differences in apprenticeship participation rates, indicate the varying degrees of appeal of apprenticeship to individuals and employers in the eight contexts. A fundamental assumption of the apprenticeship model is that there are benefits to both employers and individual learners.

For individuals, incentives to undertake apprenticeship may be linked to the process of learning as well as to the outcomes of that learning. The report examines two aspects of the process of learning that could motivate individuals to participate in apprenticeships – the appeal of learning through doing and the opportunities apprenticeships present for occupational socialization. The report also looks at two aspects of apprenticeship outcomes – the possibility of progression to employment or to additional education and learning while earning.

The analysis of incentives for employers shows a range of reasons related to their short-term interests and the needs of the production processes, technologies, and associated skills needs; longer-term benefits for the company's staffing strategy; as well as the opportunity to make a contribution to the wider education and economic systems.

Despite all the factors that may serve as incentives for employers to offer apprenticeships, many firms seem to view apprenticeship arrangements as too costly, risky, and complex to justify the investment. Except for a few exceptions, such as Germany or Denmark, employers tend to be reluctant to invest in apprenticeship training, as they expect the broader E&T system – funded by individuals or the taxpayers – to produce appropriately-trained employees that they can hire using competitive pay strategies.

Firms are likely to invest more in recruitment and less in training if they are making decisions that are not coordinated with other firms. When firms are making decisions collectively, under the umbrella of chambers or associations, they are more likely to coordinate their skills investment strategies around collectively-beneficial outcomes linked to skills development as a common good, locally or nationally, for all those firms that are part of the given collective. Training apprentices is then viewed as a contribution to the ‘pool’ of talent for the sector. Countries that have not organically developed institutions for employer coordination and/or social partnership may face a relatively difficult task when seeking to expand apprenticeship provision. Such institutional structures, however, are historically determined within each country context, and are extremely difficult to construct from scratch.

Apprenticeship is often viewed as a panacea for a wide range of policy ills: unemployment, skills shortages and skills mismatch, social exclusion and economic problems. The most fundamental choice that currently confronts policy makers in countries with apprenticeship provision is the desired proportion (in terms of levels, occupations and learner volumes) of overall initial VET that apprenticeship is expected to cover. This choice is central because in some countries (including England and Australia) a policy discourse has developed wherein apprenticeship is sometimes seen as ‘the answer’ to what are often very vaguely or weakly specified policy issues.

Influencing the scale of policy expectations is central to achieving a realistic definition of who and what apprenticeship is for. In particular, what social and economic objectives is it assumed that apprenticeship is there to deliver, and how best is a balance between these two spheres of policy focus arrived at when there is a potential for tension between them? Any decision to afford priority to social inclusion objectives has far-reaching consequences, as there is then a potential tension between wanting apprenticeship to be seen (by employers, young people, parents and wider society) as a rigorous, high status route; and also wanting to try to deploy it as a mechanism for operationalizing second chance, social inclusion goals for young people who have not flourished on the academic route and within mainstream schooling.

The fact that apprenticeship embraces learning within the workplace through a range of different on-the-job learning processes also means that apprenticeship policy needs to have a strong interest concerning the in-company capacity of the participating organizations to deliver high quality learning experiences. As a result, in most EU countries the national government offers support for training programs aimed at in-company



trainers who are responsible for delivering the on-the-job elements of apprenticeship, and in some jurisdictions having appropriately trained trainers is a prerequisite before firms are allowed to take on apprentices. In other words, E&T policy and scrutiny extends into the firm and the workplace, which is a very different proposition from classroom based routes where policy need only be concerned with and regulate what happens within formalized educational settings.

## Abbreviations & Acronyms

**APPG:** All Party Parliamentary Group, UK  
**AQF:** Australian Qualifications Framework, Australia  
**AUB:** Employers' Reimbursement Fund (Arbejdsgivernes Uddannelsesbidrag), Denmark  
**BBC:** British Broadcasting Corporation  
**BEIS:** Department for Business, Energy and Industrial Strategy, UK  
**BIBB:** Federal Institute for Vocational Education and Training (Bundesinstitut für Berufsbildung), Germany  
**BMBF:** Federal Ministry of Education and Research (Bundesministerium für Bildung und Forschung), Germany  
**CEDEFOP:** European Centre for the Development of Vocational Training (Centre Européen pour le Développement de la Formation Professionnelle)  
**DIHK:** The Association of German Chambers of Commerce and Industry (Deutscher Industrie und Handelskammertag), Germany  
**E&T:** Education and training  
**EPDC:** Education Policy and Data Center  
**ERIC:** Education Resources Information Center  
**ETF:** European Training Foundation  
**EU:** European Union  
**EY:** Ernst & Young Global Limited  
**FE:** Further Education  
**FICCI:** Federation of Indian Chambers of Commerce and Industry  
**GDP:** Gross Domestic Product  
**GCSE:** General Certificate of Secondary Education, England  
**HE:** Higher Education  
**ILO:** International Labour Organization  
**IT:** Information Technology  
**ICT:** Information and Communication Technology  
**ISCED:** International Standard Classification of Education  
**LAFHA:** Living Away From Home Allowance, Australia  
**LSYPE:** Longitudinal Study of Young People in England  
**MKI:** Mubarak-Kohl-Initiative, Egypt  
**MoMM:** Ministry of Manpower and Migration, Egypt  
**NAPS:** National Apprenticeship Promotion Scheme, India  
**NATS:** National Apprenticeship Training Scheme, India  
**NCVER:** National Centre for Vocational Education Research, Australia  
**NEET:** Not in education, employment or training  
**OECD:** Organisation for Economic Co-operation and Development  
**ONS:** Office for National Statistics, UK  
**OPH:** Finnish National Board of Education (Opetushallitus), Finland  
**PVTD:** Productivity and Vocational Training Department, Egypt  
**SCRA:** Special Class Railway Apprentice, India  
**SETA:** Sector Education and Training Authority, South Africa  
**SKOPE:** Skills Knowledge and Organisational Performance (Research Centre at the University of Oxford, UK)

**TAFE:** Technical and Further Education, Australia

**TVET:** Technical and Vocational Education and Training

**UIS:** UNESCO Institute for Statistics

**UNESCO:** United Nations Educational, Scientific and Cultural Organization

**VET:** Vocational Education and Training

## List of Figures

**Figure 1.** — Apprenticeship participation per 1000 in the labor force, by economy

**Figure 2.** — Number of apprentices per 1000 in the labor force

**Figure 3.** — Female participation in apprenticeships and labor force, by country  
(% of total)

**Figure 4.** — Apprenticeship participation by ethnicity in South Africa (% of total)

**Figure 5.** — Apprenticeship participation by ethnicity in England (% of total)

# List of Tables

**Table 1.**— Selected socio-economic and education indicators, by country



## List of Boxes

**Box 1.** — Guilds in the Middle Ages

**Box 2.** — Apprenticeship levies

**Box 3.** — Increasing female participation in engineering apprenticeships:  
the case of BAE Systems in the UK

# Introduction

The background of the slide is a complex, abstract geometric pattern composed of numerous triangles of varying sizes and shades of orange, from light peach to deep, dark brown. The triangles are arranged in a way that creates a sense of depth and movement, with some triangles pointing towards the viewer and others receding. The overall effect is a modern, low-poly aesthetic.

**A**rrangements for transferring skills from one generation to the next using a model of learning that combines on-the-job training with theoretical knowledge acquisition have been in place in different parts of the world for centuries. Apprenticeship practices originated in the ancient times and developed in the Middle Ages. One of the earliest traces of apprenticeships globally can be found in the Middle East, in Babylon, where the Code of Hammurabi dated to the 18<sup>th</sup> century BC mentions that craftsmen have a duty to train younger generations in their craft (Westermann, 1914).

Apprenticeship is today a globally recognized, work-based model of learning that links on-the-job training (including productive work as well as learning) with institution-based or off-the-job training. Apprentices learn by working on real-life tasks in a work environment with other colleagues; they are supervised and supported by trainers as required. Apprentices also attend vocational institutions on a part-time basis where they acquire and reinforce the knowledge, skills, and competences relevant to their occupation. Effective linkage between the two settings—workplace and vocational school or college—is a central aspect of a successful apprenticeship.

Apprenticeships play an important role in supporting young people in the transition between school and work, and the European Commission refers to a “...long-standing and robust body of evidence [that] has consistently shown that countries with rigorous apprenticeship schemes, such as Germany, Austria, Denmark, Norway, the Netherlands and Switzerland” perform well in facilitating this transition (European Commission, 2013, p. 1). Countries with large, well-functioning apprenticeship systems generally have lower youth unemployment rates because of the relatively smooth school-to-work transition mechanism that such a system ensures, as well as a smaller sized cohort of young people not in education, employment or training (NEET) (Biavaschi et al., 2012; Gessler & Peters, 2017; Jørgensen, 2017; Østerlund, 2012). As a result, developing apprenticeships is one of the political priorities within the European Union.

With widespread occurrence of high youth unemployment rates and skills mismatch, many countries have explored the option of introducing or improving apprenticeship systems or schemes, or modernizing and formalizing informal apprenticeships as a mechanism to address these problems. Apprenticeship is therefore often viewed as a panacea for a wide range of policy ills: unemployment, skills shortages and skills mismatch, social exclusion and economic problems. Consequently, a central question is the purpose of apprenticeship, and its aims within each national policy context, which defines the policy structures around it. For example, the recent *Society at a Glance* publication by the Organisation for Economic Co-operation and Development (OECD) indicates a perception that apprenticeship offers a second chance to those who have not benefited greatly from general schooling, as shown in the quote below:

*Vocational education and training (VET) is a valuable alternative to academic schooling. It prepares young people for the labour market with a view to responding to employers' skills needs. The practical training component of VET should be work-*

*based, ideally in the form of apprenticeships matching young people with employers at an early stage. Such programmes may be particularly attractive and beneficial for youth tired of school. (OECD, 2016b, emphasis by present authors)*

In contrast, apprenticeship is portrayed in Forbes magazine as a “time-honored system to upskill the young or novices, boost productivity, allow apprentices to earn high wages and secure rewarding careers” (Wyman, 2017). Governments find apprenticeship attractive primarily due to its easy identification both by fellow politicians and more importantly by voters (Chankseliani & James Relly, 2015). Apprenticeship “...carries connotations of quality training, leading to meaningful and reasonably well-rewarded work in what were traditionally seen as the “skilled trades” – engineering, carpentry, building, plumbing and so on” (Keep & James, 2011, p. 55).

Empirical and theoretical literature on apprenticeships exists at the macro level (e.g. governance & financing, policy-making), meso level (institutional arrangements), and micro level (learning approaches, individual decision-making), focusing on individual country contexts or examining selected issues from a comparative perspective. Our analysis of the existing literature suggests that there is a great diversity in apprenticeship organization, financing, institutional arrangements, and learning approaches in different countries. The proportions of learners undertaking apprenticeships, and the quality of those apprenticeships, also differ within countries by occupational sector, level of apprenticeship, and type of employer. Thus, although there is a limited amount of internationally comparable data on apprenticeship, there is much to be learned from in-country as well as cross-country analysis of the existing literature.

This comparative study examined apprenticeship provision in eight countries: Australia, Denmark, Egypt, England, Finland, Germany, India, and South Africa. We aimed to combine the analysis of literature and available data at the macro, meso, and micro levels in order to establish incentives and disincentives for learners and employers to engage with apprenticeships and to scrutinize the policy and purpose of apprenticeships. As such, the report includes a focus on both people and policy, as indicated in the title of the report. This study also makes a first-of-its kind attempt to compare participation in apprenticeship globally.

Part of the challenge associated with the limited international and comparable data on apprenticeship is related to the definitions used to refer to vocational education and training (VET) routes and apprenticeship. On comparing definitions from international institutions such as the European Centre for the Development of Vocational Training (CEDEFOP), the International Labour Organization (ILO), the United Nations Educational, Scientific and Cultural Organization (UNESCO), the OECD, and individual countries, a broad consensus can be reached on certain common characteristics of a formal apprenticeship to form the following definition:

*Apprenticeship is a model of learning for an agreed duration that formally combines work-based training (periods of practical work experience at a workplace) with institution-based education (periods of theoretical/practical education followed in a school, college, or training center) and that is regulated by a contract/agreement between apprentice and their employer, provides remuneration for the apprentice, and leads to a nationally recognized qualification/certificate upon successful completion.*

This definition, however, does not fully encompass the rather heterogeneous realities of apprenticeship that vary between and within countries, as will be discussed below.

Although apprenticeship is often viewed as part of the spectrum of initial VET, our report adopts a broader definition that includes both youth and adult apprenticeships that involve initial as well as continuing vocational education and training.

For the purposes of this study, the focus is on formal apprenticeship. There are also informal apprenticeship routes (for example, in India this represents the majority of apprenticeships). However, data on these are not readily available.

The remainder of the report is organized as follows: we start by explaining the methodological choices we made in designing this study. Chapter 1 examines the location of apprenticeship provision within each country's wider education system and within apprenticeship participation internationally. Chapter 2 then provides an overview of apprentice demographics in the selected eight countries. Chapter 3 contains the analysis of incentives and disincentives for engaging with apprenticeship for individuals and employers. This chapter also includes possible measures that governments can use to enhance some of these incentives. Chapter 4 scrutinizes the policy and purpose of apprenticeships. Chapter 5 concludes.

## About the study

This cross-country comparative study of apprenticeship provision used documentary analysis as its central methodological approach, citing, summarizing, synthesizing, analyzing and critically reflecting on existing literature and data produced by international organizations, government agencies, universities, and research institutions.



## Country selection

Eight countries were selected for the study: Australia, Denmark, Egypt, England, Finland, Germany, India, and South Africa.

We employed a maximum variation sampling approach to document the diversity and common patterns of apprenticeship provision. We selected country cases that covered a spectrum of apprenticeship enrolment rates, degrees of apprenticeship attractiveness, and approaches to policy purpose and process. Countries were strategically selected to include a range of different geographic locations, population sizes, different economic strengths and different types of apprenticeship provision, to allow for rich comparison and contrast. Each country features its own location of apprenticeship within its wider education system and within apprenticeship participation internationally.

## Data availability on apprenticeship

Major problems are posed for international comparison by the unequal quantity and quality of data, both official and research, available and which vary greatly amongst the countries featured in this report. The unequal quantity and quality of data is due in part to disparities in the definitions and measures employed by the international bodies when reporting on VET and apprenticeship. For example, the age range of eligibility for apprentices varies between countries and therefore leads to difficulties in interpreting progression to employment. Additionally, the terms used to define and refer to apprenticeship can disguise actual apprenticeship activity under a different name and vice versa.

Data availability for apprenticeship internationally is more restricted and less reliable than for primary, secondary and tertiary (academic) education. In particular, comparable data are difficult to access. As a UNESCO representative explained in an email communication to the project team:

*The UNESCO Institute of Statistics collects and disseminates vocational enrolment data. [...] There is no distinguished category for apprenticeship within UIS data collection on formal education but these programmes may be included in formal vocational programmes that countries report to the UIS/OECD/Eurostat. [...] usually, vocational programmes are included in Secondary education (ISCED level 2 and 3) as well as in Post-Secondary non Tertiary (ISCED level 4). (UIS email communication, 2017)*

The project researchers undertook a search for up-to-date data sources on apprenticeships in the countries under investigation as well as globally. As part of this, we started constructing a global database on apprenticeship enrolments. These data were used to locate the eight countries within the broader context of apprenticeship participation internationally.

## Overview of sources, literature and data searches

The main sources of literature and data used in this report include:

- Government source material for each country
- Reports by international organizations
- Academic, peer-reviewed articles
- Data from the World Bank and UNESCO Institute of Statistics (UIS)

The study examined government websites in the eight countries, focusing on the ministries of education, higher education (HE), labor and economic development, as these were deemed most likely to contain the relevant data, policy documents and descriptions of apprenticeship provision. We also searched the websites of international organizations, such as OECD, UNESCO, World Bank, CEDEFOP and the ILO, for individual- and multi-country reports.

Academic literature searches were conducted for the eight countries, using the ERIC and SCOPUS databases. Two search items were entered - the country name and the word 'apprenticeship'. These two databases were chosen as the most appropriate for this type of search, as ERIC captures publications in the field of education internationally and SCOPUS may capture publications more broadly, including science, technology, medicine, social sciences, and arts and humanities. The results were adjusted according to criteria agreed in early research team discussions: only peer-reviewed papers, publications with specific reference to apprenticeship, dating back to no further than twenty years, approximately, as the focus was on current provision, and predominantly publications in English.

Sources emerging from the Education Resources Information Center (ERIC) and SCOPUS searches mentioned above were supplemented by publications and data sources discovered through mining the reference lists of the articles selected for the analysis. Not all sources are cited and/or referenced in the text, but they have all flowed into the analysis in this report.

The researchers composed brief country notes on the eight case study subjects to provide overviews of apprenticeship within each context. In the next step, cross-country comparison took place using a thematic structure which emerged during the process of reviewing the literature and organizing and writing up the data.

## Thematic analysis

Themes emerged gradually throughout the process of reading, summarizing, and collating the secondary material and writing up initial drafts of this report. In addition, these drafts were discussed in weekly project meetings, to identify any shifts as new material was encountered or if evidence from a particular country shed light on a new issue. The material was then re-assessed and allocated to the thematic analysis for the final report.

Two broad themes were identified: incentives and disincentives for engaging with apprenticeship; and policy and purpose. As well as these two major themes, we examined the development and challenges of apprenticeship provision in each country and the demographic profile of apprentices.





Chapter 1

# Setting the Scene



## Apprenticeship participation globally

**M**easuring and comparing the scale of apprenticeship participation globally is not straightforward as reliable comparable data for all countries are not available. As noted above, this is partly due to the data collection methods used in international databases (such as UNESCO Institute of Statistics, World Bank, OECD) which do not differentiate between vocational education and training in institutional contexts, and apprenticeship.

This report works with, consolidates and presents participation statistics, within the limitations mentioned above and explained in some detail below. Working in this area involves combining data from national and international databases and from smaller, country-specific reports. In order to show the relative positions of the selected countries in terms of apprenticeship participation globally, we calculated what proportion of the labor force – the sum of employed and unemployed individuals aged 15 to 64 (ILO, 2016) – was enrolled in apprenticeships in countries for which the data were available. The data for some countries date back to 2003. Apprenticeship enrollment and apprenticeship participation are used in this report interchangeably to mean the number of individuals enrolled in apprenticeships at any given time.

There is an uneven distribution of apprenticeship activity globally. Out of 224 economies on the World Bank (2016c) list, there is some evidence that formal apprenticeships are offered in 145. Countries not offering apprenticeships are listed in Appendix 1. We obtained apprenticeship enrolment numbers for 103 of these 145 economies and these are presented in Figure 1. (Apprenticeship participation per 1000 in the labor force, by economy). The sources and dates for the statistics displayed here are provided in Appendix 2. The remaining 41 economies are likely to have very limited provision of formal apprenticeships, as the data on the enrolments in these economies are difficult to obtain.

Apprenticeship participation statistics are available for 104 economies (from ministries and other sources), and in 52 economies one or fewer individuals per 1000 in the labor force was enrolled in apprenticeship. The apprenticeship participation statistics for the remaining 52 economies are presented in Figure 1. (Apprenticeship participation per 1000 in the labor force, by economy).

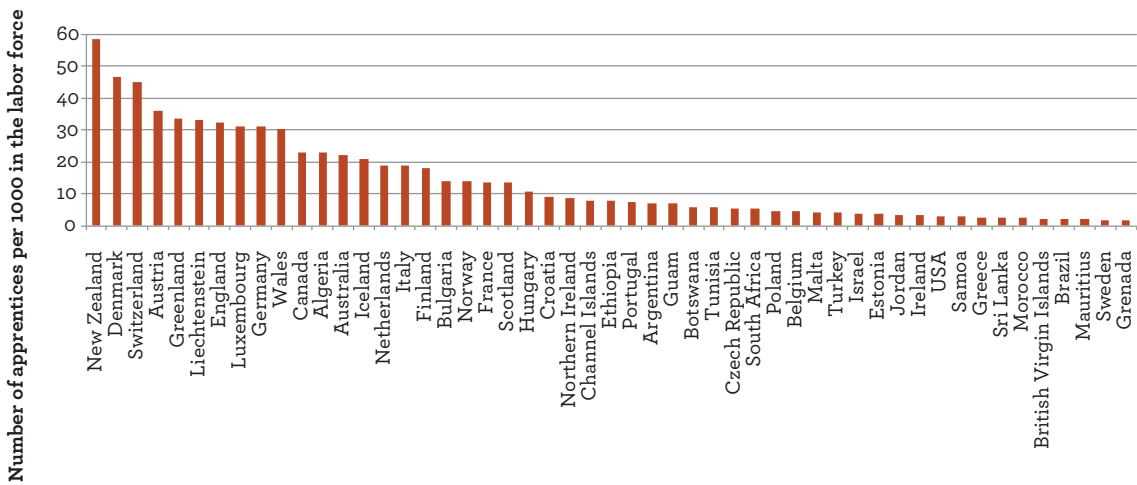


Figure 1. Apprenticeship participation per 1000 in the labor force, by economy

Note: Own calculations based on the analysis of two variables for each economy: apprenticeship enrolments/participation in the most recent year available (2017 to 2003; see Appendix 2 for details) and the labor force (15-64) figures in the same year. The first variable was sourced from country government websites/ international reports, other scholarly writing, and the second was sourced from The World Bank (2016).

According to an initial reading of these statistics, New Zealand, Denmark, and Switzerland appear to have relatively high-participation systems. Austria, England, Germany, Wales, Canada, Australia, Netherlands, Italy, and Finland are medium-participation countries. By contrast, formal apprenticeships remain less widespread in the Global South, with Asia and Latin America showing low levels of apprenticeship participation. These numbers, some of which date back to 2003, mask a large variation in how apprenticeship is understood in each national context. For instance, the data for Belgium, Greece, Hungary, Luxembourg, and Netherlands are taken from a report (European Commission, 2012) which refers to these statistics as apprenticeship students “according to national definitions” (p. 31), underscoring the variations in national definitions.

The question thus arises as to whether the statistics are comparing ‘like with like’. The raw numbers on participation indicate quantity, but include no information on the quality of apprenticeships. In addition, the raw participation numbers internationally do not necessarily differentiate apprenticeship provision by level (i.e. secondary, post-secondary, further or higher education), duration of the training, or the occupational groups involved, leading to a counting of apprenticeship in different contexts which places widely differing types of learning on an equal footing in terms of participation statistics.

Enrolment and completion rates in eight countries

The countries selected for this study represent a wide range of apprenticeship provision: Denmark, England, Germany, Australia, Finland, South Africa, Egypt, and India (Figure 2. Number of apprentices per 1000 in the labor force).

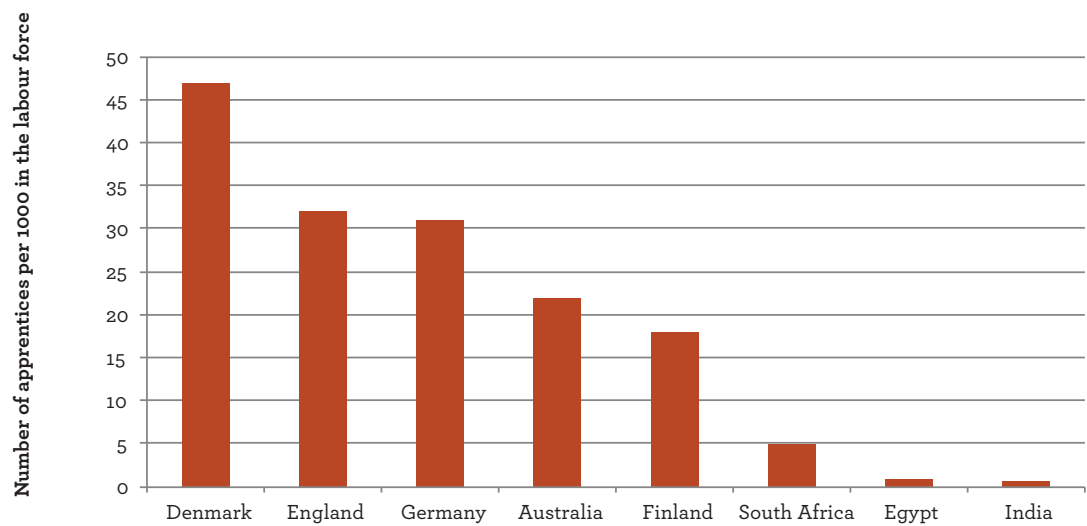


Figure 2. Number of apprentices per 1000 in the labor force

Note: Own calculations based on the data from Department of Higher Education & Training (2016); Destatis (2015); European Commission (2013); Finnish National Board of Education (2016); House of Commons (2016); Ministry of Education of Egypt (2014); NATS (2017); NCVER (2016a). The South African numbers are for learnerships (including apprenticeships), but not for internships or other skills programs. The Australian numbers include apprenticeships and traineeships.

Participation in apprenticeship per1000 in the labor force ranges from 47 in Denmark, to five in South Africa, and one in both Egypt and India. England and Germany have 32 and 31 apprentices per 1000 in the labor force, respectively, while Australia has 22 and Finland 18 (Figure 2. Number of apprentices per 1000 in the labor force2). The Danish statistics are explained by the fact that 99.7 percent of VET students in Denmark are in work-based programs (European Commission, 2016a), the majority of which are apprenticeships. To highlight the limitations of apprenticeship statistics, the reader’s attention is directed to the English numbers, which are almost identical to the German statistics.

One of the central problems with international statistics on E&T is that the national definitions of different types of skills formation activities are not directly compatible, and this is plainly a major issue when seeking to compare apprenticeship provision across countries. The difficulty is that when we look beneath the headline figures, it is apparent that major national differences in what counts as an apprenticeship make it very hard indeed to directly compare apprenticeship volumes across the two countries.

In Germany, apprenticeships are generally for young people who are entering the labor market and who are newly-recruited employees of the firm that is providing the apprenticeship, whereas in England, apprenticeship has become an ‘all age’ form of provision. In 2006 more than 99 percent of English apprenticeship starts were for persons aged 16-24. By 2016 43 percent of all starts were aged over 25, and 3,410 apprentices were aged over 60, and among those aged over 25, 91 percent were existing employees, who were converted into apprentices, sometimes after many years of previous employment with that firm (Lanning, 2016).

In England, the bulk of apprenticeships are aiming for the equivalent of lower secondary qualifications (level 2), rather than the intermediate or craft level 3 (upper secondary equivalent) awards that most German apprenticeships aim to deliver, and partly as a consequence English apprenticeships tend to be of shorter average duration. Moreover, many English apprenticeships lack any significant element of off-the-job training. As a result, a very significant proportion of what in England are seen as apprenticeships would not be recognized as such by many of those involved in the German dual system. Systems are more or less attractive to individuals and firms — and this is reflected in participation rates to some extent — but it seems that the scale of participation does not necessarily link directly with other dimensions of the performance of the system. Completion rates are an indication of this. The completion rate is the percentage of those completing from those who started an apprenticeship. England seems to have the highest completion rates (72 percent — again perhaps reflecting the somewhat limited ambitions of what many apprenticeships aim to deliver), followed by Australia, Denmark, and South Africa, ranging between 53 percent and 51 percent. In Finland 41 percent of apprentices complete their contract (Danish Ministry of Education, 2014; Finnish National Board of Education, 2016; NCVER, 2016; Skills Funding Agency, 2017; van Rensburg, Visser, Wildschut, Roodt, & Kruss, 2012). The completions in Germany are calculated as a proportion of the *population* between 19 and 27 years of age. Thus, the calculated completion rate of 42 percent must be read differently from the completion rates in other countries, which refer to the completion rates for *those enrolled* only (BIBB, 2017a). Figures for Egypt and India were more difficult to pin down. Reasons for non-completion in all countries are varied, and may include a range of issues, such as the apprentice changing their mind about the occupational area, poor experience early in the program, students' life situation, and unsatisfactory communication with trainers.

The analysis undertaken with the statistics available has been partially compromised by a number of factors. Firstly, as indicated above, there are major difficulties with the data on apprenticeship internationally. This is partly due to the interpretation of the terminologies used in different countries, and the ensuing allocation of categories. Furthermore, these statistics do not capture the substantial role played by informal and non-formal apprenticeship because of the lack of published and reliable data in this area.

The embeddedness of apprenticeship within each national context means that the development and analysis of the statistics, and the interpretation of them, requires detailed contextualization. In the subsequent two sections we overview some contextual factors and the place of apprenticeship provision within respective E&T systems.

## Contextual factors in eight countries

Contextual factors related to the demographic situation, the economy, and the labor market, all effect apprenticeship provision. Table 1. Selected socio-economic and education indicators, by country1 provides an overview of some indicators forming the background to apprenticeship in each country.

Country	Population aged 15-24 as % of total population (2016)	Rural population as % of total population (2016)	GDP per capita (current US\$) (2016)	Unemployment as % of total labor force (2016)	Youth unemployment as % of total labor force aged 15-24 (2016)	NEETs as % of persons aged 15-29 (2015)	Primary education net enrolLment rates (%) (2013/15)
Australia	13	10	49928	6	13	10	97
Denmark	13	12	53418	6	11	6	98
Egypt.	17	57	3514	12	33	27	98
England (UK)	12	17	43734	5	13	11	100
Finland	12	16	43090	9	22	11	100
Germany	10	24	41936	4	7	6	99
India	18	67	1709	4	10	27	92
South Africa	19	35	5274	26	52	31	85

Table 1. Selected socio-economic and education indicators, by country

Note: Own calculations using the EPDC (2014); UIS (2016); World Bank (2008, 2016) data.

Amongst the countries in this report, South Africa and India have the largest youth populations, as a proportion of the total population. In contrast, Germany is facing demographic decline (Table 1. Selected socio-economic and education indicators, by country1). In terms of population distribution, large proportions of the population live in rural areas in India (67 percent) and Egypt (57 percent), whereas in Australia (11 percent) and Denmark (12 percent) the proportions of rural population are very small.

GDP per capita ranges from 53,417 (US) in Denmark to 1,709 (US) in India. Denmark, Australia, the UK, Finland and Germany are high income countries. South Africa is a middle income country, and Egypt and India are lower middle income countries (Table 1. Selected socio-economic and education indicators, by country1). Twenty-eight percent of population in India, 23 percent in South Africa, and 22 percent in Egypt live below the national poverty line (ILO, 2012).

We looked at total unemployment and youth unemployment (Table 1. Selected socio-economic and education indicators, by country). Germany, Denmark, Australia and England seem to have much lower unemployment than Finland, Egypt, or South Africa. The Indian statistics remind to us that although the World Bank defines unemployment as the share of the labor force that is without work but available for and seeking employment, the comparability of unemployment statistics is problematic as unemployment is measured in different ways in each country. Overall, South Africa seems to have extremely high unemployment figures, especially for youth (Table 1. Selected socio-economic and education indicators, by country1). Youth unemployment is also very high in Egypt, and unemployment is more than twice as high for young

women, at 44 percent, as for young men, at 21 percent (ETF, 2017). As seen in Table 1. Selected socio-economic and education indicators, by country<sup>1</sup>, across all countries, the youth unemployment rates are on average twice as high as the total unemployment rates. The larger the difference between the two statistics, the less favorable the labor market is for young people leaving education as compared to more experienced workers in the same country.

Moreover, a large share of employment is informal in countries such as India and Egypt where 84 percent and 51 percent, respectively, of all non-agricultural employment is informal. In South Africa, 33 percent of all non-agricultural employment is informal (ILO, 2012). Informal employment refers to the people whose main job lacks basic social or legal protections, and may include, amongst others, own-account workers employed in their own informal sector enterprises; contributing family workers, irrespective of whether they work in formal or informal sector enterprises; employees holding informal jobs in formal sector enterprises, informal sector enterprises, or as paid domestic workers employed by households (ILO, 2012).

The share of young people not in education, employment or training (NEET) is very large in South Africa, India, and Egypt, ranging from 27 percent to 31 percent. The UK, Finland, and Australia have around one in ten young people classified as NEET. As seen in Table 1. Selected socio-economic and education indicators, by country<sup>1</sup>, the lowest proportions of NEETs are encountered in Germany and Denmark (six percent in each).

Furthermore, some of these countries face serious challenges in terms of primary and secondary school enrolments. 15 percent of primary school age children in South Africa and eight percent in India are not at school. These two countries also have low enrolment rates for secondary school. thirty-eight percent of secondary school age children in India and 22 percent in South Africa are not enrolled in school. While Egypt has a relatively good primary enrolment rate (98 percent), 18 percent of secondary-age students remain out of school (Table 1. Selected socio-economic and education indicators, by country).

The countries selected for this study exhibit not only a wide range of socio-economic characteristics and apprenticeship participation rates, but also different histories of offering apprenticeships, varying demographic profiles of apprentices, a diversity of (dis)incentives for individuals and employers, and differences in apprenticeship policy purpose. Each country features its own location of apprenticeship within its E&T system. This diverse sample is a deliberate choice within the study with the aim of shedding the light on issues which may not emerge when investigating only countries with broadly similar characteristics.



## The place of apprenticeship in the E&T systems: linking the past with the present

Traditions of apprenticeship vary by country. In contrast to Germany and Denmark, where apprenticeship is the main form of provision for formal vocational education and training, in England, Finland, Australia, and South Africa apprenticeship is an alternative option to school or college-based vocational education and training. Yet another group of countries, with large informal economies (Egypt, India), correspondingly possess informal apprenticeships which introduce young people to the world of work; such apprenticeships are ingrained in the local culture and traditions and involve a number of challenges, such as long working hours, unsafe working conditions, low or no allowances or wages, little or no social protection, strong gender imbalances, and pedagogies of uncertain quality (Molz, 2015). Appendix 3 provides an overview of key features of apprenticeship in the selected countries.

Apprenticeship has a long history of imparting occupational skills from one generation to the next in England, Germany, and Denmark where apprenticeship dates back to the Middle Ages (Box 1. Guilds in the Middle Ages).

In Anglo-Norman English, the earliest reference to apprentice/apprentiz was made in 1275 (Anglo-Norman Dictionary, 2006). Furthermore, The York Memorandum Book: Part 1 (1376-1419) has some early English descriptions of rules for masters and apprentices. In those days, each trade had its guild that organized the training of apprentices to ensure that traditions and standards in the craft were upheld. Guilds were collective professional institutions that controlled each craft or trade. Guilds shaped the content and form of apprenticeships and were responsible for organizing journeyman's tests. Guilds followed a strict hierarchy of apprentice, journeyman, and master. Apprentices had to complete a trial period of some months before being accepted into the guild. Every guild had their rules on the duration and content of apprenticeship as well as the pay for apprentices. Apprentices lived with their master and paid a fee for maintenance and housing. The master was responsible for the theoretical and practical training of the apprentice. Following the completion of training and examination at the guild, apprentices became journeymen (CEDEFOP, 2004; Poulsen & Eberhardt, 2016). Apprenticeships lasted for up to seven years. Guilds as institutions lost their importance in the 18th and 19th centuries, during the Industrial Revolution, when national systems of vocational education and training started to develop in Europe. It is claimed that norms of non-market competition and collectivist approach to apprenticeships originate from the tradition of guilds in handicraft sectors (Martin, 2017). Moreover, apparently, liberal thinkers at that time saw guilds as obstacles to market competition and free trade (CEDEFOP, 2004).

In Germany and Denmark, the current dual systems developed from the medieval guild system. In both countries apprenticeship is a vital part of the respective E&T systems and is known for providing an attractive pathway for young people.

In Germany, apprenticeship is organized through occupations that require formal training as recognized by the Federal Institute for Vocational Education (BIBB). The apprenticeship system is operated by the local chambers of commerce and industry (Kammern); these are employers' organizations that put together training programs for apprentices in partnership with the BIBB, the state-funded institute for vocational training. Firms' membership of the Kammern is legally mandated. While vocational institutions are in charge of the general education component of learning, trainers (who are approved by the relevant chamber) lead the practical learning component. Study at the vocational school is supported by public funds, and the training at the company is covered by the company.

Apprenticeship in Denmark developed around vocations that remain at the core of present-day provision. Vocation is defined as "a segment of the national labor market for which there is mutual agreement between employers and unions on salaries and working conditions" (Østerlund, 2012, pp. 23–24). In Denmark, all public and private employers contribute a pre-defined per full-time employee amount to a common pot – the Employers' Reimbursement Fund (AUB). In return, employers with apprentices can claim reimbursement when their trainees spend a proportion of their time attending vocational school. Danish apprenticeship lasts for four years (Jørgensen, 2017), and is characterized by a very high level of stakeholder involvement, whereby employers, trade unions, vocational colleges, teachers and students are involved in development of the VET system based on consensus and shared responsibility (CEDEFOP, 2012). Although there are some similarities between the Danish and the German systems of apprenticeship (Baethge & Wolter, 2015; Jørgensen, 2017), the distribution of firm-based and school-based training varies by country: 66–90 percent of training is company-based in Denmark, while in Germany the proportion is 60 percent (European Commission, 2013).

England differs from Denmark and Germany in terms of having a more diverse system of apprenticeship with large variation in the quality of provision and a very limited involvement of social partners. On average, English apprenticeships, lasting from one to four years (House of Commons, 2017), are shorter than Danish or German apprenticeships. Another major difference lies in the diversity of off-the-job training provision. In England, employers provide the off-the-job training in-house (77 percent of those offering apprenticeships), use external training providers to design and deliver this (82 percent of employers offering apprenticeships), or have some combination of the two (Shury et al., 2017). Much of the apprenticeship expansion in England has been led by private providers who 'sell' to employers government funding for a variety of training schemes, including apprenticeship (Chankseliani & James Relly, 2015; Keep & James, 2011).

Historically, the relationship between an apprentice and an employer was at the core of English apprenticeships, with Further Education (FE) colleges providing off-the-job training. FE colleges developed from mechanics' institutes to meet the needs of industry and until the early-1980s they trained apprentices who took courses that had been followed by generations of tradesmen and technicians (Unwin, 1990). With the increase in the centralized control of the skills training system since the 1980s (Keep, 2006a), the employer-employee relationship has been overtaken by government-led programs often administered and devised by training organizations external to the company. Apprenticeship has been used by successive governments over the last three decades in a variety of ways as a policy panacea and as a central component of their skills policy. The government has conducted several reviews, and put in place a variety of reforms and measures to create a demand-led system with the aim of improving the quality and efficiency of apprenticeships (Chankseliani & James Relly, 2015).

The latest reforms included the introduction of the apprenticeship levy (more on levies in Box 2. Apprenticeship levies). These reforms aim to achieve three million new apprenticeship starts by 2020. This represents a U-turn on the voluntarist approach to apprenticeship provision that had existed since 1981. Large employers, with a payroll above £3,000,000, pay a levy of 0.5 percent of their payroll to the government which they can then claim back to spend on approved apprenticeship training and assessment. The government applies a ten percent top-up to the funds that are paid by an employer for the levy. The minister of state for apprenticeships outlined five priorities for the English system: improving the prestige of apprenticeships and technical education, expanding the quantity and quality of careers advice provision, meeting the needs of a high skills economy, support for the most disadvantaged, and job security (APPG, 2017).

One financial incentive that governments have used to increase the supply of apprenticeships is a levy. The aim of levy schemes is to recompense those employers that invest in training and make those who benefit from the training offered by others (via poaching) to contribute to the training costs (Kuczera, 2017a).

Levy schemes are in place in many countries but they adopt different shapes in different contexts. In some places, like Denmark, all public and private employers contribute to the common pot a pre-defined per full-time employee amount and those who do not take apprentices contribute more. South Africa and England operate payroll-based levies. South Africa operates a skills development levy to be paid by employers, at a rate of 1% of the employer's payroll, if the payroll is more than R500 000 (£29,000). In England only from large employers, with payroll above £3,000,000, pay a levy of 0.5% of their payroll to the firm's levy fund that they can then spend on approved apprenticeship training and assessment. The Government will apply a 10% top-up to the funds that are paid by an employer for the levy. Training levies in Egypt are based on company profits. Finland and Australia do not have levy systems, and Germany operates a levy only in the construction industry.

Little evidence is available on the impact of apprenticeship levies. The difficulty of assessing whether the measure has acted as an incentive or rather as a disincentive, or has led to unintended consequences, requires greater attention to evaluating the levies and the actual (rather than intended) effects they have.

Countries that do not use compulsory levies to fund apprenticeship rely on a number of other incentives for firms and employer associations to offer apprenticeships. One such incentive is not disrupting a long tradition of offering apprenticeships and also, the evidence that shows the return on investment in training (OECD & ILO, 2017).

#### **Box 2. Apprenticeship levies**

Unlike England, in Finland support for the most disadvantaged represents the top policy priority. Finnish apprenticeships are perceived as providing a second chance. The provision is largely oriented towards adults and is fully funded by the state (Aho, Pitkanen, & Sahlberg, 2006). The fact that the duration of apprenticeships is only up to two years is perhaps linked to this (OPH, 2016).

Although Finland had similar guilds to other countries in the 17<sup>th</sup> and 18<sup>th</sup> centuries, the dual system that is common in Germany and Denmark did not become popular in Finland. It was during the industrialization period when the paths of Finland and other Nordic countries diverged in this regard. It is argued that Finnish industries did not wish to invest in formal

apprenticeships for their employees and instead provided on-the-job training and/or employed foreign workers (Stenström & Virolainen, 2014b). In the first half of the 20<sup>th</sup> century, state general vocational schools started to emerge. These expanded in mid-century as Finland started developing a school-based VET system. Some schools were set up by the government and others were established by the industrial enterprises. In the 1980s, government considered the expansion of apprenticeship but it was not deemed desirable to place apprenticeships in competition with school-based vocational training. Apprenticeships were less appealing than school-based VET and were left to those who were affected by ‘restructuring problems’ or were marginalized for other reasons. For example, the minister of labor in the late 1980s referred to apprenticeship as appropriate for “unwilling students” and as a way for “those in the most difficult situations” to access an occupation (Kivinen & Peltomäki, 1999). Apprenticeship provision expanded in Finland in 2000–2012. However, it has not become a strong model of youth education in the Finnish E&T system (Stenström & Virolainen, 2014a). Traditionally, Finnish employers have not viewed the initial training of novices as part of their responsibility (Stenström & Virolainen, 2014a), and to date school-based training is more widespread than apprenticeship training. Only 17 percent of all vocational qualifications are completed as apprenticeships (OPH, 2017a). Apprentices spend 70 to 90 percent of their training time at the firm and the rest at the VET institution.

These old and well-established systems seem to have influenced the emergence and development of apprenticeship schemes in other countries. Australia and Egypt represent examples of this, albeit of a different nature. Apprenticeship, including the British laws on masters and apprentices, was imported into the colony of New South Wales from Great Britain in 1788 (Knight, 2012). Following Australia’s Federation in 1901, an apprenticeship system was created with the necessary provisions concerning trades, employment and training regulations. In the mid-1980s, traineeships were introduced. Apprenticeships and traineeships use the same model of learning. The difference between them is that the term ‘apprenticeship’ refers to trade and ‘traineeship’ to mostly non-trade occupations, such as services, or personal care. Typically, apprenticeships last for four years and traineeships for up to one year (Noonan & Pilcher, 2017). In the 1990s, the government introduced an incentives program for employers to help reduce firms’ training costs and allow them to offer more apprenticeships. Australia also opened up to non-state providers of technical and further education (TAFE) that deliver the off-the-job training component of apprenticeships. The Australian government operates the Australian Apprenticeships Incentives Program to support the creation of apprenticeship opportunities and to encourage individuals to undertake training. There are also incentive payments in place for employers offering apprenticeships in rural areas, as well as adults, disabled individuals, and mature disadvantaged learners.

Unlike Australia, which has a well-established system of apprenticeships, in Egypt the provision remains largely informal. The informal apprenticeship tradition that dates back to Roman, if not Pharaonic, Egypt (Westermann, 1914), and is currently popular in crafts, construction, retail, garment-making, and automobile maintenance. Informal apprenticeships are entirely workplace-based and do not include a school-based component of learning. Such training does not involve any formal contract and does not lead to a qualification (Sweet, 2009). When it comes to formal provision, this was first introduced in the mid-1950s and there are several schemes operating in the country, including the Mubarak Kohl Initiative (MKI) which started in 1994 with German support. Referred to as ‘dual system’, it follows the German apprenticeship model (Ministry of Education of Egypt, 2014). However, it is a small scheme with only 10,200 students annually in a country with 1.8 million VET students (Adams, 2010). Formal apprenticeships in Egypt last for three years and the total number of students graduating from these six schemes does not exceed two percent of the total number of completers of all initial VET for 14-18 year olds (Ministry of Education of Egypt, 2014; E. Smith & Kemmis, 2013).

To date, apprenticeships in Egypt remain isolated, relatively small-scale schemes, rather than forming a national apprenticeship system as such. The relatively limited offer of work-based learning and apprenticeship in Egypt appears to be due to the dominance of institution-based learning within VET in general (Sweet, 2009).

India also has a large share of informal apprenticeships. Formal apprenticeships last from six months to four years (OECD & ILO, 2017). Any individual over 14 years of age who is physically fit and has the minimum educational qualification required for a trade can seek to undertake apprenticeship training (NAPS, 2014). The history of formal apprenticeship in India is relatively recent. The first Indian apprenticeship scheme — Special Class Railway Apprentice (SCRA) — started in 1927 by the Indian Railways to train young people in mechanical engineering.

Currently, there are two streams of apprenticeships in India: the Trade Apprenticeship Training that the Ministry of Human Resource Development is responsible for and Graduate, Technician and Technician (Vocational) Apprenticeship Training that is the responsibility of the Ministry of Labor and Employment. The first stream is for initial VET and the second stream is for those who already have an engineering qualification (EY-FICCI, 2013). OECD & ILO (2017) refer to the Indian apprenticeship provision as “well-established and regulated” (p. 241), albeit having a very poor reach and expanding rather slowly.

Finally, formal apprenticeships were introduced in South Africa in the mid-20th century by the apartheid government. The economy needed skilled workers for newly set-up electricity, post and telecommunications, railways and iron and steel production companies. Close links were established between industry and colleges. This provision was mainly aimed at white apprentices.

From the early 1990s, large numbers of black students started vocational courses, and college provision expanded. However, in the mid-1990s, the old system was phased out and a new, allegedly demand-led system was introduced, as the old system was considered supply-led and disconnected from market demand. The new system included the national qualifications framework and competency-based standards that are registered and allow providers to deliver any qualification, as long as they obtain accreditation from a relevant Sector Education and Training Authorities (SETA). Some apprenticeship provision — which was considered to be supply-led — changed its name to learnerships. At present, learnerships are defined as periods of on-the-job learning and off-the-job training leading to a qualification that is regulated by a contractual arrangement between an employer, a learner, and a SETA. Apprenticeships differ from learnerships as they are mainly for existing employees but they also involve periods of on-the-job and off-the-job learning (Musset, Álvarez-Galván, & Field, 2014). Despite all the changes, apparently some employers would welcome the return of traditional forms of apprenticeships (Kraak, 2008a; Marock, 2011; Odora & Naong, 2014). Apprenticeship in South Africa lasts from two to four years (E. Smith & Kemmis, 2013). South African employers pay a skills development levy, at a rate of one percent of the employer's payroll that goes to the SETA and the Skills Development Fund to pay for training.



The background of the entire page is an abstract geometric pattern composed of numerous triangles in various shades of orange, brown, and tan. The triangles are of different sizes and are arranged in a way that creates a sense of depth and movement. The colors range from dark, almost blackish-brown to light, sandy beige.

## Chapter 2

# Demographic Profile of Apprentices



**A**pprentice demographics differ across the eight countries. This section provides an overview of the demographic characteristics of apprentices by age, gender, and ethnicity. The statistics presented below reflect a number of decisions made by individual learners (when choosing between different types of learning) as well as employers (when selecting apprentices) and policy-makers (when putting in place different schemes and policies). These statistics also reflect national traditions of apprenticeship participation as well as the socio-economic realities in each country.

## Age

The eight countries in this study provide apprenticeships which are taken up by people of varying ages:

- In Germany, Egypt, and India apprentices are predominantly made up of young people who are school leavers. For instance, in Germany, the average age of apprentices concluding their contract is about 20 (BIBB, 2016b).
- In contrast, a vast majority of the apprentices in Finland are over 25 (OPH, 2016), following the apprenticeship route in what has been termed a ‘second chance’ model.
- Finally, in England, Australia, South Africa, and Denmark there is a mixed model, with apprenticeship being taken up in significant numbers by both younger learners (up to 19) and older learners (25 plus). In South Africa, for example, the average age of those starting apprenticeships is 28 (van Rensburg et al., 2012).

According to Fuller & Unwin (2012), despite the fact that in England “for most people, their image of an apprentice would be a teenage school leaver”, 40 percent of individuals are 25 or over when they start an apprenticeship (Fuller & Unwin, 2012), and more recent figures (Amin Smith, Cribb & Sibieta, 2017) suggest that the proportion of the over 25s has now risen to 44 percent. Yet, until relatively recently, virtually all apprentices in England were under 25. The growth in the number of apprenticeships for those aged 25 and over has driven almost all of the increase in the overall volume of apprenticeships since 2009-10 (Amin-Smith, Cribb, & Sibieta, 2017). It has been claimed that a practice termed ‘conversion’ – when older adults join an apprenticeship while they are with their existing employer – is eroding the concept of apprenticeship as a model of learning (Fuller, Leonard, Unwin, & Davey, 2015; Fuller & Unwin, 2012).

The involvement of adults in Finnish and Danish apprenticeships is viewed more positively, in the context of lifelong learning. In Finland, four in five apprentices are over 25. This group of older learners particularly favors occupations in the cultural sector as well as the social sciences and business and administration sector. Adult apprenticeships often target low skilled, unskilled or long-term unemployed adults. In Denmark, for example, such apprenticeships are administered by job centers in local authorities and have proven to be effective in terms of increasing their likelihood of finding employment (OECD, 2016a). In order to support better engagement by adult learners, countries like Denmark have systems of prior learning recognition in place. Such systems turn apprenticeship into a suitable pathway for obtaining a vocational qualification, and Denmark has one of the highest rates of adult participation in lifelong learning in the European Union (EU) (European Commission, 2016a).

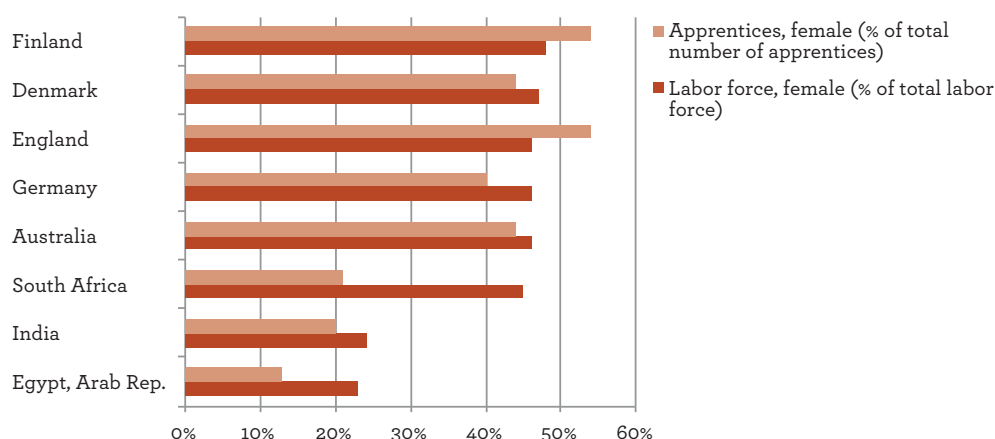
Adult apprenticeship provision in Finland as well as Denmark is in line with the European Employment Strategy, specifically with regard to its approach to improving the opportunities for those who may be facing the risk of long-term unemployment (European Commission, 2014). As young people remain under-represented in apprenticeships in Finland, the Finnish government has been encouraging participation in apprenticeship through increased training compensation for students leaving basic education, which is part of what is termed the Youth Guarantee (OPH, 2016, 2017a). The Youth Guarantee, which exists in different forms across most EU member states (but not the UK), offers everyone under 25, as well as recent graduates under 30, an employment, continued education, apprenticeship, or traineeship within four months after they become unemployed or leave formal education, and “its intention is to prevent young people from being excluded from society” (European Commission, 2016c; Stenström & Virolainen, 2014a, pp. 57–58).

This age breakdown therefore reflects some characteristics of the policy purpose for apprenticeships. In some cases it may concur with the OECD view that apprenticeship is for “youth tired of school” (OECD, 2016b, p. 11). In other cases the purposes may relate to bringing older people out of unemployment. Four out of eight countries in our sample — England, Denmark, Finland, and Australia — have adult apprenticeship schemes. As stated on the web-site of a UK-based FE college: “you’re never too old to do an apprenticeship” (Bolton College, 2015).

## Gender

With regard to the gender breakdown of apprenticeship participation in these eight countries, there is also variation. In five out of the eight countries, there appears to be a gender balance in apprenticeships overall. Finland and England have majority-female (54 percent) apprenticeship cohorts. Australia, Denmark, and Germany remain majority-male systems with significant proportions (40-44 percent) of women in apprenticeships (BMBF, 2016; OPH, 2016; Østerlund, 2012; E. Smith & Kemmis, 2013). In a stark contrast to this, in Egypt only 13 percent of the Mubarak-Kohl-Initiative are female (Ministry of Education of Egypt, 2014), in India 20 percent of apprentices are female (E. Smith, Kemmis, & Comyn, 2014), and in South Africa only 21 percent of apprentices are female (van Rensburg et al., 2012).

In some cases, such as Australia and Denmark, the make-up of the apprentice gender profile in a country reflects the make-up of the labor force (Figure 3. Female participation in apprenticeships and labor force, by country). However, in Egypt, South Africa, Germany, and India, women are in the minority in apprenticeships, and this is disproportionate to their labor market participation. Females are most under-represented in apprenticeships in Egypt, a country faced with some major challenges, including a weak labor market (especially for the young and women) and gender discrimination (Álvarez-Galván, 2015; ETF, 2017). The Mubarak-Kohl-Initiative has faced particular criticism regarding the gender imbalance of the program (Adams, 2010). Finland and England, in contrast, demonstrate an overall over-representation of females in apprenticeships when compared to their labor force participation.



**Figure 3. Female participation in apprenticeships and labor force, by country (% of total)**

Note: Own calculations based on BMBF (2016); Ministry of Education of Egypt (2014); OPH (2016); Østerlund (2012); E. Smith & Kemmis (2013); E. Smith et al. (2014); van Rensburg et al. (2012); World Bank (2016a).

However, it is important to note that the gender breakdown of apprenticeship participation is linked with occupation. Even when there appears to be a gender balance in apprenticeships overall, females are enrolled in different and fewer occupational sectors, mirroring and maintaining occupational distribution in the workforce more broadly. In England, females are considerably under-represented in sectors that generally offer high-quality provision such as engineering (less than four percent), while males are under-represented in low-pay sectors such as the children's and young people's workforce (seven percent) (Newton & Williams, 2013). This is despite selected companies' efforts to attract females to engineering apprenticeships (Box 3. Increasing female participation in engineering apprenticeships: the case of BAE Systems in the UK (Source: APPG)

Many companies are making efforts to increase the participation of women in STEM-related apprenticeships. One example in the UK is BAE Systems, which has an intake of around 700 apprentices a year. In 2016, 26% of the new apprentices were female, an increase from the 12% in 2012 (the sector average is 5%).

BAE Systems has a number of initiatives in place to support increasing the participation of women in its apprenticeship, including its School Roadshow, which takes place every year and is co-organised by the company with the RAF and the Royal Navy. This involves some 90,000 young people, and works toward encouraging young people to get involved in STEM activities, and inform students about possible employment in engineering. In addition, the company works with teachers, providing placements for them to find out more about the apprenticeships on offer.

Further, the company has a team of STEM ambassadors, of whom around one third are women, who are involved in the school activities and events, to provide visibility of female engineers.

Source: APPG (2017)

**Box 3. Increasing female participation in engineering apprenticeships: the case of BAE Systems in the UK** (Source: APPG (2017)

Female apprentices in Germany are most likely to be training in the five following occupations, in order of participation figures:

1. Office management clerk
2. Medical assistant
3. Sales person
4. Retail sales person
5. Dental nurse.

In contrast, male apprentices are most likely to be training in the five following occupations, in order of participation figures:

1. Motor vehicle mechatronics technician
2. Electrician
3. Retail sales person
4. Industrial machine fitter and plant mechanic for sanitation
5. Heating and air conditioning systems. (BMBF, 2016)

Thus, it has been argued that women are less likely to follow technical occupations and more likely to be active in the commercial and service sectors (BMBF, 2016). The distribution of women across different sectors is also somewhat uneven in Denmark with building and construction dominated by male apprentices while the opposite applies to commercial training and social and healthcare training (Østerlund, 2012, p. 6).

The occupational distribution of apprentices may be linked with a variety of demand-side and supply-side factors, such as stereotyped perceptions of occupations amongst individuals, their peers and their parents; exclusive recruitment practices from employers; and/or lack of positive role models / mentors (Newton & Williams, 2013).

## Ethnicity

Research on the ethnicity and/or migrant background of apprentices is relatively scarce, and there is very little of a comparative nature (Chadderton & Wischmann, 2014). One of the key reasons could be differing understandings and conceptualizations of ethnicity across different national contexts. For example, in England the “debate has been couched in racial terms”, whereas in Germany the debate is embedded in the wider concepts of national belonging and citizenship, and “those who might be referred to as ‘minority ethnic’ in England tend to be referred to as ‘auslaender’ (foreigners) in Germany” (Chadderton & Wischmann, 2014, p. 333). Across the eight countries, the following emerge as some of the key factors of ethnic under-representation in apprenticeships: foreign/migrant background (Germany, Finland), race (England, South Africa), indigenous background (Australia), and caste (India). Egypt and Denmark, as relatively ethnically homogeneous countries (Kærgård, 2010; Niakooee, 2013), do not feature in the analysis below.

The understanding and interpretation of ethnicity/race/migrant background also differ between and within national contexts, depending on the demographic, historical, political, social, educational and economic specificities of each country. The examples below serve as illustrations of the complexity involved, and the associated difficulties in undertaking comparative analysis of with the available data.

In South Africa, the issue of ethnicity/race is particularly contested, because of the history of apartheid. Apprenticeship used to be a white-dominated model of learning (Kraak, 2008b; van Rensburg et al., 2012) and the government implemented an entirely new training regime to upskill black South Africans who used to be excluded from E&T opportunities during apartheid (Kraak, 2008a). At present, whites are still over-represented and blacks and other racial groups are under-represented (Figure 4. Apprenticeship participation by ethnicity in South Africa . While only nine percent of the South African population is white, they account for 22 percent of apprenticeship places. Blacks and other racial groups, by contrast, are under-represented.

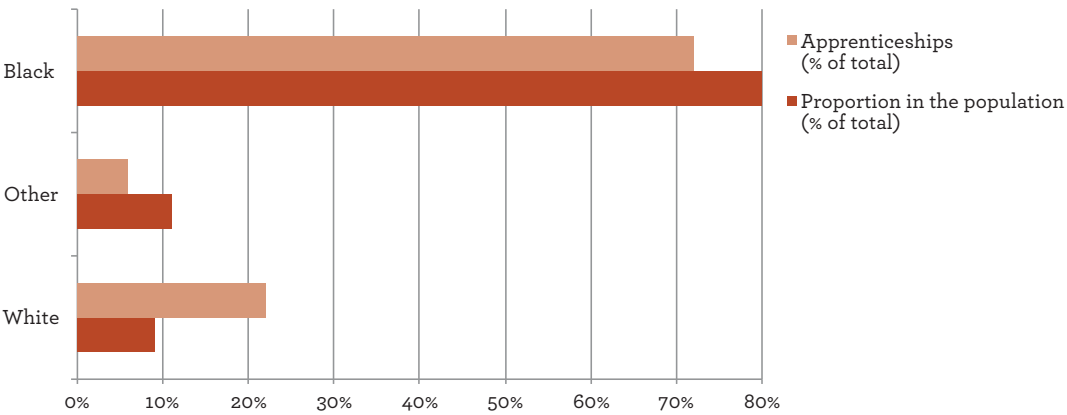


Figure 4. Apprenticeship participation by ethnicity in South Africa (% of total)

Note: Own calculations using (Statistics South Africa, 2013; van Rensburg et al., 2012). All data is from 2012.

Similarly, historically disadvantaged groups are under-represented in apprenticeships in India where caste membership, which is inherited from parents, is associated with apprenticeship enrolments. Smith et al. (2014) analyzed different government reports to show that only ten percent of apprentices come from a scheduled caste, a category that makes up 17 percent of the Indian population. The scheduled castes, or the Dalits, are at the bottom of the social ladder (Hobbs, 2016). Furthermore, only one percent of apprentices are from scheduled tribes that make up a further nine percent of the population (Ministry of Home Affairs, 2011; E. Smith et al., 2014). This reflects and sustains the clustering of scheduled castes and scheduled tribes in what Gang, Sen, & Yun (2017, p. 436) refer to as, “the least well-paid and most socially degrading occupations” in a highly stratified system of education and employment.

With regard to Germany, a recent government report states that, “young people from migrant backgrounds are still greatly under-represented in dual vocational training” (BMBF, 2016b, p. 46). The statistics are included in the provisional data report for 2017 which indicate that, compared with the 57 percent of Germans who began an apprenticeship, just 26 percent of those with a migrant background did so (BIBB, 2017a).

Foreigners in Finland constitute six percent of the Finnish population while 8 percent of all apprentices are foreigners, with Russians, Estonians, and Somalis representing the largest groups (OPH, 2016, 2017b; Statistics Finland, 2016).

In Australia, indigenous people have higher rates of participation in apprenticeships/traineeships compared with non-indigenous people (Windley, 2017). However, the outcomes of apprenticeship participation, such as completion rates and employment opportunities, reveal the disadvantaged condition of indigenous graduates. Apprenticeship completion rates for indigenous people are lower than completion rates for non-indigenous people. Although employment outcomes differ by individual characteristics and occupation, across the board, indigenous graduates have lower employment outcomes than non-indigenous graduates of apprenticeships/traineeships; this may be linked with their enrolment in lower-level qualifications (Certificate I and Certificate II) as employment rates in the Australian context are higher for those with higher-level qualifications (Windley, 2017).

Finally, in England, across the spectrum of apprenticeship provision ethnic minorities are not significantly under-represented (Figure 5. Apprenticeship participation by ethnicity in England, contrary to the argument developed by (Chadderton & Wischmann, 2014). The only ethnic group that is under-represented in apprenticeship starts is Asian/Asian British. All other ethnicities are proportionally represented in apprenticeship starts, although whites are slightly over-represented.

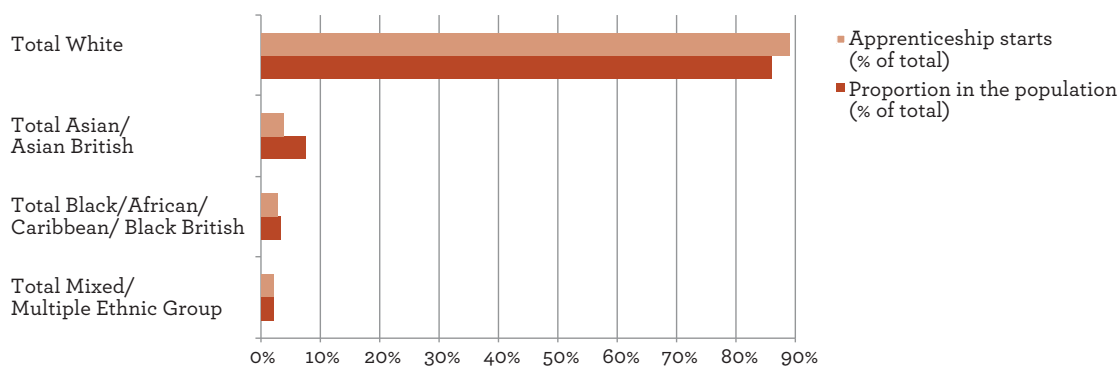


Figure 5. Apprenticeship participation by ethnicity in England (% of total)

Note: Own calculations using ONS (2011b); Skills Funding Agency (2017). All data are from 2011/2012. More recent apprenticeship starts statistics for 2016/17 are very similar to those presented in the table. Apprenticeship starts are for England, whereas the census data is for England and Wales.

However, while there appears to be an ethnic balance in apprenticeships overall, white and non-white individuals in England train in different sectors. For example, only three percent of engineering apprentices are from non-white ethnic groups (Newton & Williams, 2013). Furthermore, ethnic minority groups tend to have a younger age profile than the white population (ONS, 2011a).

## Final thoughts

Apprenticeship populations in the eight countries represent a diverse spread of younger and older individuals, males and females, and different ethnic groups. At first glance, women and ethnic minorities seem to be under-represented across the majority of the country contexts which indicates that gender and ethnic stereotyping are some of the main issues that need to be addressed by policy-makers, employers, and school career guidance services in the future. However, the question of equality goes hand in hand with the question of quality and issues of labor market outcomes and occupational options need to be considered as well. There are two caveats to take into account. First, apprenticeship is not a comparably attractive, high-quality pathway in all countries. Second, the quality of apprenticeships and the labor market outcomes associated with completing apprenticeships are relatively unambiguous in some contexts (e.g. Germany, Denmark) and rather more varied in others (e.g. England, Australia). Therefore, it may be questionable whether in some cases under-representation in apprenticeship participation can be viewed as an advantage rather than a disadvantage for selected groups within the specific national context.





The background of the entire page is an abstract geometric pattern composed of numerous triangles in various shades of orange, from light peach to deep burnt orange, and some white. The triangles are of different sizes and are arranged in a non-repeating, tessellated fashion, creating a dynamic and textured visual effect.

## Chapter 3

# Incentives & Disincentives for Engaging with Apprenticeship

**The apprentice demographic characteristics, as well as the differences in apprenticeship participation rates, indicate the varying degrees of appeal of apprenticeship to individuals and employers in the eight contexts we have examined.** These overview statistics (Figure 2. Number of apprentices per 1000 in the labor force) mask an array of supply and demand-side pressures and characteristics. Many countries are struggling with the task of encouraging individuals and firms to participate in apprenticeships. In Denmark, there is apparently a shortage of company places for apprenticeships, while in India the demand for apprenticeships is lower than the supply of apprenticeship places (European Commission, 2016a; OECD & ILO, 2017). It is therefore important to explore what potential incentives and disincentives are present for individuals to become apprentices and what may encourage or discourage employers to offer apprenticeships. These are the questions we address in this section, using examples from different countries.

The concept of incentives is used here to refer to the factors that motivate individuals or firms to perform a specific action – to enter apprenticeship arrangements and provide the required volume and quality of training. The concept of incentives as overviewed and discussed here is closely linked with the concept of attractiveness. To put it differently, we are interested in what makes apprenticeships attractive to learners and to employers. Although apprenticeship arrangements have some shared characteristics across national contexts (and these are reflected in our definition of apprenticeship), there are a number of differences in policy purpose and the degree of employer ownership, as well as educational and labor market progression opportunities for apprentices. Employer ownership can be defined as the extent to which employers ‘buy in’, have a meaningful stake, and are involved in and/or determine relevant decision-making processes.

This chapter combines a broader conceptual contemplation of the incentives for learners and firms, with country-level examples demonstrating how apprenticeship arrangements can provide specific incentives or disincentives within each context.

It is important to stress at the outset that the perceived incentives for engaging with apprenticeships in particular countries can be difficult to assess, and even more difficult to change, as attested by repeated attempts at reform in England, for example, and the regular criticisms of the dual system in Germany (Keep, 2015a; Sloane, 2014). Besides the educational, microeconomic, and institutional factors discussed in the section, there are a number of wider societal perceptions that may influence learners’ and employers’ level of involvement in apprenticeship.

## Incentives for individuals to participate in apprenticeship

For individuals, incentives to undertake apprenticeship may be linked to the process of learning as well as to the outcomes of that learning. In this section, we start by examining two aspects of the process of learning that could motivate individuals to participate in apprenticeships—the appeal of learning through doing and the opportunities apprenticeships present for occupational socialization. This is followed by an overview of two aspects of apprenticeship outcomes—the possibility of progression to employment or to additional education and learning while earning.

### The appeal of learning through doing

A major incentive for prospective apprentices may be the opportunity of learning through doing as a way of exploring the world of work and achieving occupational aspirations. Apprenticeship is a model of learning that is valuable because of the technical, cognitive and motivational aspects associated with its integration of theory and practice to achieve craftsmanship.

In *The Craftsman*, Richard Sennett (2008) explains the skills, judgement, practice and thinking required to connect hands and head and thereby develop craftsmanship. Development of skills starts as a bodily practice, through touch and movement, but it is through the powers of imagination that craftsmen and women achieve technical understanding and establish intimate connections between hands and head. Sennett (2008) refers to various examples, including brick makers, goldsmiths, sports champions, and writers to illustrate the development of skills and shows that this is an arduous but satisfying process that promises emotional rewards for individuals who are “being anchored in tangible reality” and who can “take pride in their work” (p. 21).

Evidently, where learning requires doing, vocational education and training can take place most effectively in the workplace, in a real-life occupational environment, rather than in a highly structured school environment: “Being told in a school how concrete is mixed and poured on a construction site is something quite different from living through the drama and the crises of fifteen or twenty-four hours of continuous, minutely timed and tightly coordinated hard physical work” (Streeck, 1989, p. 98).

Looking at motor vehicle apprentices in England, Michaela Brockmann (2010) uses biographical interviews to show how apprentices identified with this particular style of experiential learning, while rejecting “academic study in a directive teaching and learning arrangement” that does not allow for the “possibility of engaging young people by arousing their curiosity” (p. 71). Brockmann (2010) emphasizes how apprenticeship allows for “developing a disposition to learning which posits [the apprentice] as a producer, rather than passive absorber, of knowledge” (p. 72).

Apprenticeship may also be appealing because of the personalized, learner-centered approach to training. In Finland, for instance, all apprentices have personal study plans. The plan is put together by the training organizer and includes the credits for prior training; it also outlines how the apprentice will learn to achieve the desired qualification. The plan forms a part of the apprenticeship contract. Such personalized approaches to apprenticeship help to avoid overlapping studies and to shorten the study period; this can make the apprenticeship route seem more flexible and suited to the learner's needs, especially so when the learners in question are adults.

Learning through doing and work-based learning could, however, also operate as a disincentive if the quality of the learning is not sufficiently high, or if it is very 'restrictive', as defined in Fuller and Unwin's research (2003b, 2011). They suggest that three inter-related themes (participation, personal development and institutional arrangements) underpin an expansive/restrictive continuum in apprenticeship. Features of restrictive learning indicate narrow learning objectives and work structured around tightly defined tasks, which may be tailored towards the specific and immediate needs of the company. In addition, the apprentice may have limited involvement in the wider community of practice, and the opportunities for extending their identity are also circumscribed (Fuller & Unwin, 2003b). In contrast, the expansive end of the continuum features the apprentice participating in communities of practice, engaging with tasks which have breadth and allow the individual to develop and extend their identity as a practitioner (Fuller & Unwin, 2003b).

For example, in Egypt, traditional apprenticeships have a number of important shortcomings that include "the partial transfer of knowledge from the master to the apprentice; large variations in the quality of the training provided; the perpetuation of existing low-productivity technologies; and a tendency for slow innovation" (Ministry of Education of Egypt, 2014). Learning in such apprenticeships is commonly passive and non-experimental. Masters do not necessarily possess good pedagogical skills and apprentices are almost always viewed as cheap labor for purely menial duties (Ministry of Education of Egypt, 2014). Thus, the realities on the ground may not be supportive of the craftsmanship aspirations of individuals choosing apprenticeships and may serve as disincentives for others to engage in this model of learning.

In the English context, Level 2 retail apprenticeships, for example, which sometimes simply serve to accredit the prior learning of those already working in the company, may also have a limited incentive effect for potential apprentices (Brockmann, 2013).

## Occupational and/or workplace socialization

A further incentive for apprentices may be the opportunity for occupational socialization which can be defined as the development of “occupational values and skills which might generalize across organizational settings in which the occupation may be practiced” (Fisher, 1986, p. 102). Occupation refers to the definition of a particular working environment and set of tasks. In the context of apprenticeship, this may be reflected in the name of the respective pathway and the elements included. Occupations may be, for example, baker, hairdresser, plumber, or engineer, and occupational socialization may involve the advancement of such work-related values as “reliability, the ability to hold up under pressure, and solidarity with others working at the same tasks are highly regarded and rewarded” (Streeck, 1989, p. 98).

Experiencing the reality of a working context is a central feature of apprenticeship, as indicated in the work of Michaela Brockmann (2013), who conducted studies with retail apprentices in Germany and England. The incentive of joining an occupation has a potentially powerful appeal for future apprentices. Apprenticeships are closely linked with the concept of occupations (*berufskonzept*) in Germany, for example. As Brockmann (2013) explains, apprenticeships in Germany are conceived of as the learning that develops *handlungskompetenz*, or competence to act responsibly at the workplace and in society. It is a much broader concept than learning about the practice of one’s occupation in a specific workplace setting. As such, the term *beruf* has a powerful currency within the German dual system of apprenticeship and ensures that the benefits of undertaking an apprenticeship in a given occupation are clear to individuals and their families. However, in other contexts apprenticeships are not always ‘grafted on to’ occupations (Fuller & Unwin, 2013). Sometimes that is because of weak conceptualization of the concept of occupation and occupational identity, which can lead to an ‘anything goes’ approach (Fuller & Unwin, 2013) when constructing apprenticeship provision. The latter is evident in England and to some extent in South Africa. Whereas some apprenticeships in England have retained a strong relationship with the occupation, for example, construction and hairdressing, others, such as customer service, parts of retail, business administration and health and social care, have a much a weaker connection, or even none at all (Fuller & Unwin, 2013).

Depending on the sector, apprentices in England may be undergoing workplace socialization rather than full occupational socialization. In those cases where the apprentice’s main relationship is with the job and the employer, instead of with the occupation as such, we may need to conceive of the process as workplace socialization. This differentiation is linked with what Brockmann, Clarke, & Winch (2011) describe as the multi-dimensional competence approach, where competence is understood as the ability of an active employee to deal with complex work situations, versus the functionalist-

behaviorist approach, where a passive employee is conceived as a performer of functions specified by employers. While in England, the differences between occupational and workplace socialization may be sector-specific, in Australia the concept of socialization seems to be workplace related as the training arrangements refer to the bundles of competencies and skills required for a particular type of work, rather than to individual occupations per se (Pfeifer, 2016).

Whether it is workplace socialization or occupational socialization, learning about the sector and real-life work situations can be attractive for future apprentices. However, the occupational socialization process may vary by occupation and by context, resulting in some apprenticeships in selected contexts being more attractive than others.

The disincentives here shadow the incentives. For example, if apprentices are not in an occupation of their choice, because of high levels of competition or their relatively low levels of prior attainment, this will be compromised.

Furthermore, in countries such as Egypt, India and South Africa, where apprenticeships are often informal and of relatively low status, the occupational socialization process may not hold much currency. In addition, where there is a strong non-formal occupational context, such as in India, these incentives may accrue without the need for completing an apprenticeship.

## The possibility of progression to employment or additional education

For individuals, incentives to participate in apprenticeship can be linked to the process of learning—modes of learning and occupational socialization—but also to the outcomes of that learning. Progression to additional education and to the labor market takes different forms in the individual country contexts, based on how apprenticeship is conceived, and also based on its currency within the E&T provision and labor market structure of each country. Although apprenticeship could be viewed as part of lifelong learning, and taken up purely for the sake of enriching one's understanding of the occupation, the possibilities of progression to decent employment or additional E&T represent two potential incentives for individuals to embark on an apprenticeship.

### Cases of Denmark and Germany

In some countries (Denmark, Germany) apprenticeship ordinarily results in entry into decent and stable employment, although it is unlikely to lead to higher education. In contrast, progression to the labor market or further education may be relatively difficult in countries like India or Egypt, possibly because of weak links between E&T and the labor market, and limited opportunities for mobility from vocational to academic education, particularly higher education. Yet, in other countries apprenticeship does provide



possibilities of progression to both employment and additional education (Australia, England, Finland), although the numbers of apprenticeship completers who choose higher education may not be high.

It has proven to be extremely difficult, if not impossible, to develop E&T systems that ensure both progression options to an equal extent — a high likelihood of the successful entry to the labor market as well as successful continuation to additional subsequent education. Two E&T systems in our sample that are known to lead to employment of large proportions of apprenticeship graduates have been considered ‘dead ends’ when it comes to entering higher education. In Germany, the employment rate for 25-34 year-olds with a vocational qualification is 30 percentage points higher than the rate for those who have a general upper-secondary or post-secondary qualification (84 percent vs. 53 percent) (OECD, 2014). Denmark is another example, with high employment rates but no eligibility for apprenticeship completers to move into HE. This lack of permeability into higher education from apprenticeship acts as a disincentive for some individuals (Jørgensen, 2017). This is not because of quality shortcomings in the apprenticeship system but because of a strict separation of academic and vocational routes. In Germany, the traditional model of vocational/academic separation has been dissolving in recent years. Access to higher education has been extended to those with vocational qualifications, without the Abitur school-leaving certificate, although this has a limited reach: three percent of first-year students were non-traditional, using data from 2013, but their proportion has more than quintupled since 1993 (A. Wolter & Kerst, 2015). Non-traditional students in this context refer to those who enter HE with a vocational experience and via an alternative access route that is often called the “third education route” in Germany (A. Wolter & Kerst, 2015).

### Cases of Egypt, India, and South Africa

In the contexts where the likelihood of successful employment outcome is not high, the appeal of apprenticeship, as a consequence, may be relatively limited. Progression from apprenticeship in Egypt is affected by the challenge of the perceived low status of VET in general and the high societal demand for university education. In contrast, the Kohl-Mubarak-Initiative, which has approximately 10,000 entrants annually, has been criticized because of the high proportion of its students who then go on to HE, which undermines the program as a genuine apprenticeship route (Adams, 2010).

With reference to India, VET results in a higher likelihood of employment and better wages than general academic education. However, university graduates seem to be more successful in the labor market than VET completers (Ahmed, 2016). Labor market progression opportunities are particularly unfavorable for individuals choosing the vocational route to specialize in information technology (IT), as there is an oversupply of graduate engineers in the IT field (Ahmed, 2016). Furthermore, the continuing absence of a well-developed national qualifications framework in India means that it is difficult for



apprenticeship certificates to offer progression into higher level qualifications. Apprentices who pass their trade tests obtain a National Apprenticeship Certificate but, without integration into a national qualification framework, such certificates remain outside the formal educational system and are therefore relatively unattractive to those potential entrants who are looking for pathways to additional higher qualifications (ILO & World Bank, 2013).

Declared goals of apprenticeship provision at the national level frequently include expectations concerning the employment outcomes of apprenticeship graduates. Individuals may choose apprenticeship in order to obtain a qualification that helps them find a stable job. This is indeed the case in South Africa, the country that has the highest proportion of NEETs in the sample—31 percent (Table 1. Selected socio-economic and education indicators, by country). Although there do not seem to be any statistics available, VET and apprenticeships have been reported as having “a poor image with employers and therefore only a minority of their graduates, aggregated across all fields, find employment” (City Press, 2012).

### Cases of England, Australia, and Finland

England and Australia have relatively flexible E&T systems and robust labor markets that ensure transition to employment as well as the possibility to move from vocational to academic routes. Almost 81 percent of individuals who have an apprenticeship qualification are in employment in England. This is higher than employment rates for those with academic lower secondary General Certificate of Secondary Education (GCSE) qualifications (78 percent), but lower than employment rates for those with degrees (85 percent) (ONS, 2014). The example of England with regard to progression to additional education is affected by the prevalence of Level 2 apprenticeships, which means that progression in England often focuses on progression between apprenticeship at Levels 2 and 3, and beyond. However, this begs the question as to whether this should really be termed progression, not least as in many European countries the vast bulk of apprenticeships are at Level 3 or above. Furthermore, it has been recommended that all English Level 2 apprenticeships should allow for automatic progression to Level 3 (Kirby, 2015), something that does not always happen at present. The analysis of the Longitudinal Study of Young People in England (LSYPE) shows that progression opportunities are an incentive for individuals. Ninety eight percent of those who applied for an apprenticeship place in England indicated that they were attracted by the idea that apprenticeship would provide good career prospects on completion (Williams, Foley, & Newton, 2013).

In regard to progression to higher education in England, a longitudinal study established that 19.3 percent of advanced apprenticeship (those equivalent to upper secondary level academic learning, i.e. Level 3) completers progressed to HE over seven years (S. Smith, Joslin, & Jameson, 2015). Approximately 37 percent of all apprenticeships are at the advanced level (Amin-Smith et al., 2017). Therefore, the progression rate to higher education represents a small

proportion of learners. Notably, 22 percent of advanced level apprentices who progressed to HE were from the most educationally disadvantaged parts of the country, and more than half of these individuals started their higher education programs at FE colleges (S. Smith et al., 2015).

In Australia, 92 percent of apprenticeship completers in trade occupations and 80 percent of those in non-trade occupations are employed (NCVER, 2016c). Approximately 43 percent of graduates stay with the firm that trained them which is somewhat lower than the German statistic of 60 percent (Pfeifer, 2016). However, unlike Germany, the Australian Qualifications Framework (AQF) indicates that the aim of all qualifications (except for the doctorate) includes “a pathway for further learning” (AQF Council, 2011). Indeed, 23 percent of completers continued to further education, according to the latest data (NCVER, 2010).

Similar to Australia and England, Finnish completers can progress to universities and polytechnics after completing an upper secondary vocational school qualification (Aho et al., 2006; Stenström & Virolainen, 2014b).

In conclusion, progression routes to additional education from apprenticeship are a potentially powerful incentive for participants. However, the rather complex and diffuse patterns of progression outlined in this section for eight countries in this report indicate the difficulties involved in providing an effective progression pathway, without diluting the specific purposes of apprenticeship itself.

## Learning while earning

Apprenticeship allows individuals to earn wages while they learn. This can be a very strong incentive for individuals as demonstrated by the analysis of the Longitudinal Study of Young People in England (LSYPE). The survey shows that 99 percent of those who applied for an apprenticeship place in England were attracted to the idea of entering paid employment and undertaking training at the same time (Williams et al., 2013). In order to understand what learning while earning means, we need to look at the alternatives for an individual who is interested in developing occupational skills. There are usually three alternatives in the contexts where apprenticeships are an option:

- taking up an apprenticeship,
- starting a vocational program at a vocational school,
- or joining the labor market without a relevant qualification.

The opportunity cost of taking up an apprenticeship is lower than pursuing full-time school-based vocational training, as apprentices receive wages, unlike full-time students at vocational schools. However, in some contexts, individuals may earn more by joining the labor market directly rather than by pursuing an apprenticeship. In such contexts, higher pay for unskilled labor may be a disincentive for an individual to take up an apprenticeship and bear a part of the training costs in the form of lower pay than if they had joined the labor market directly.

Faced with the three alternatives, if individuals choose the apprenticeship route, their wages may differ depending on the country context, region, and the occupation.

Apprentices in all eight countries receive wages (referred to as wages, pay, or stipend in the case of South Africa and India). However, there are considerable variations in the apprentice wage amount and wage arrangements within and between countries. In some countries, apprenticeship offers relatively high levels of remuneration, whereas in other countries, for example in Egypt and India, the pay is extremely low (Álvarez-Galván, 2015; ILO & World Bank, 2013). While Indian employers may choose to pay more to their apprentices, they need not; and low wages are not compensated for by any certainty of post-apprenticeship employment (ILO & World Bank, 2013).

Different wage arrangements can provide different incentives for individuals to participate in apprenticeships. In some countries, such as Denmark and Germany, apprentices receive wages for the entire period of their apprenticeship engagement, without any differentiation between their on-the-job training and school-based training (Kuczera, 2017b). In other contexts, additional financial allowances as well as wages are offered to apprentices. For example, in Australia apprentices who have moved away from their parents' home receive The Living Away From Home Allowance (LAFHA). Australian apprentices may also receive the allowance if they are undertaking an apprenticeship and are or become homeless (Australian Apprenticeships, 2013). In Finland, apprentices are offered one free meal per day, can receive school transport and accommodation allowances, and are eligible for means-tested financial aid. Apprentices with families are entitled to a family allowance and mature students can receive an adult education subsidy (OPH, 2010, 2016). In England, apprentices have the same employment rights as other employees; this includes holiday entitlement and maternity leave (House of Commons, 2017). In Germany, too, the employment rights of the apprentices below the age of 18 are broadly in line with those of other employees, but have some additional features, such as the right to attend training outside the training company, and protection regarding required working hours, and working hours at night (BMBF, 2005).

Three out of the eight countries — Denmark, Finland, and Germany — use collective wage agreement systems to determine apprenticeship pay rates, which generally results in relatively attractive salaries for apprentices. In Finland, for example, the trainees receive wages of about 80 percent of the wages of a skilled worker in a particular field (Stenström & Virolainen, 2014a). In England, relatively few private sector employees are covered by any kind of collectively bargained wage agreement (at either sector or company level) and employers are free to set apprenticeship wage rates more or less as they choose. There is a national minimum rate for apprentices below the age of 19 (or for those who are 19 years and over, and in the first year of their apprenticeship) and thereafter a requirement that the apprenticeship wages meet the minimum standard set by the National Minimum Wage (which has different wage bands for those aged 18 to 20, 21 to 24 and 25+). However, this requirement is not always adhered to (see below).

Potential determinants of apprentice pay may include: the organized interests of employers and employees, the mode and content of state intervention, and the supply of and demand for potential trainees (Ryan, Backes-Gellner, Teuber, & Wagner, 2013). Apprentice wages can also differ by occupation, gender, and region.

The variation by occupation is one indication of the relative status of the respective apprenticeship pathways and, in some cases, of the supply and demand patterns of training places in specific sectors. For instance, training allowances in Germany, which are based on collective wage agreements, are particularly high in the main construction trades, such as bricklayer, where the overall average is €1,042 per month. This indicates a mismatch between the number of training places available, and apprentices willing to take them up, hence the relatively high wage for bricklayers. In contrast, the average monthly wage for a painter and varnisher is €670, for a baker — €618, and for a florist €587 (BIBB, 2017b).

Statistical analysis of apprentices' ages and gender shows that gender is an important correlate of pay, controlling for all other factors, and that female apprentices in England earn on average £0.24 less per hour than male apprentices (Williams, et al., 2013). The pay differences between sectors may disguise a gender gap in apprentice pay, as some of the more male-dominated occupations offer higher pay. In England, for example, the occupations of hairdressing and children's care and learning are amongst the lowest paid, and also amongst the occupations with relatively high proportions of women participants (London Economics, 2013). Further, male apprentices in Germany are most likely to be training in the five following occupations, in order of participation figures: motor vehicle mechatronics technician, electrician, retail sales person, industrial machine fitter and plant mechanic for sanitation, heating and air conditioning systems. Mechatronics fitter is the occupation with the third best average monthly wage for apprentices, at €1,023, and bricklayer is the best paid, at €1,042 (BIBB, 2016a). The latter is also a

traditionally male-dominated occupation, with the *Frankfurter Allgemeine Zeitung* (2014) reporting that female bricklayers are the rarest species amongst the 30 most popular occupations in Germany. Thus, occupational gender segregation may be a contributor to the gender pay gap.

There are considerable differences in the amount of remuneration by occupations, as well as by region. Even a number of decades after unification, for example, the average apprentice wage for western Germany is €1,090 while in eastern Germany it is only €897 (BIBB, 2017b).

In other countries where the wages are not based on collective wage agreement, the variations between and within occupation as well as by regions may be even larger, to the extent that some apprentices may not even be paid the legal minimum wage. Nearly one in five apprentices at Level 2 and Level 3 are paid less than the minimum wage in England, according to the government's apprenticeship pay survey (BEIS, 2017). The non-compliance rates that emerged in the report varied significantly according to sector, with 47 percent of those working in hairdressing reporting that they were paid below the minimum wage, while those on the management framework were least likely (seven percent) to be paid below the minimum wage (BEIS, 2017).

Furthermore, in terms of international variation in apprentice wages, it has been estimated that apprentices in the UK are paid more than apprentices in dual systems (London Economics, 2013). As an illustration, research on the pay of metalworking apprentices, specifically, in Britain, Germany and Switzerland, showed that apprentice pay as a proportion of that of skilled workers in the same occupation stood (around 2005) at 40 percent, 29 percent, and 14 percent in Britain, Germany and Switzerland respectively (Ryan, et al., 2013). One explanation is that the UK pays proportionally higher apprentice wages because the quality of the training on offer across different firms is more variable and uncertain, while the countries with well-respected dual apprenticeship training can 'afford' to pay less because of the higher quality of and better returns to the apprenticeship training, as well as the commitment to vocational training more generally (London Economics, 2013). Another explanation, linked to the metal working apprentices, is that the higher pay in Britain can be attributed to a number of factors, such as the institutional thinness of a liberal market economy (weakness of trade unions, employers' associations, and the education system) and shortages of qualified workers who would like to take up apprenticeship training in a given sector (Ryan, et al., 2013).

This brief examination of the issue of apprentice pay reveals its complexity, as well as its embeddedness in wider economic systems and institutional arrangements. While apprentice wages may not always be high and therefore appealing across and within selected national contexts, the idea that people are paid while they are trained is in itself powerful, especially in those contexts where apprenticeship graduates are highly likely to find good employment. This is a cornerstone of apprenticeship provision and one of the key incentives.

## Concluding remarks

Incentives linked to the process of learning as well as to the outcomes of learning may be useful in explaining why individuals choose the apprenticeship route. As well as those mentioned in this section, there are also other strong disincentives for pursuing apprenticeship, such as the perceived relative low status of the route; lack of encouragement from parents, carers, teachers, peers; gendered structures and those related to ethnicity limiting possibilities; age-related restrictions; the structure of the local economy and geographical considerations. These forms of disincentives are present in varying forms in the countries included in this study, and the permutations reflect the broader labor market, societal, educational and political contexts.

The balance between incentives and disincentives will play out differently over time and across countries. In some instances, most notably Germany and England, at present demand from individuals to pursue apprenticeship is outstripping the willingness of employers to offer places. It is to the reasons for this that we now turn.

## Incentives for employers to engage with apprenticeship

Employer engagement is essential for the apprenticeship arrangement to exist. S.C. Wolter & Ryan (2011) call the firm's willingness to train apprentices the *conditio sine qua non*<sup>1</sup> for an apprenticeship system. Engaging with apprenticeship in an on-going and sustainable way is a substantial commitment from an employer of any size and in any sector. Why would employers opt to do this and to get involved? Moreover, what are potential factors that may discourage employers from offering apprenticeships? These are the questions we address below.

We start by viewing employers as atomistic entities, and skills as a private, firm-specific good, and overview incentives and disincentives for individual firms. Later we change our perspective to look at employers as collective entities, and skills as both a private and collective good.

---

1. A Latin phrase meaning an indispensable or essential condition.



## Incentives for employers

The analysis of incentives for employers shows a range of reasons related to their short-term interests and the needs of the production processes, technologies, and associated skills needs; longer-term benefits for the company's staffing strategy; as well as the opportunity to make a contribution to the wider education and economic systems. One factor to consider at the outset is that these incentives may be different for large firms and SMEs. In contrast to large businesses, SMEs may have less well-established training cultures, weaker in-company training capacity, and more limited budgets for apprenticeships. Also, some firms may be too small to train individuals towards a qualification (European Commission, 2015). The following outlines some of the incentives available to employers.

## Productive work of apprentices and low net costs of training

Apprenticeship training helps to link the content of occupational skills with the day-to-day requirements of the production process and/ or service provision. It allows employers in occupations that require hand-eye coordination and appropriate use of equipment to develop employees within the specific work settings in which these skills will be deployed, as well as giving new employees experience of the work routine of that firm.

Employers also potentially benefit from the fact that following their initial period of training apprentices contribute to productivity. In Germany, 41 percent of employers participating in a nationally-representative survey rated “in order to employ apprentices as workers even during apprenticeship training” as a reason for providing in-company vocational training (BIBB, 2015). It has been shown that an increase of the share of apprentices in a firm's workforce in trade, commercial, craft or construction occupations (though not in manufacturing) is linked with higher labor productivity and profitability (Mohrenweiser & Zwick, 2009). Furthermore, in Denmark, there is also positive feedback on employer satisfaction with the contribution made specifically by adult apprentices who are seen as being highly motivated trainees (European Commission, 2014).

The main costs of providing apprenticeship are apprentice wages, off-the-job and school-based training, and assessment costs. Depending on the context, these are shared in different ways between firms (through direct payment and levies), governments, and individual apprentices. For example, in Denmark, the levy fund covers apprentice wages during their school-based training. This means the companies only directly pay the wages of the apprentices when they are doing in-company training. Similarly, the recently-introduced levy in England must be spent on apprenticeship training and assessment with a training provider (more on levies in Box 2. Apprenticeship levies).



In Finland, where apprenticeship is publicly funded, the employer receives training compensation to cover the costs of providing workplace training. An employer who takes on an apprentice directly from basic education receives an increased subsidy (OPH, 2016). Therefore, it can be argued that taking on apprentices could be quite attractive to Finnish employers. However, this is not reflected in apprenticeship participation rates; only 17 percent of all vocational qualifications are completed as apprenticeships in Finland (OPH, 2017a).

The training costs borne by the companies are generally low when considering the productivity of the apprentice across the training period. With reference to the costs in Germany, a BIBB survey on the costs and benefits of apprenticeship training shows that apprenticeship is an investment for most companies, at least at the outset (BIBB, 2015). The gross cost for the training year 2012/13 was an average of €17,933 per apprentice, with the contribution per apprentice providing returns of an average of €12,535, meaning net costs of €5,398 per apprentice for that year (BIBB, 2015). These costs are specific to the German context, but give an indication of how investment by employers can be offset by the productivity of apprentices. Of course, the net costs vary quite considerably between sectors and occupations, with higher costs for electrical, metal, building and printing occupations compared with food and hairdressing occupations, for example (Pfeifer, 2016). In England, research suggests that most employers were able to recoup the costs of their investment in apprenticeship training within one to two years (Hasluck & Hogarth, 2010).

### **Retaining trained apprentices long-term and reducing recruitment costs**

A further incentive is the opportunity to observe apprentices at work and to engage in learning before potentially taking workers on permanently. In other words, apprenticeships are a kind of extended interview or trial work period. In Germany, 83 percent of employers participating in a nationally-representative survey rated “to train young workers with a view to employing them long-term in the company as skilled workers” as a reason for providing in-company vocational training (BIBB, 2015).

The costs of offering apprenticeships can be offset if apprentices who have developed company-relevant skills and knowledge are taken on after completion, thus reducing spending on recruitment. A nationally representative survey undertaken in the German context shows that 36 percent of employers participating in the survey rated ‘to save the costs of recruiting and inducting skilled workers’ as a reason for providing in-company vocational training, which indicates that apprenticeship training can pay off for companies (BIBB, 2015).

The firm's investment in apprentice training supports the apprentice-employer relationship, potentially leading to greater motivation and company loyalty (Poulsen & Eberhardt, 2016). Loyalty from apprentices who see that the employer is investing in their training and taking an active part in their development is also a factor when it comes to the retention of apprentices.

## Wider impact on the staff

In addition, engagement with apprenticeship may involve wider benefits for adult co-workers who participate in the training process and the integration of novices into the workplace, and their future development. Apprentices may bring with them up-to-date information about developments in the field through their learning outside the enterprise, including at vocational schools. Apprentices may also bring in fresh perspectives, enthusiasm and energy that may be refreshing for the team.

## Satisfaction from honoring tradition

Firms offering apprenticeships can have a reputational benefit from honoring the tradition of investing in people. In Germany, 41 percent of employers participating in a nationally-representative survey rated “Because apprenticeship is part of tradition” as a reason for providing in-company vocational training (BIBB, 2015). In other words, participation is underpinned by a set of expectations and societal norms that encourage firms to maintain a tradition that is supported and valued by a wide coalition of stakeholders. In addition, it can be claimed that a strong and stable apprenticeship system, such as is arguably present in Germany and Denmark, with a “...high degree of standardization and consistency” will lead to motivating firms to be involved in apprenticeship on a relatively constant basis (Pfeifer, 2016, p. 17).

This contrasts with the “fractured” system in England, for example (Keep, 2015a); the “relatively dynamic policy-driven development in Australia” (Pfeifer, 2016, p. 27); and the struggle to establish a functioning system in countries such as Egypt, India and South Africa.

## Disincentives for employers

Despite all the factors that may serve as incentives for employers to offer apprenticeships, many firms internationally seem to view apprenticeship arrangements as too costly, risky, and complex to justify the investment. Except for a few exceptions, such as Germany, Denmark, Austria, or Switzerland, employers tend to be reluctant to invest in apprenticeship

training, as they expect the broader E&T system, funded by individuals or the taxpayers, to produce appropriately-trained employees that they can hire using competitive pay strategies. Firms' reluctance to invest can be one of the core reasons for the undersupply of skilled labor.

Even when firms recognize the importance of skills and act rationally, they are likely to invest less in the employee training than they should in their own interest, as explained by Wolfgang Streeck (1989). Why is this the case? What are the disincentives for firms to offer apprenticeships?

One of the main disincentives is that trained apprentices may leave their employer soon after the completion of the training and join another company that is likely to be a competitor of the firm where the individual completed the apprenticeship. In the contexts where trained apprentices are allowed to move from one employer to another and they are not required or expected to stay with the firm where they completed their training, the likelihood that firms cannot justify the investment in apprenticeship training is high. This phenomenon can be referred to as poaching/free-riding. The possibility of poaching opens up an incentive for employers to hire already-trained individuals instead of training them in their firms.

Another important disincentive is the availability, cost, and quality of the school/vocational college-based or other form of off-the-job element of apprenticeship training, especially if it is not seen as being closely matched with work practices at the company (Sloane, 2014). Further, the institutional fragmentation of VET providers may disincentivize employers in such contexts as England or Australia where employers are faced with the complexities of navigating the institutions and funding schemes when trying to access government assistance for training costs (OECD & ILO, 2017).

The complexities of apprenticeship arrangements may sometimes be related to apprenticeship funding more broadly, and not only the funding for school-based learning. In South Africa, the skills development levy is used to finance national VET activities. Twenty percent of the revenue from the skills development levy goes to the National Skills Fund to finance cross-sector strategic training initiatives, and the training of disadvantaged groups. The rest of the revenues from the levy go to tripartite SETAs (Sector Education and Training Authorities) and are spent on sector-specific training (Department of Higher Education & Training, 2016; Ziderman, 2016). An assessment of the levy and its impact at an earlier stage (2008) indicates some of the challenges in South Africa, which are partly linked to a perception by employers that the institutional structure is overly complex (one perhaps shared by employers in England, for example Keep (2015a); Keep & James (2011)). The quote below, relating to South Africa, again highlights the complexity of the inter-institutional communication and arrangements:

*Another problem has been the continuation of a ‘voluntarist’ and ‘short-term’ mindset towards enterprise training among employers. Many employers disregard the levy-grant system or view it as little more than an additional tax burden impacting negatively on cost structure and profit margins. Government has reacted angrily to such arguments, blaming the companies for not taking skills development seriously. Training authorities and employers, in sharp contrast, are critical of an over-bureaucratized system. (Kraak, 2008, p. 13)*

For some employers, particularly SMEs, paying the apprentice wages could be another disincentive, especially during the initial period when the apprentice is not fully productive. Companies may also be concerned with the negative influence on overall firm productivity of employing apprentices, which is partly due to an inexperienced member of staff joining, and partly due to the need for those with more experience to give time to supervise and train them. Another disincentive linked to this is the potential lack of cohesion between the apprentices and the existing staff.

Further, dependent on the sector, the health and safety implications of an apprentice may be considerable, at least during the initial period. This may well be associated with additional costs.

These disincentives are not similar across all types of firms as monopoly or high-skill firms may be able to rationally justify investment in apprenticeships because, first, there are not many competitor firms in the market that can potentially poach their trained apprentices. Second, such firms may be unable to find appropriately trained individuals on the market as there may not be other firms in their monopoly/niche sector that train apprentices. Thus, following the writing of Streeck (1989), in open market competition when individual firms compete for trained staff, there may be cases of exceptionally high quality apprenticeship training provision in selected firms.

In addition, the relatively low status of apprenticeship in some countries will affect the willingness of employers to become involved. In a country such as India, where in some economic areas, such as street food vendors, on-the-job training in family businesses or in informal employment are particularly important, the need for recognized and certified skills may be compromised by the high levels of employment of those with informally acquired skills (Pilz, Uma, & Venkatram, 2015). Research looking at skilled workers in four different occupations in two Indian states highlighted the importance of informal learning when the cost of formal training, as well as the opportunity costs, are seen as too high by those working in rural areas, as well as the role played by families in transferring knowledge and skills in traditional sectors (Noronha, 2011).

The levels of education of the potential workforce are also a factor in India, with such a high proportion not completing secondary education, cited at around 70 percent in 2009-10 (OECD & ILO, 2017). In terms of disincentives, the assessment is terse: “Young people do not tend to see apprenticeship as a valued career path, and employers have been reluctant to employ apprentices” (OECD & ILO, 2017).

## The value of collective efforts

In view of the mostly microeconomic disincentives briefly overviewed above and the evidence of firms being reluctant to engage in apprenticeships across many national contexts, in this section we suggest complementing the microeconomic analysis with institutional explanations of firms' incentives.

Institutional explanations may include country-specific collective institutions, such as: employer collective organizations (associations, chambers of commerce/trade), employee organizations (unions, councils), associations of educational vocational centers/schools/colleges, as well as trainee/learner associations. There is considerable variability in the occurrence and strength of such institutions in the countries included in this report. In this section we focus on employer collective organizations as key social partners.

An important starting point here is a central assumption that underlies the analysis of firm (dis)incentives to invest in apprenticeship. This assumption relates to whether occupational skills are viewed as a collective good or as a private, firm-specific good. Our assumption when overviewing incentives and disincentives was that skills are a private, firm-specific good. In this section, we change that assumption and approach skills not only as a private good but also as a collective good.

Looking at employer investment in apprenticeships through the lens of game-theory decision-making, firms are likely to invest more in recruitment and less in training if they are making decisions that are not coordinated with other firms. When firms are making decisions collectively, under the umbrella of chambers or associations, they are more likely to coordinate their skills investment strategies around collectively-beneficial outcomes linked to skills development as a common good, locally or nationally, for all those firms that are part of the given collective. Training apprentices is then viewed as a contribution to the 'pool' of talent for the sector. Wolfgang Streeck (1989) explains the idea of skills as a collective good from the employer's perspective: "if an employer provides training, he is no more than adding to a common pool of skilled labor which is in principle accessible to all other employers in the industry or the locality, many of which are his competitors" (p. 94). It has been argued that following this assumption more firms may undertake more training than under the circumstances when each firm looks at its own costs and benefits only and views skills as a firm-specific good (Streeck, 1989; S. C. Wolter & Ryan, 2011).

When employers engage in apprenticeship provision through collective structures, a number of benefits may arise.

- The content of apprenticeship is more likely to be kept relevant for the requirements of production/service provision and is less likely to be narrowly-focused, as firm-specific training cannot be useful for enriching the collective pool that may benefit more than one company (S. C. Wolter & Ryan, 2011).
- Employers may be more inclined to view apprenticeships as a legitimate sector-owned investment, since the collective bodies (and not public officials) design, assess, and administer apprenticeships. Also, firms may find it more reasonable to share the information about their skill needs and training options with their collective bodies than with the government (Culpepper, 2003; S. C. Wolter & Ryan, 2011).
- Employer coordination may be beneficial for solving poaching/free-riding through information exchange, deliberation, and oversight (Culpepper, 2001; Soskice, 1994; Trampusch & Eichenberger, 2012).
- Employer associations/chambers are in a position to use different mechanisms, such as “dialogic capacity” or peer pressure (S. C. Wolter & Ryan, 2011) to persuade resistant firms to invest in the development of the collective good.
- Employer collective bodies, together with wider networks of social partners, may coordinate a common fund that all employers contribute to and in order to then access funding for training, thus sharing the cost and benefits of apprenticeship training amongst the entire collective. The Employers’ Reimbursement Fund (AUB) is one such common fund that operates in Denmark. All employers in Denmark make contributions to this fund for each full-time employee. In return, employers with apprentices can claim reimbursement when their trainees attend vocational school.
- A history of approaching apprenticeship training collectively may influence firms’ perceptions of the value they are creating for society. In Germany, 63 percent of employers participating in a nationally-representative survey rated “because apprenticeship training is a shared task of business and industry and hence a service for society” as a reason for providing in-company vocational training (BIBB, 2015).



Collective employer structures are usually formalized in countries that have had a long history of apprenticeship training, such as Germany and Denmark. Collective employer structures refer to institutions such as sectoral associations, organizations, or chambers that bring employers of waged labor together to seek to coordinate the behaviour and represent the interests of their members firms. In Germany, the non-optional employer body—the Association of German Chambers of Commerce and Industry (DIHK)—supports and advises individuals on questions relating to apprenticeship training. They provide mediation in the case of problems, determine the suitability of businesses and trainers, register the training contracts, administer examinations and issue certificates (DIHK, 2017). In Denmark, the tradition of social partnership in training provision is extensive, with social partners playing a central role in relation to both the content and organization of apprenticeships. National Trade Committees (*de faglige udvalg*) are the backbone of the system and consist of representatives from employer and employee associations; these are in charge of the learning programs, specializations, duration, structure, examinations, and other aspects of apprenticeship training. There are also Local Trade Committees (*de lokale uddannelsesudvalg*) that ensure close contact between the vocational colleges, the local community, and the particular local labor market needs (European Commission, 2016b).

In contrast, in India, industry associations are involved in apprenticeship provision in a very limited way (ILO & World Bank, 2013). In Egypt, the involvement of employers' collective organizations is also limited, except for the MKI dual-system program where investors' associations of mostly medium and large companies participate in the implementation of the program by providing the practical training component. When apprentices finish the training, they receive a certificate from the association and a diploma from the Ministry of Education. In 2010, approximately 56 percent of apprenticeship graduates stayed with the firm that trained them (Ministry of Education of Egypt, 2014).

South Africa, Australia, and England have employer collective bodies involved in apprenticeships but not as extensively as in Germany or Denmark. Tripartite Sector Education and Training Authorities (SETAs) in South Africa implement sector skills plans by starting learnerships, approving workplace skills plans from employers, disbursing the training levies payable by all employers, and watching over education and training in their sectors. SETAs include representatives from trade unions, employers' associations, the government, and professional bodies (Department of Labour, 2014). Industry Skills Councils in Australia are government-recognized and funded bodies representing employers in different sectors and participating in developing the skills and productivity of the sector's workforce. In England, the former structure of the Sector Skills Councils (SSCs) has largely been dismantled as government has removed funding from these bodies and has focused its attention on one-off, temporary clubs of employers (called Trailblazer



groups) to create the new apprenticeship standards (Keep & James Relly, 2016). Collective employer involvement in the provision and regulation of apprenticeships in England is very limited, not least because the bulk of provision is delivered by external independent training provider organizations rather than by the firms themselves (Keep & James Relly, 2016).

Overall, our analysis aligns with S.C. Wolter & Ryan's (2011) argument that countries that have not organically developed institutions for employer coordination and/or social partnership may face a relatively difficult task when seeking to expand apprenticeship provision. At the same time, countries with larger apprenticeship systems tend to have more elaborate structures for the institutional coordination of employers' collective efforts than those countries that have smaller systems. The existence of collective mechanisms may potentially incentivize employers to view apprentice training as an investment for the collective good. Such institutional structures, however, are historically determined within each country context, and are extremely difficult to construct from scratch. To date, there is a shortage of robust empirical evidence on the relative importance of different microeconomic and institutional incentives for engaging employers in apprenticeships.

## How can governments enhance some of these incentives?

Governments are in a position to encourage employers as well as learners to engage with apprenticeship. This section presents a number of these possible measures.

First, raising the attractiveness of apprenticeship may be linked with improving educational provision and E&T progression pathways, namely via:

- ensuring that vocational schools are in a position to provide high-quality school-based teaching and learning. Part of this can involve improving VET teacher training programs to ensure a high quality school-based E&T that is part of the apprenticeship provision
- ensuring that the qualifications system is flexible and allows individuals to move from one qualification to the next within the vocational route as well as from the vocational to the academic route

Second, employers may be incentivized to offer apprenticeships if the government

- provides optimal sets of financial and non-financial incentives to balance employer costs and benefits, e.g. supporting the training for in-company trainers, contributing to apprentice wages, or particular tax incentives
- cuts down on bureaucracy and the regulatory burden, especially when the system is government-led

All employer incentives need to be tailored to the different needs of SMEs and those of large firms. SMEs may require much more extensive support than large firms.

Third, the government can provide a public information exchange platform for employers offering apprentices, schools offering the training, and individuals looking for apprenticeships. Matching employers and potential apprentices is a complex and challenging task. New technology may have a role to play. One approach that could support this process is that of using digital technology, such as apps, for employers and potential apprentices to find out what is available in their field and locality. This has been used to limited effect in Wales, for example (BBC, 2017), and new developments will be used there to try to make it more effective and fit-for-purpose, using social media technology that may appeal to young people.

Fourth, the government should “promote and build the brand confidence of apprenticeships” (APPG, 2017) and one of the ways to do this is the effective communication on

- the benefits for firms from offering apprenticeships
- the benefits of participating in apprenticeships for individuals, in particular individuals from the currently under-represented age, gender, and ethnicity groups as well as under-represented geographical areas within the country
- the policy changes and the implications of these changes for firms and individuals
- the support structures / financial incentives available for employers and individuals to engage with apprenticeships.

An example of an effective public information campaign to raise the attractiveness of VET and apprenticeships was *Berufliche Bildung – praktisch unschlagbar* (Vocational Education and Training: practically unbeatable), which took place between 2011 and 2015 in Germany. The campaign was organized by the federal ministries of education and economic affairs for youth, parents, schools, and employers. The campaign included press

advertisements, public events, and social media, and helped to increase the awareness of the public of various vocational education opportunities for youth and adults (BMBF, 2016; Härtel, 2017).

Fifth, linked with the fourth point, the government can introduce firm branding schemes recognizing ‘learning enterprises’. This was done by the Norwegian government. The brand, that has its own logo, is registered for protection at the Norwegian Industrial Property Office. The Minister of Education and Research launched the brand in 2015 in a hair salon that had been offering apprenticeships since 1979. To become a ‘learning enterprise’ the firm has to follow pre-defined stipulations. The government started a PR campaign in newspapers and online marketplaces to promote companies that are recognized as ‘learning enterprises’. Such recognition may indirectly influence firm’s profit, as socially responsible companies are more likely to sell their products and services (CEDEFOP, 2016; Kuczera, 2017a).

Finally, governments can use other measures, such as skills competitions, to raise the attractiveness of VET and apprenticeships. Research has argued for the potential of events like WorldSkills competitions, for example, to affect the attractiveness of apprenticeship and therefore incentivize people to apply for and follow this route (see, for example, Chankseliani & James Relly (2016); Chankseliani, James Relly, & Laczik (2016); Chankseliani, James Relly, & Mayhew (2015); Chankseliani, James, & Mayhew (2015); James (2016); Mayhew, James, Chankseliani, & Laczik (2013); Wilde & James Relly (2015)). It has also been shown that the potential for promoting high quality learning at the workplace through preparation for WorldSkills is considerable (James & Holmes, 2012).

WorldSkills competitions currently feature 77 member organizations and countries. These 77 countries include those featured in this report. The broad aims of WorldSkills International and the competitions, which have taken place every two years since 1950, are to promote greater awareness of the contribution that skills and high standards of competence make to achieving economic success and individual fulfilment.

As well as WorldSkills, national skills competitions, such as the annual Finnish National Skills Competition ‘Taitaja’, have increased the popularity of VET in Finland (Stenström & Virolainen, 2014b).

## Concluding remarks

A fundamental assumption of the apprenticeship model is that there are benefits to both employers and individual learners. This section has highlighted some of the factors that make apprenticeships attractive to learners and employers. The links to the labor market and specifically to employers are a key challenge for creating, sustaining and maintaining apprenticeship systems, as well as for the task of researching them. As such, policy maker (and researcher) engagement with apprenticeship needs to pay close attention to the capacity and commitment of employers. Another key challenge for apprenticeship is that of the relative attractiveness of this pathway within E&T and labor market system for individuals.

Disincentives and incentives for potential apprentices and for employers considering getting involved may be entangled with each other, in competing or complementary ways. The most obvious example is wages, which may operate as an incentive for potential apprentices but as a disincentive for potential employers for whom they represent an additional cost to pay for an apprentice who will, at least initially, be less than fully productive.

Further, with regard to progression to additional education and higher education, this incentive may serve to compromise or dilute the apprentice ‘brand’. It is essential for the completion of an apprenticeship to serve a clear purpose in and of itself, rather than be seen as just a ‘stepping stone’ to higher education, for example. These competing incentives are also evident in the dual study programs (i.e. HE and apprenticeship combined) which are becoming more popular in Germany, with the danger of an “...insufficient combination of both worlds, the academic world and the world of work” (A. Wolter & Kerst, 2015, p. 521). As such the incentive of progression to additional education can be argued to compete with the incentive of building a fully-developed occupational identity through apprenticeship. This identity would become subsumed into the quest for a higher education degree, and potentially a work route at some distance from the occupational identity.

An example of complementary incentives would be systems where employers are engaged in apprenticeships at the collective sectoral level, and where there is a lower likelihood of skills training being mostly firm-specific. In such systems, individuals may find the skills and knowledge they acquire during apprenticeship training to be more portable, and thus supporting their progression into the E&T system as well as into the labor market, than in systems where there are fewer sectoral quality assurance mechanisms in place.

The use of an apprenticeship levy, such as was introduced in England in April 2017, can also be argued to be ambiguous in its incentivizing effects. Large employers who pay the levy (0.5 percent of payroll for employers in England with payroll costs of more than £3 million) will potentially want to get their money’s worth and reclaim what they contributed to the levy. This may lead to the training levy being spent in ways that may compromise the quality of learning, for example through existing forms of company training possibly being re-labelled as ‘apprenticeship’ in order to aid efforts to reclaim

levy payments. This may weaken the incentive of high quality training for potential apprentices. This is a further example of a potentially competing incentive, although it is as yet too early for research on the effects of the levy to be available.

These examples reflect the potentially unintended consequences of seeking to alter or enhance particular incentivizing features of the apprenticeship pathway. This is because of its entwinement, in all national contexts, with the wider educational, political and economic contexts and choices within which apprenticeships form only a part.

Finally, the policy purpose of apprenticeship in a specific context, such as Finland's use of apprenticeship as a vehicle for social inclusion, for example, may act as a disincentive if the apprentices sense that it is a model that aims to remove them from unemployment statistics, in much the same way as the now obsolete Youth Training Scheme in England, which provided vocational training for unemployed 16 to 17-year-olds (Bradley, 1995; Fuller & Unwin, 2003a).

As such, the links between the policy purpose of apprenticeship and the incentives on offer are pivotal in providing apprenticeships which will appeal to young people, their parents, employers and careers guidance counsellors in schools. The incentive of a positive choice to participate in an expansive learning pathway, with realistic prospects on completion, is far more effective than the 'second chance' narrative. The next chapter examines the question of policy purpose.

The background of the entire page is a complex, low-poly geometric pattern. It consists of numerous triangles of varying sizes and shades of orange, brown, and tan, creating a textured, crystalline effect. The colors range from light peach to deep, dark chocolate and near-black browns.

## Chapter 4

# Policy & Purpose

**This chapter reviews some of the central questions and issues that confront governments and policy makers in relation to apprenticeships.** The aim is not to try to provide a comprehensive overview, as this would require considerably more space than is available here, but rather to focus on some of the most important and fundamental choices.

Our starting point is that national situations and choices vary considerably. It can be argued that in relation to the starting point for the development of national apprenticeship policy, there are three broad categories of country:

1. Countries that currently either lack an apprenticeship system entirely or only have a very low level of provision that plays a marginal role within the overall national vocational education and training (VET) system (e.g. India, Egypt, Sweden, South Africa)
2. Countries that have a history of apprenticeship provision as a reasonably significant component in their VET system, but which have faced a decline in provision and may now wish to revitalise and perhaps expand provision (e.g. England)
3. Countries that have relatively large, well-established and vibrant apprenticeship systems, which they wish to maintain and perhaps expand incrementally, particularly into new occupational areas in response to technological change and new patterns of work (e.g. Australia, Germany, Denmark, and Switzerland).

Policy makers in each of these countries face different choices about how best to proceed. What follows seeks to explore those issues that need to be addressed if progress is to be made.

## **Where does apprenticeship sit within the broader spectrum of VET provision?**

Probably the most fundamental choice that currently confronts policy makers is the desired proportion (in terms of levels, occupations and learner volumes) of overall initial VET that apprenticeship is expected to cover. This choice is central because in some countries (including England and Australia) a policy discourse has developed wherein apprenticeship has acquired the characteristics of ‘magic dust’ which can be sprinkled on almost any vocational education and training problem. To put it another way, apprenticeship is sometimes seen as ‘the answer’ to what are often very vaguely or weakly specified policy issues. England has been a particularly extreme example of this tendency (Keep & James Relly, 2016; Keep & James, 2011).



Influencing the scale of policy expectations is central to achieving a realistic definition of who and what apprenticeship is for. In particular, what social and economic objectives is it assumed that apprenticeship is there to deliver, and how best is a balance between these two spheres of policy focus arrived at when there is a potential for tension between them? Any decision to afford priority to social inclusion objectives has far-reaching consequences. There is the potential for tension between wanting apprenticeship to be seen (by employers, young people, parents and wider society) as a rigorous, high status route; and also wanting to deploy it as a mechanism for operationalizing second chances, that also offers social inclusion goals for young people who have not flourished on the academic route and within mainstream schooling.

In Finland, for example, apprenticeship has been assigned a niche role focused largely on second chance, social inclusion objectives, with little attempt to see it as a broader, high quality route for large volumes of initial VET. In England, by contrast, there has been a tendency to try to pursue social inclusion and high status objectives simultaneously, with the overall result that to some extent neither outcome has been realized (Fuller & Unwin, 2003a).

Consequently, under the New Labour governments in the UK, while attempts were being made to expand apprenticeship provision and to position it as a relatively high status option for those seeking intermediate and technician level training, there was also a policy of offering an “apprenticeship guarantee” which meant the promise of a place to all young people who wanted one. The guarantee proved impossible to deliver, as the volume of apprenticeship places was (and still is) determined by the willingness of employers to provide them, a point to which this section returns, rather than by individual demand from young people, and the guarantee was quietly abandoned.

### ***The Issue of Relative Scale.***

These choices will in part reflect the overall capacity and size of the current and possible future apprenticeship system. As discussed in earlier chapters and outlined immediately above, the scale of apprenticeship provision and throughput relative to other forms of education and training varies enormously across countries (Lerman, 2017). The point at which a nation currently sits on this spectrum, will have a very significant impact on the options that are available for change and the timescale (see below) within which it can be realized.

It is also important to stress that apprenticeship cannot be thought about in isolation from other competing (for students and funding) streams of education and training provision. This spectrum includes:

1. Upper secondary schooling
2. Vocational colleges delivering learning at a range of levels, including sub-degree, (full and part-time)
3. Apprenticeship
4. Higher education institutions (delivering full and part-time)
5. Informal induction and on-the-job training provided by employers (usually without certification).

The relative weight placed on these different routes varies enormously between countries and also within them across different occupations and sectors. For example, in India, the fifth option matters and accounts for a relatively significant volume of provision (EY-FICCI, 2013; Liu & Finegold, 2017) and even in England this has until relatively recently been the main way in which many young people have entered lower waged employment.

This picture is not static over time. Many forces can act to change the locus of where initial VET for entry into a particular sector or occupation takes place, and in some instances at least this has meant a shift into or out of apprenticeships. For example, professionalization projects within a range of occupations have led towards the expansion of HE, the graduatization of entry level positions and the shifting of work-based routes from post-upper secondary level to post-degree (solicitors and accountants in England over the last 40 years would be an example of this).

At the same time, technological change can throw up new occupations and choices that have to be made about the most appropriate route by which new entrants will need to be educated and trained. Different countries will, depending on the relative strength, vibrancy and adaptability of their various routes, arrive at varying solutions. A classic example is ICT training. In Germany, after considerable effort, a highly successful apprenticeship route was developed to produce information and communication technology (ICT) technicians and workers (Steedman, Wagner, & Foreman, 2003). However, there is criticism in Germany of the time required to develop training regulations for new occupations in fast-moving fields of work. In the UK, the answer was seen as expansion of degree level provision in universities — a choice which has subsequently led to considerable dissatisfaction from many employers as to the suitability of the courses that have been designed and the relevance of the skills coming out of them (Shadbolt, 2016; Wakeham, 2016).

Put simply, given a finite (at any given moment) flow of young people requiring initial training and also a potentially finite volume of older workers seeking re-training or upskilling, apprenticeship is in competition with other routes and modes of provision. In countries where apprenticeship is currently very small, and caters to a minority, such as Finland, Sweden and South

Africa, expansion would mean taking students/learners off other routes; and in countries where apprenticeship has historically been a major route (such as Denmark, Germany and Switzerland), there is now increasing competition, partly from vocational colleges that can cater to skill needs up to sub-degree level, but also from the general phenomenon of expanded ('massified') higher education (Holmes & Mayhew, 2015, 2016).

This expansion of HE has become a major issue for German policy makers (Baethge & Wolter, 2015; A. Wolter & Kerst, 2015), but it is also a consideration in England and Australia (Fowler, 2017), and in countries such as China, Taiwan, South Korea and India in terms of the relative balance between all forms of non-university VET and mass public and private HE (EY-FICCI, 2013; Liu & Finegold, 2017; Sung & Raddon, 2017). In part, this reflects a societal and cultural perception of the relative status of the different routes, with HE appearing more prestigious to parents and young people, a situation that may be extremely difficult to modify. Thus in India, "skill development through vocational training has yet to achieve acceptance as a viable alternative to formal education" (EY-FICCI, 2013, p. 32), or as one commentator put it:

*There's a robotic fixation among parents to have their children go into higher education and a genuine apathy towards participation in vocational education. When it comes to encouraging young people to undertake vocational training, the natural position of many Indian parents is that they don't want their children to be plumbers or electricians because those jobs are seen as being for lower class citizens. (Evans, 2013, pp. 21-22)*

These kinds of cultural perceptions of vocational training, and at least a proportion of the jobs towards which it might lead, mean that in some countries parental and student aspiration tends to focus on degrees as the route to higher status, higher paid occupational routes. Moreover, once the scale of HE reaches a certain stage, and as more and more of the better paid and higher status jobs in the labor market become populated by graduates, an element of a self-fulfilling prophecy emerges. An assumption arises that while a degree will not necessarily prove to be a ticket to a good job, the absence of a degree will shut young people out of the competition across an ever-widening range of occupations and jobs. Such a belief may become increasingly rational (Brown, Lauder, & Ashton, 2011; Keep & Mayhew, 2004; Wolf, 2002).

At the same time, the attractiveness of mass HE to employers has become increasingly obvious. Employers can recruit graduates whose learning has been paid for out of general taxation and/or parental contributions or student loans. In other words, the direct financial costs to employers of a mass HE system are liable to be significantly lower than the direct costs of a large-scale apprenticeship system. With mass HE, many employers can now find graduates to fill entry level positions that a decade or two ago would have been taken by those leaving upper secondary education, and the notion of

a ‘graduate job’ has become a much less clearly delineated concept (Brown et al., 2011; Tholen, 2017). At the same time, graduate salaries have become much more dispersed, as graduates have cascaded down the labor market, so that the costs of employing graduates in medium skilled jobs has been reduced (Keep & Mayhew, 2004). In some cases university degree courses may not always deliver exactly the skills that would make the graduate job ready, but the main response to this (at least in Anglo-Saxon countries) has been for employers to demand greater efforts on the part of universities and other education providers to inculcate greater ‘employability’ skills in their graduates (Keep, 2012).

The main cost has been the emergence of a substantial number of graduates whose skills and learning are not being utilized to maximum effect by their employers (for the English evidence, Holmes & Mayhew (2015, 2016); Keep (2016)) and who find themselves trapped in low waged employment. Recent UK figures, using student learner records matched to individual tax records, indicate that no less than a quarter of all graduates, a decade after graduating were still had not earning £20,000 per annum (the median UK wage is about £27,000 per annum) and have therefore not reached the £21,000 per annum threshold for starting to repay their student loans (Department for Education, 2016). This is a double problem; 25 percent of graduates appear trapped in low paid employment, and as a result, the student loans system is in serious long-term danger of not being self-sustaining as insufficient numbers of student are able to repay their student debts.

In England, an emerging response is the concept of degree-level apprenticeships (Bishop & Hordern, 2017). Great hopes are being invested in the idea that employers and universities can co-design new forms of degree course wherein the student is an employee, their HE studies are undertaken part-time (via distance learning and blocks of off-the-job learning) and where learning on and through the job is an integrated element of the package (for an overview of company thinking on the benefits of this model, see Tant & Sherlock (2011)). The attractiveness to students is that they earn while learning, rather than racking up considerable levels of student debt through loans. Such a model builds, in part, on earlier traditions of sandwich degrees and also on a range of experiments with delivering HE in the workplace that were undertaken as a pilot workforce development program under the New Labour government (Keep, 2014). The numbers of such courses is currently still small, and in many cases confined to occupations, such as accounting technicians, where there is already a well-established model for a considerable amount of the training to be undertaken in the workplace (Eraut & Hirsh, 2007). It is too early to say how successful this new model will be, both in terms of delivering high quality learning outcomes and perhaps more importantly, in extending itself into a broad range of occupations and sectors. However, in countries where mass HE is now well established, or is liable to be the inevitable outcome of current policy developments, a policy

choice of critical importance will be working out the division of labor between apprenticeship and universities and other forms of tertiary education provider. As Fowler remarks in relation to the Australian situation: “there is a risk, that, if left to current policy settings, higher education will continue to steadily take over the top levels of VET” (Fowler, 2017, p. 25).

The final point to make is that, as has been hinted at above, policy makers do not start with a blank sheet of paper or an infinite and open array of options in terms of the relative weightings afforded to different routes and modes of learning. In reality, the future development of national E&T policy and the institutions required to deliver it are subject to a relatively high degree of path dependency. Cultural, historic, and structural economic and social norms and forces constrain choices in different ways in different countries (Bosch, 2017; Keep, 2006b, 2009). In many nations, the chances of being able to construct a policy pathway towards introducing a viable large-scale apprenticeship system are probably close to nil, not least because the available ‘space’ and student flows are already accounted for by existing modes of provision. In many instances the development of the supportive circumstances and structures required to provide the foundations of apprenticeship are also not possible.

## Who makes policy?

Before turning to look at some of the other key issues in the range of apprenticeship policy choices, it is important to first discuss, albeit relatively briefly, the questions of who makes policy on apprenticeships and who takes the lead within the policy making process? In essence, there are at least four potential models:

1. National (or regional) government and politicians (England, Egypt)
2. Government and employers (Australia)
3. Employers take the lead with other stakeholders in support (Switzerland)
4. Government, employers and a wider range of stakeholders cooperate and coordinate their activities, including trade unions and those involved in delivering the off-the-job element of the apprenticeship (Germany).

These different configurations of power and influence have a major impact on how decisions are made. For example, if government is the sole driving force in determining the major issues about apprenticeships (e.g. funding mechanisms, targets for apprenticeship numbers, how provision will be quality assured and monitored, and so on) then a top-down and less consensual approach is possible, as has been the case in English apprenticeship policy formation since the early 1990s.

Government ministers are able to determine the direction and rate of travel, and to seek to impose this on all the other actors. Although from time to time English policy makers have hankered after moving from model 1 to model 2, and even at a rhetorical level, to model 3 (what has been termed ‘employer leadership’ (Keep, 2015b), the reality is that the formation of apprenticeship policy has remained firmly located within national government, with minimal involvement of any other parties or points of view (Fuller & Unwin, 2003a; Keep, 2006b, 2009; Unwin, 2010). This means that active employer commitment to apprenticeship remains very limited in many instances, at least outside a core set of industries where there are long-standing traditions of apprenticeship delivery and where apprenticeship as a learning model delivers skills that cannot easily be acquired by other routes.

At the other end of the continuum, in countries like Germany there is a long-established and complex set of policy making and governance mechanisms that seek to balance and concert the interests of the different stakeholders via a social partnership model, which has proved to be one of the abiding strengths and resources that has sustained the system in the face of external challenges.

Social partnership models provide a set of institutions, relationships and traditions that support the activities they superintend, and help ensure that there are mechanisms to secure the active buy-in and ownership by those whose active participation is required to make the system work. In effect, co-ownership and co-production are institutionally encoded into the governance of the system.

Given these factors, changing from one model to another is liable to be a complex and difficult project and certainly not one that can be delivered on a rapid timescale. In particular, once government has established a tradition of being in the driving seat, it is liable to be hard for policy makers to let go, and for other parties to assume greater responsibility, not least because everyone has grown used to and potentially comfortable with ministers and civil servants making the key decisions.

The major downside locked into this model is that apprenticeship runs the strong danger of being just another government ‘training scheme’, ownership of which does not reside with employers or other non-governmental stakeholders (Fuller & Unwin, 2003a) and towards which real commitment is very limited outside of government. England would be a case in point here.



## Dealing with the temporal dimension — apprenticeship as a relatively slow growing delivery mechanism

One of the biggest tensions in contemporary education and training policy making across the globe is between the temporal horizons of policy makers, who often seek to initiate transformational change within the relatively short timescale set by the electoral cycle and the expectation of momentum and progress established by modern news media, and the reality of how that change can be designed and delivered in the real world (Ball, 2008; City and Guilds, 2014; Denham, 2016; Ilott, Norris, Randall, & Bleasdale, 2016; Keep, 2009; Norris & Adam, 2017).

This tension exists within most, if not all spheres of E&T policy, but is perhaps more acute within apprenticeship policy because reform objectives that encompass improvements in quality or quantity are ultimately reliant upon the willingness and capacity of employers, training providers and facilitators to deliver these — they cannot simply be mandated by government in the same way as changes to state schooling.

As a result, for developing countries, expanding apprenticeship is far harder to contrive than expanding schooling or higher education, particularly in terms of volume of provision (quality may be a tougher nut to crack across all routes). Apprenticeship is liable to be a slower growing option because, unlike HE, it is generally not possible to buy in overseas providers (as has happened with both HE and some forms of vocational education in wealthier developing countries) or overseas faculty to teach in domestic institutions. Employers operating in the country have to be able to provide more and/or better in-company training opportunities, and their ability to make adjustments to this is often more limited and slower than policy objectives and timescales seek to demand.

## Quality versus quantity

One of the key components of public management reforms across the globe (Ball, 2008) has been the use of targets to drive reforms (Adonis, 2012; Barber, 2008). In relation to education, these targets have often focused on expanding participation volumes in various forms of learning, and ministers have become used to being able to set expansion targets, often expressed in large round numbers (absolute or percentage) — for example, 50 percent participation of the 18 to 30 age cohort in HE, three million apprenticeship starts by 2020 (both examples taken from English policymaking). The problem is that it is easier to specify simple numerical targets that relate to volume and learner numbers, than it is to specify the quality, value and relevance of what is to be learned. Quantity tends to trump quality, not least because rapid expansion of volume often means having to cut corners on quality.



This presents real dangers to apprenticeship, since it runs the risk of ‘diluting the brand’ as, in search of rapid increases in volume, policy makers make compromises about the levels of learning, the quality and scale of both the on- and off-the-job components of learning, and the overall meaning attached to apprenticeship. In England, this has led to accusations that apprenticeship has become ‘a catch-all brand to cover all forms of work-based training’ (Fuller & Unwin, 2016, p. 15), as a large proportion of apprenticeship provision now covers learning leading to lower secondary (Level 2) equivalent qualifications, learners who are adult employees who have been working for the firm for several years before commencing an apprenticeship, and levels of off and on-the-job training that are variable and sometimes very low or even non-existent (Keep & James Relly, 2016).

## Occupational reach and identity

Another important consideration in thinking through what is possible in terms of national apprenticeship policy is the societal and legal status of different occupations and the cultural conceptions of what occupations and occupational identity and skill mean. To put it simply, some countries have long traditions of strong occupational identity that extend beyond a limited number of professions. They also possess labor market regulations that operate as some form of licence-to-practice regulation (people need certain qualifications and experience to practice in a given occupation or trade), for example, Germany, Denmark, and England in part. In nations with these characteristics designing and operating an apprenticeship system will generally be easier than in a country where expectations about the skills required to enter the bulk of employment outside elite professions are weak and vague, and where entry to such employment does not depend on having particular forms of learning experience or qualifications (Egypt, India, South Africa).

As research demonstrates very clearly (Brockmann et al., 2011; Fuller & Unwin, 2013; Green, 1998), within Europe different countries have different perceptions about the appropriate model of learning, but also about what levels and types of skills, knowledge and bodies of theory and understanding are required to become proficient in different occupations. England stands out as a country in which, outside of the traditional professions, notions of occupational knowledge and identity are, at best, hazy and ill-formed, with the consequence that the learning content of many vocational courses is narrow and more shallow than would be the case in other countries, such as Denmark, Germany and, for some courses, Australia. In particular, a strong element of general education is almost wholly absent (Brockmann et al., 2011).

As Fuller and Unwin (2013) explore, the absence of strong expectations about the breadth and depth of knowledge required to practise in many occupational areas, coupled with a relative absence of licence to practice regulation, has

meant that apprenticeships in England are often bereft of substantive learning outside a narrow set of entry-level competences, and are set at a lower level than would be normal elsewhere.

The lesson here is that if expectations about the skills and knowledge needed to enter into and practise within many jobs are low, and if qualifications are not required to achieve entry, then building and sustaining a high quality apprenticeship system, or indeed a high quality VET offering delivered via other means, will be hard to achieve.

## **Delivering policy ambition — the critical role of employers**

One key difference between apprenticeships and other forms of E&T provision is that apprenticeships require the co-operation and engagement of employers in order to deliver a high quality learning experience. Although schooling and tertiary classroom-based education can be enhanced by work experience, this is not necessarily essential to the educative process. By contrast an apprenticeship requires the young person to be a paid employee of the firm, and the assumption is normally that a significant proportion of the learning within the apprenticeship will take place within the workplace via on-the-job instruction and experiential learning in and through work. This has a number of major implications for policy, particularly when policy makers have significant ambitions to expand the scale of apprenticeship provision.

First, expansion requires the co-operation and participation of more employers, perhaps in sectors and occupations that hitherto have made limited (or no) recourse to apprenticeship to supply their skill needs. This is not always easy to contrive, as there may be good reasons why employers in that sector have tended to favor other routes to skill creation. If persuasion fails, then the only option is compulsion — a route that England has now embarked upon via its payroll levy on larger employers, which came into force in April 2017. How this experiment in seeking to bribe employers with their own money will play out is as yet extremely unclear (Keep & James Relly, 2016).

Second, split responsibility and costs means that co-ordination mechanisms are required to try to concert the off- and on-the-job elements of the learning package, and to bring together the classroom and workplace-based elements of the program (Couldrey & Loveder, 2017). As noted earlier, this means an institutional infrastructure that has the ability to communicate with, sound out, and co-ordinate the activity of employers and their interaction with those elements of the education system that provide the off-the-job learning component, usually on a sectoral or occupational basis.

The creation of such an infrastructure from scratch is not simple or easy, as experience in England has demonstrated over the last three or more decades. Indeed, one of the clearest lessons from English policy experience over the last 35 years or more is that national government has proved to be a very eager, if

not impatient, but ultimately inadequate architect of employer bodies (Keep, 2002, 2006b, 2015b). The result has been that effective collective organization at either a sectoral or local level has not emerged. Other countries that want to establish or significantly expand apprenticeship provision will also face that problem. If there is not a prior strong tradition of employer collective organization, often existing as a result of collective wage bargaining at sectoral level (Martin, 2017; Streeck, 1998) then sectoral and/or local employer bodies will have to be created, resourced and developed.

The fact that apprenticeship embraces learning within the workplace through a range of different on-the-job learning processes also means that apprenticeship policy needs to have a strong interest concerning the in-company capacity of the participating organizations to deliver high quality learning experiences. As a result, in most EU countries the national government offers support for training programs aimed at in-company trainers who are responsible for delivering the on-the-job elements of apprenticeship, and in some jurisdictions having appropriately trained trainers is a prerequisite before firms are allowed to take on apprentices. In other words, E&T policy and scrutiny extends into the firm and the workplace, which is a very different proposition from classroom based routes, where policy need only be concerned with and regulate what happens within formalized educational settings.

### ***Coping with competing demands.***

Another policy consideration that often seems to be lost when policy focuses on apprenticeships to the exclusion of other, broader policy priorities is the fact that there is a growing global trend for mainstream full-time education, both academic and vocational, to make increasing demands on the time and resources of employers. In large measure this is being driven by the realization that, in order to create the soft skills and generic competences that employers say they value when recruiting young entrants to the labor market, work experience and work placements are a vital component in creating such skills, and therefore schools, vocational colleges and universities are all seeking to gain work placements for their students.

## **Final thoughts**

The main message that this chapter seeks to send is that apprenticeship policy needs to be rooted in the art of the possible rather than in seeking to make transformational leaps. Apprenticeship is a relatively slow growing model of learning delivery and it demands considerable underpinning by supportive institutional structures and expectations, particularly in relation to employers.

Moreover, apprenticeship as an organizational form, and as a set of expectations about the role and possibilities of workplace learning, tends to be strongly rooted in the cultural, structural and historic circumstances of individual countries. Unlike higher education, it is a form of learning that is relatively difficult to transfer across national boundaries.

# Conclusion

**A**pprenticeship is a model of learning that allows for the integration of practice and theory in a way that provides cognitive and motivational benefits; facilitates the alignment of occupational requirements with the content of educational programs; and therefore results in improved opportunities for individual employment and better skills match across the economy (Bonnal, Mendes, & Sofer, 2002; European Commission, 2013). Despite a growing political interest in apprenticeship globally, it remains a relatively fragile mode of VET, not least because, as this report has argued, its reliance on the active participation and support of employers makes it more vulnerable than forms of learning that are classroom-based and which can be delivered by state-sponsored colleges acting without direct employer support. Even in countries where apprenticeship appears to be soundly embedded in the social and economic fabric, it has sometimes been conceived of as being ‘in crisis’. The German dual system, for example, has experienced waves of concern about its future sustainability over the last 30 years or more (see, for example, Culpepper & Finegold (2001)). The fragility of apprenticeship is even starker in countries such as Egypt and India, where informal learning plays a significant role, and formal apprenticeship numbers are relatively low.

There are a number of challenges facing apprenticeship research and apprenticeship provision and participation internationally. As this report has discussed, the statistical evidence on a variety of indicators related to apprenticeship entry, participation (of learners and employers), progression (to employment and to additional education), and completion is still rather limited and fragmented. This means that designing and conducting rigorous comparative and international studies is challenging. Therefore, many of the studies on apprenticeship are either qualitative studies focusing on a single country context or occupation, or broader theoretical pieces. The field of apprenticeship research does not benefit from the same quality, quantity and detail of data availability as general education and higher education. This is partly because of the added difficulty of collecting data from and with employers, and partly due to the marginalization of apprenticeship in policy discussions, as apprenticeship is generally overshadowed by policy-makers’ emphasis on general academic education and its role for preparing students for higher education (OECD, 2010). Hence, national and international efforts of data collection on apprenticeship are not as sophisticated as the efforts of data collection on other modes of learning.

Furthermore, although conceptualizations of apprenticeship as an effective model of learning emerge across a large body of literature, there is very little solid empirical evidence that presents a counterfactual, i.e. that compares learning and/or labor market outcomes for randomly selected individuals who take up apprenticeships as against those continuing with full-time upper-secondary education, pursuing institution-based vocational or academic qualifications, or directly joining the labor market. However, it can be argued that even such studies would be biased by uncontrolled occupation-specific factors, as “apprenticeship might be superior to other forms of learning for particular skills and occupations, but inferior for others” (S. C. Wolter & Ryan, 2011, p. 551).

Moving on to the challenges linked to apprenticeship provision and participation, the main challenges, some of which can also be viewed as opportunities, appear to be:

- the danger of political ambitions and policy objectives outstripping the capacity of the apprenticeship system to adapt and deliver what is being asked of it;
- the rise of mass HE as an alternative mechanism for delivering an ever-widening range of vocational and professional skills;
- the technological change and the rise of new occupations and skill sets, to which any apprenticeship system must adapt;
- the rise of self-employment;
- the embeddedness of apprenticeship within a set of historical, cultural and institutional circumstances that cannot easily be transported and replicated.

In terms of the first challenge, in some countries (England, Australia, Denmark and Germany) apprenticeship can be seen as the premier non-university learning 'brand'. Problems arise when governments seek to 'stretch' the brand in pursuit of greater volumes of activity and social inclusion goals, and as a consequence re-label other forms of activity as apprenticeship. Examples include lower levels of initial training, as in Australia's traineeships, or much of the newer Level 2 (lower secondary equivalent) apprenticeship provision in England. The danger is that as a result the brand becomes diluted and devalued. On the other hand, placing apprenticeship within the remit of the 'second chance' route, such as in Finland, may limit its potential contribution to wider skills challenges.

In terms of the threat posed by growth of mass HE, current attempts to construct and deliver graduate level (and above) apprenticeships in England and Germany offer one response, the effectiveness of which it is too early to assess. Another is to see apprenticeships as either an entry route into subsequent study in HE, or, in the opposite direction, apprenticeship as a means of adding on workplace and firm-specific skills subsequent to undertaking a degree.

The rise of mass HE, however, can also be viewed as an opportunity for apprenticeship participation. According to the degree inflation hypothesis (the practice of requiring job candidates to possess an HE degree for jobs that did not use to traditionally require a degree), when HE degrees are in large supply, the labor market value of degrees decreases (Collins, 1979, 2002; Goldin, 1999), and some of the data reported above on the significant proportion of UK graduates who are earning low wages a decade after graduating offers support to this hypothesis. This could make apprenticeship more attractive to learners, as well as increasing their value to employers on the labor market.



Another challenge is technological change and the rise of new occupations and skill sets, to which any apprenticeship system must adapt. There are two key issues. The first is whether the new skills and knowledge required is at a higher level than apprenticeship is conventionally delivered – for example, what is needed is at masters level – which may then tend to drive provision towards higher education institutions. Notwithstanding current moves in the UK to create more higher and degree (and even masters and above) level apprenticeships, there are questions about how easily this kind of provision can be delivered, particularly the on-the-job components, which may require a relatively intensive in-firm training/human resource development capability. The second concerns the ability of the apprenticeship system to develop new standards, qualifications and courses of instruction to meet new or changing skill needs. One of the standard criticisms of the German system has been its relative slowness to deliver change.

Technological change can also potentially be viewed as an opportunity. Technological advances can allow apprenticeships to become more important than institution-based VET. A rigorous study two decades ago estimated that in times of rapid technological change, on-the-job investment in human capital became more important relative to institution-based VET in Germany (Blechinger & Pfeiffer, 1996). Although the supply of and demand for apprenticeships is sensitive to technological change (Steedman, 2012), working life today requires learning about “local and pragmatic kinds of knowledge due to specialized, rapidly changing, and flexible forms of production”, and apprenticeship that combines on-the-job and institution-based components seems to be the most adapted form of learning for these new demands on knowledge (Nielsen & Pedersen, 2011, p. 563).

Some challenges facing apprenticeship provision relate to economic change and new forms of employment relationship. For example, the rise of self-employment in the UK (now amounting to one in six workers) raises issues about forms of training that are dependent upon employed rather than self-employed status. Other elements of change include technological advances and the rise of new occupations and skill sets, to which any apprenticeship system must adapt.

Lastly, implicit in much of the policy literature on VET is a tension between an impatient, globalized, generic policy discourse on the need for more and better skills, and the fact that apprenticeship is a model of learning that is rooted within a very specific set of historical, cultural and institutional circumstances that cannot easily be transported and replicated. International bodies such as the World Bank, OECD, and European Commission support the view that skills are central to future economic and social sustainability in the face of globalization and the pressures it brings (Ball, 2008). Apprenticeships often figure in strategies for coping with these skills challenges. However, the problem is that apprenticeship systems, where they already exist, are hard to expand with great rapidity while retaining quality; and, where they do not exist, or exist only as a small, niche route, creating a durable and effective



national apprenticeship system from scratch is exceedingly demanding. Even a country like England, which had a reasonably large, albeit often inflexible, apprenticeship system between the end of the Second World War and the late 1970s that created craft skills, has found it very difficult to revive this tradition after its collapse in the 1980s.

A final thought relates to the role of employers. They are, as has been argued at various points throughout this report, central to making apprenticeships work. Unlike other forms of VET, in apprenticeship employers are an integral co-producer of the learning. A vital question therefore concerns the future trajectory of employers' development of learning in and through work. Rapid technological change and the re-bundling of tasks and skills suggests that, to some extent at least, employers may have to contemplate creating more of their own skills in-house than has been the case in recent times in some countries. Relying on graduates and mass HE to satisfy their need for talent may not be enough when the skills cease to be generic and relate to the firm's own processes and technological requirements. Perhaps the idea of the higher level, degree and above apprenticeship has arrived at just the right time, when doubts are being expressed – in very different quarters and for very different reasons (Brown et al., 2011; Holmes & Mayhew, 2015, 2016; Wakeham, 2016) – about the overall utility of mass HE as a skills cure-all. More broadly, there are questions regarding where apprenticeship might fit within an evolving spectrum of employer provision of learning opportunities delivered within the workplace and through learning on-the-job, as well as the potential shift between non-formal, informal, and formal apprenticeship in certain contexts.

Given these challenges, what over-arching lessons for policy and practice can be extracted from this study? The first is that apprenticeship is not a form of policy magic dust that can be sprinkled over a range of problems. It is essential to be clear what role(s) apprenticeship is meant to play. In particular, is it primarily concerned with offering a relatively prestigious route to gaining certain kinds of skill, or is it seen as a social inclusion mechanism that offers a second chance or safety net for those who have failed to prosper within classroom-based learning settings? Evidence from England suggests that apprenticeship struggles if attempts to combine these two objectives are pursued in tandem.

It also helps if those in charge of superintending apprenticeship policy have a clear understanding of which levels and types of skills for which occupations and sectors of employment apprenticeship is meant to be catering in the context of their national labor market. This matters because without a relatively strong, collectively held (among employers) notion of occupational identity, apprenticeships often struggle to operate effectively (Brockmann et al., 2011; Fuller & Unwin, 2013). It is also the case that apprenticeships work best where at least some of the skills required in the sector or occupation are demonstrably better learned in and through work rather than the classroom.

The second overall conclusion is linked to the first, in that it is clear that apprenticeships are harder and more complex to provide than classroom-based forms of skill acquisition. The reason for this is simple — they require the active support and participation of employers. Firms will need to bear the wage costs of employing the person who is learning, and they will also need to help design the overall package of learning and to supervise and provide the on-the-job elements of this. To put it another way, apprenticeships are a form of provision that demands partnership, between state (at some level), employers and those who are providing the off-the-job element. This in turn has implications for the governance of apprenticeships — at national, sectoral/occupational and sometimes local levels. Employers need to be willing to cooperate with one another and with external agencies, and they should be involved in the governance process.

The third, and final overall conclusion is that apprenticeship systems, particularly if they are not intended to cater for a small minority of students or fulfil a niche role (as in Finland), are very hard to introduce. Constructing a mass apprenticeship system from scratch, where none has existed previously, is liable to be a daunting task. Besides the issues reviewed above, establishing an incentive structure for young people, their parents, employers and the state that would support a new apprenticeship system would be difficult and complicated given pre-existing and probably long-established existing incentives.

## Glossary

**Apprenticeship:** Apprenticeship is a model of learning for an agreed duration that formally combines work-based training (periods of practical work experience at a workplace) with institution-based education (periods of theoretical/practical education followed in a school, college, or training center) and that is regulated by a contract/agreement between apprentice and their employer, provides remuneration for the apprentice, and leads to a nationally recognized qualification/certificate upon successful completion

**Collective employer structures:** Institutions such as sectoral associations, organizations, or chambers that bring employers of waged labor together to seek to coordinate the behaviour and represent the interests of their members firms

**Community of practice:** A group of individuals who share a craft or a profession

**Completion rate:** The percentage of those completing from those who started an apprenticeship

**Degree inflation:** The practice of requiring job candidates to possess a higher education degree when the job type did not traditionally require a degree

**Dual system:** A system where apprenticeship involves two learning venues, usually an educational institution and a workplace, as well as possibly two different funding streams

**Employer ownership:** The extent to which employers 'buy in', have a meaningful stake and are involved in and/or determine relevant decision-making processes

**Participation/enrolment statistics:** Calculations of the numbers of people taking part/being enrolled in apprenticeship

**Workplace socialization:** The process of learners adjusting to the demands, expectations and behavioural norms of their place of work

# Appendices

## Appendix 1. List of countries not offering formal apprenticeships

American Samoa	Gabon	Peru
Andorra	Georgia	Qatar
Antigua & Barbuda	Gibraltar	Russian Federation
Armenia	Guadeloupe	San Marino
Aruba	Guatemala	São Tome & Principe
Belarus	Guinea	Senegal
Bolivia	Guinea-Bissau	Serbia
Burkina Faso	Haiti	Seychelles
Burundi	Hong Kong SAR, China	Sierra Leone
Cabo Verde	Iraq	Somalia
Cambodia	Kazakhstan	South Sudan
Cameroon	Kenya	St Kitts & Nevis
Central African Republic	Kiribati	St Martin (French Part)
Chad	Korea, Dem. People's	Sudan
Comoros	Rep	Suriname
Congo, Dem. Rep.	Kosovo	Tajikistan
Congo, Rep.	Kuwait	Taiwan, China
Cook Islands	Kyrgyz Republic	Timor-Leste
Costa Rica	Laos	Togo
Cuba	Lesotho	Turkmenistan
Curaçao	Libya	Tuvalu
Djibouti	Macedonia	United Arab Emirates
Equatorial Guinea	Mali	Uruguay
French Polynesia	Moldova	Uzbekistan
French Southern Territories	Montenegro	Vanuatu
	Panama	Venezuela
	Paraguay	Yemen

## Appendix 2. Countries offering apprenticeships, with the date of the source of data

Pakistan	2017	<a href="http://www.tevta.gop.pk/img/successBygrapg/apprentice-popup.png">http://www.tevta.gop.pk/img/successBygrapg/apprentice-popup.png</a>
Channel Islands	2017	<a href="https://www.gov.gg/apprenticeships">https://www.gov.gg/apprenticeships</a>
Vietnam	2017	<a href="http://www.bosch.com.vn/en/vn/newsroom_11/news_11/news-detail-page_48576.php">http://www.bosch.com.vn/en/vn/newsroom_11/news_11/news-detail-page_48576.php</a>
Grenada	2017	<a href="http://www.nowgrenada.com/2017/04/marep-graduates-second-vocational-skills-training-group/">http://www.nowgrenada.com/2017/04/marep-graduates-second-vocational-skills-training-group/</a>
Singapore	2017	<a href="http://www.straitstimes.com/singapore/education/unisim-and-sit-to-launch-apprenticeship-degree-programmes">http://www.straitstimes.com/singapore/education/unisim-and-sit-to-launch-apprenticeship-degree-programmes</a>
Azerbaijan	2017	<a href="https://www.britishcouncil.az/en/programmes/education-society/Access-to-Hospitality-and-Apprenticeship-Scheme-Project">https://www.britishcouncil.az/en/programmes/education-society/Access-to-Hospitality-and-Apprenticeship-Scheme-Project</a>
Bermuda	2017	<a href="http://www.royalgazette.com/news/article/20170206/apprentices-ready-to-go-high-speed">http://www.royalgazette.com/news/article/20170206/apprentices-ready-to-go-high-speed</a>
Nicaragua	2017	email from Dave Boone (from ESVO)
United States of America	2016	<a href="https://www.doleta.gov/OA/data_statistics.cfm">https://www.doleta.gov/OA/data_statistics.cfm</a>
India	2016	<a href="http://mhrdnats.gov.in/">http://mhrdnats.gov.in/</a>
Sweden	2016	<a href="https://cumulus.cedefop.europa.eu/files/vetelib/2016/2016_CR_SE.pdf">https://cumulus.cedefop.europa.eu/files/vetelib/2016/2016_CR_SE.pdf</a>
Northern Ireland	2016	<a href="https://www.economy-ni.gov.uk/sites/default/files/publications/economy/AppsNI-2013-Bulletin-Feb-17.pdf">https://www.economy-ni.gov.uk/sites/default/files/publications/economy/AppsNI-2013-Bulletin-Feb-17.pdf</a>
Côte d'Ivoire	2016	<a href="https://www.povertyactionlab.org/fr/evaluation/impacts-public-apprenticeship-program-c%C3%B4te-divoire">https://www.povertyactionlab.org/fr/evaluation/impacts-public-apprenticeship-program-c%C3%B4te-divoire</a>
Liberia	2016	<a href="https://prospectsyouth.files.wordpress.com/2016/05/prospects-practice-paper-no-3-prospects-apprenticeship-programme.pdf">https://prospectsyouth.files.wordpress.com/2016/05/prospects-practice-paper-no-3-prospects-apprenticeship-programme.pdf</a>
Guam	2016	<a href="http://www.guampdn.com/story/news/2016/10/24/apprentice-program-expand-via-grant/92660208/">http://www.guampdn.com/story/news/2016/10/24/apprentice-program-expand-via-grant/92660208/</a>
Myanmar	2016	<a href="http://www.cvt-myanmar.org/wp-content/uploads/2014/06/20161009-Jahresbericht-deutsch.pdf">http://www.cvt-myanmar.org/wp-content/uploads/2014/06/20161009-Jahresbericht-deutsch.pdf</a>
Macao SAR, China	2016	<a href="http://www.dsal.gov.mo/download/pdf/publicity_information/activity_report/2016.pdf">http://www.dsal.gov.mo/download/pdf/publicity_information/activity_report/2016.pdf</a>
Bahamas	2016	<a href="http://www.thenassauguardian.com/news/65122-22-mil-for-new-jobs-program">http://www.thenassauguardian.com/news/65122-22-mil-for-new-jobs-program</a>
Dominica	2016	<a href="http://dominicanewsonline.com/news/homepage/news/general/thirty-graduate-from-apprenticeship-program/">http://dominicanewsonline.com/news/homepage/news/general/thirty-graduate-from-apprenticeship-program/</a>
Albania	2016	<a href="https://www.youtube.com/watch?v=y76y1tfmWok">https://www.youtube.com/watch?v=y76y1tfmWok</a>
El Salvador	2016	<a href="http://www.sparkassenstiftung.de/en/media-publications/news/news-detail/datum/2016/08/19/el-salvador-in-der-finanzgruppe-fedecredito-startet-die-zweite-generation-mit-der-dualen-berufsaus.html">http://www.sparkassenstiftung.de/en/media-publications/news/news-detail/datum/2016/08/19/el-salvador-in-der-finanzgruppe-fedecredito-startet-die-zweite-generation-mit-der-dualen-berufsaus.html</a>
Germany	2015	<a href="https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/BildungForschungKultur/BeruflicheBildung/Tabellen/AzubiAusbildungsbereich.html">https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/BildungForschungKultur/BeruflicheBildung/Tabellen/AzubiAusbildungsbereich.html</a>
England	2015	<a href="http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06113">http://researchbriefings.parliament.uk/ResearchBriefing/Summary/SN06113</a>
Australia	2015	<a href="https://www.ncver.edu.au/data/data/infographics/apprentices-and-trainees-2015-infographic">https://www.ncver.edu.au/data/data/infographics/apprentices-and-trainees-2015-infographic</a>
Wales	2015	<a href="http://dera.ioe.ac.uk/24822/1/151125-further-education-work-based-learning-community-learning-2014-15-provisional-en.pdf">http://dera.ioe.ac.uk/24822/1/151125-further-education-work-based-learning-community-learning-2014-15-provisional-en.pdf</a>
Saudi Arabia	2015	<a href="http://www.saudiaramco.com/content/dam/Publications/facts-and-figures/FF-2015-SaudiAramco-English.pdf">http://www.saudiaramco.com/content/dam/Publications/facts-and-figures/FF-2015-SaudiAramco-English.pdf</a>
Afghanistan	2015	<a href="http://wadsam.com/afghan-business-news/enrollment-of-afghan-apprentices-in-technical-and-vocational-institutes-in-mazar-and-kabul-232/">http://wadsam.com/afghan-business-news/enrollment-of-afghan-apprentices-in-technical-and-vocational-institutes-in-mazar-and-kabul-232/</a>
Jamaica	2015	<a href="http://www.moey.gov.jm/sectoral-presentation-2015-2016">http://www.moey.gov.jm/sectoral-presentation-2015-2016</a>
Romania	2015	<a href="https://www.google.co.uk/l?sa=t&amp;rct=j&amp;q=&amp;esrc=s&amp;source=web&amp;cd=3&amp;cad=rja&amp;uact=8&amp;ved=0ahUKEwj3MivyfDUAhWNLlAKHQHqBjsQFggzMAI&amp;url=http%3A%2F%2Fsgg.gov.ro%2Fdocs%2FFile%2FUPP%2Fdoc%2Fanaliza_impact%2FRIA%2520Pilot%2520Project%2520Report%2520-%2520Apprenticeship%2520System%2520in%2520Romania.docx&amp;usg=AFQjCNE5G1dnEKxdO2bJz4C5zEar3GCogw">https://www.google.co.uk/l?sa=t&amp;rct=j&amp;q=&amp;esrc=s&amp;source=web&amp;cd=3&amp;cad=rja&amp;uact=8&amp;ved=0ahUKEwj3MivyfDUAhWNLlAKHQHqBjsQFggzMAI&amp;url=http%3A%2F%2Fsgg.gov.ro%2Fdocs%2FFile%2FUPP%2Fdoc%2Fanaliza_impact%2FRIA%2520Pilot%2520Project%2520Report%2520-%2520Apprenticeship%2520System%2520in%2520Romania.docx&amp;usg=AFQjCNE5G1dnEKxdO2bJz4C5zEar3GCogw</a>
Slovak Rep.	2015	<a href="http://www.cedefop.europa.eu/en/publications-and-resources/publications/4150">http://www.cedefop.europa.eu/en/publications-and-resources/publications/4150</a>
Thailand	2015	<a href="http://thailand.ahk.de/fileadmin/ahk_thailand/GTDEE/Organisations/GTDEE_Summary_Report_2013-2016_All_Culminating_Report.pdf">http://thailand.ahk.de/fileadmin/ahk_thailand/GTDEE/Organisations/GTDEE_Summary_Report_2013-2016_All_Culminating_Report.pdf</a>
British Virgin Islands	2015	<a href="http://www.bvi.gov.vg/media-centre/technical-apprenticeship-programme-graduates-27">http://www.bvi.gov.vg/media-centre/technical-apprenticeship-programme-graduates-27</a>

Nigeria	2015	<a href="http://m.nigeria.diplo.de/Vertretung/nigeria/en/06_20Wi_2C_20Wz/Wz/DVT__firstphase.html">http://m.nigeria.diplo.de/Vertretung/nigeria/en/06_20Wi_2C_20Wz/Wz/DVT__firstphase.html</a>
Canada	2014	<a href="http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/educ66a-eng.htm">http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/educ66a-eng.htm</a>
South Africa	2014	<a href="https://www.dhet.gov.za/DHET%20Statistics%20Publication/Statistics%20on%20Post-School%20Education%20and%20Training%20in%20South%20Africa%202015.pdf">https://www.dhet.gov.za/DHET%20Statistics%20Publication/Statistics%20on%20Post-School%20Education%20and%20Training%20in%20South%20Africa%202015.pdf</a>
Switzerland	2014	<a href="https://www.sbf.admin.ch/dam/sbf/en/dokumente/2017/04/Fakten_Zahlen_BB2017.pdf.download.pdf/Fakten_Zahlen_BB2017_en.pdf">https://www.sbf.admin.ch/dam/sbf/en/dokumente/2017/04/Fakten_Zahlen_BB2017.pdf.download.pdf/Fakten_Zahlen_BB2017_en.pdf</a>
Finland	2014	<a href="http://www.opf.fi/english/publications/2016/key_figures_on_apprenticeship_training_in_finland">http://www.opf.fi/english/publications/2016/key_figures_on_apprenticeship_training_in_finland</a>
Egypt	2014	<a href="http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u24/Egypt%20Country%20Report_o.pdf">http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u24/Egypt%20Country%20Report_o.pdf</a>
Croatia	2014	<a href="http://ec.europa.eu/eurostat/documents/2995521/7564100/3-18072016-AP-EN.pdf/88d7d902-9261-491e-9a3a-23acd4ad3fd6">http://ec.europa.eu/eurostat/documents/2995521/7564100/3-18072016-AP-EN.pdf/88d7d902-9261-491e-9a3a-23acd4ad3fd6</a> <a href="http://www.refernet.hr/media/1087/apprenticeship-doc.pdf">http://www.refernet.hr/media/1087/apprenticeship-doc.pdf</a>
Spain	2014	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Bangladesh	2014	<a href="http://bdplatform4sdgs.net/2017/03/08/the-power-of-apprenticeships/">http://bdplatform4sdgs.net/2017/03/08/the-power-of-apprenticeships/</a> <a href="http://www.brac.net/sdp">http://www.brac.net/sdp</a>
Malawi	2014	<a href="http://www.teveta.mw/index.php/downloads/TEVET%20ANNUAL%20REPORT%202014_2015_FINAL.compressed.pdf/detail">http://www.teveta.mw/index.php/downloads/TEVET%20ANNUAL%20REPORT%202014_2015_FINAL.compressed.pdf/detail</a>
Korea Rep	2014	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Lithuania	2014	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Bahrain	2014	<a href="http://www.niitbah.com/news.php?newsid=6">http://www.niitbah.com/news.php?newsid=6</a> <a href="http://www.niitbah.com/news.php?newsid=7">http://www.niitbah.com/news.php?newsid=7</a> <a href="https://pt.slideshare.net/niitbah/presentation-of-niit-bahrain-march-2014">https://pt.slideshare.net/niitbah/presentation-of-niit-bahrain-march-2014</a>
Samoa	2014	<a href="http://www.mcil.gov.ws/images/Forms/csu/Corprate%20Docs/Annual%20Report/2014-2015/MCIL%20AR%20201415-ENG%20Final.pdf">http://www.mcil.gov.ws/images/Forms/csu/Corprate%20Docs/Annual%20Report/2014-2015/MCIL%20AR%20201415-ENG%20Final.pdf</a>
France	2013	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Argentina	2013	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Mexico	2013	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Portugal	2013	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Scotland	2013	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Ireland	2013	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Lebanon	2013	<a href="http://www.cedefop.europa.eu/el/publications-and-resources/presentations/apprenticeship-low-and-middle-income-countries-ways">http://www.cedefop.europa.eu/el/publications-and-resources/presentations/apprenticeship-low-and-middle-income-countries-ways</a>
Belize	2013	<a href="http://edition.channel5belize.com/archives/88560">http://edition.channel5belize.com/archives/88560</a> <a href="https://www.facebook.com/pg/kayap.belize/about/?ref=page_internal">https://www.facebook.com/pg/kayap.belize/about/?ref=page_internal</a>
Solomon Islands	2013	<a href="http://research.acer.edu.au/cgi/viewcontent.cgi?article=1023&amp;context=transitions_misc">http://research.acer.edu.au/cgi/viewcontent.cgi?article=1023&amp;context=transitions_misc</a>
Benin	2013	<a href="http://www.gret.org/projet/pafpa-benin-mauritanie/">http://www.gret.org/projet/pafpa-benin-mauritanie/</a>
St Lucia	2013	<a href="http://www.nicejobs.govt.lc/images/nice_at_a_glance.pdf">http://www.nicejobs.govt.lc/images/nice_at_a_glance.pdf</a>
Turkey	2012	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Angola	2012	<a href="http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u26/Angola%20Country%20Report.pdf">http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u26/Angola%20Country%20Report.pdf</a>
Italy	2012	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a> ; <a href="https://cumulus.cedefop.europa.eu/files/vetelib/2015/ReferNet_IT_2014_WBL.pdf">https://cumulus.cedefop.europa.eu/files/vetelib/2015/ReferNet_IT_2014_WBL.pdf</a>
Denmark	2012	<a href="ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en</a>
Bulgaria	2012	<a href="ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en</a>
Norway	2012	<a href="https://www.ssb.no/en/utdanning/artikler-og-publikasjoner/_attachment/162224?ts=1446e2e4128">https://www.ssb.no/en/utdanning/artikler-og-publikasjoner/_attachment/162224?ts=1446e2e4128</a>
Morocco	2012	<a href="http://unesdoc.unesco.org/images/0023/002317/231799e.pdf">http://unesdoc.unesco.org/images/0023/002317/231799e.pdf</a>

## Appendices

Sri Lanka	2012	<a href="http://www.youthmin.gov.lk/web/index.php?option=com_content&amp;view=article&amp;id=178&amp;Itemid=233&amp;lang=en">http://www.youthmin.gov.lk/web/index.php?option=com_content&amp;view=article&amp;id=178&amp;Itemid=233&amp;lang=en</a>
Estonia	2012	<a href="http://ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en</a>
Philippines	2012	<a href="http://www.tesda11.com/uploaded/Financial%20Plan%202013%20BED%202A%20PPM%20PP.pdf">http://www.tesda11.com/uploaded/Financial%20Plan%202013%20BED%202A%20PPM%20PP.pdf</a>
Liechtenstein	2012	<a href="http://www.llv.li/files/as/fl-in-zahlen-englisch-internet.pdf">http://www.llv.li/files/as/fl-in-zahlen-englisch-internet.pdf</a>
Mauritius	2012	<a href="http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u26/Mauritius_Country_Report.pdf">http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u26/Mauritius_Country_Report.pdf</a>
Greenland	2012	<a href="http://naalakkersuisut.gl/-/media/Nanoq/Files/Attached%20Files/Uddannelse/Engelsk/The%20Education%20Plan%20II%20of%20the%20Government%20of%20Greenland.pdf">http://naalakkersuisut.gl/-/media/Nanoq/Files/Attached%20Files/Uddannelse/Engelsk/The%20Education%20Plan%20II%20of%20the%20Government%20of%20Greenland.pdf</a>
Bhutan	2012	<a href="http://thebhutanese.bt/11th-plan-needs-to-create-140000-jobs/">http://thebhutanese.bt/11th-plan-needs-to-create-140000-jobs/</a>
Trinidad & Tobago	2012	<a href="http://www.cpahq.org/cpahq/cpadocs/Wade-Paper%20on%20Tackling%20Youth%20Unemployment_58th%20CPC.pdf">http://www.cpahq.org/cpahq/cpadocs/Wade-Paper%20on%20Tackling%20Youth%20Unemployment_58th%20CPC.pdf</a>
Ecuador	2012	<a href="https://www.ituc-csi.org/ecuador-s-informal-workers-receive">https://www.ituc-csi.org/ecuador-s-informal-workers-receive</a>
Austria	2011	<a href="http://ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en</a>
New Zealand	2011	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Poland	2011	<a href="https://cumulus.cedefop.europa.eu/files/vetelib/2012/2012_CR_PL.pdf">https://cumulus.cedefop.europa.eu/files/vetelib/2012/2012_CR_PL.pdf</a>
Czech Republic	2011	<a href="http://ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=11348&amp;langId=en</a>
Tunisia	2011	<a href="https://www.oecd.org/countries/tunisia/Support-Graduate-Tunisia-Final-HD.pdf">https://www.oecd.org/countries/tunisia/Support-Graduate-Tunisia-Final-HD.pdf</a>
Ghana	2011	<a href="http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u24/Ghana%20Country%20Report_0.pdf">http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u24/Ghana%20Country%20Report_0.pdf</a>
Iceland	2011	<a href="https://cumulus.cedefop.europa.eu/files/vetelib/2015/ReferNet_IS_2014_WBL.pdf">https://cumulus.cedefop.europa.eu/files/vetelib/2015/ReferNet_IS_2014_WBL.pdf</a>
Rwanda	2011	<a href="https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Rwanda%20-%20Skills%20Employability%20and%20Entrepreneurship%20Programme%20%28SEEP%29%20-%20Appraisal%20Report.pdf">https://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Rwanda%20-%20Skills%20Employability%20and%20Entrepreneurship%20Programme%20%28SEEP%29%20-%20Appraisal%20Report.pdf</a>
Papua New Guinea	2011	<a href="http://research.acer.edu.au/cgi/viewcontent.cgi?article=1021&amp;context=transitions_misc">http://research.acer.edu.au/cgi/viewcontent.cgi?article=1021&amp;context=transitions_misc</a>
Madagascar	2010	<a href="https://www.ifad.org/documents/10180/94586ce7-67d4-4be6-a5ea-b8a43ee4faed">https://www.ifad.org/documents/10180/94586ce7-67d4-4be6-a5ea-b8a43ee4faed</a>
Zimbabwe	2010	<a href="http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u24/Zimbabwe%20Country%20Report_0.pdf">http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u24/Zimbabwe%20Country%20Report_0.pdf</a>
Japan	2010	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Ethiopia	2009	<a href="https://www.theigc.org/wp-content/uploads/2014/09/Krishnan-Shaorshadze-2013-Working-Paper.pdf">https://www.theigc.org/wp-content/uploads/2014/09/Krishnan-Shaorshadze-2013-Working-Paper.pdf</a>
Algeria	2009	<a href="http://eacea.ec.europa.eu/tempus/participating_countries/documents/13_algeria_fr.pdf">http://eacea.ec.europa.eu/tempus/participating_countries/documents/13_algeria_fr.pdf</a>
Brazil	2009	<a href="https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf">https://www.oecd.org/els/emp/Youth%20questionnaire%20country%20responses-Compilation1.pdf</a>
Netherlands	2009	<a href="http://ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en</a>
Hungary	2009	<a href="http://ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en</a>
Belgium	2009	<a href="http://ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en</a>
Greece	2009	<a href="http://ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en</a>
Indonesia	2009	<a href="http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/publication/wcms_119173.pdf">http://www.ilo.org/wcmsp5/groups/public/---asia/---ro-bangkok/---ilo-jakarta/documents/publication/wcms_119173.pdf</a>
Luxembourg	2009	<a href="http://ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en</a>
Malta	2009	<a href="http://ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en</a>
Latvia	2009	<a href="http://ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en</a>
Cyprus	2009	<a href="http://ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en">ec.europa.eu/social/BlobServlet?docId=7717&amp;langId=en</a>
Jordan	2007	<a href="http://www.etf.europa.eu/eventsmgmt.nsf/(getAttachment)/13AD8F52774785E9C125731E004E92E3/\$File/Overview_of_the_VET_System_Jordan_Abdalla_020707.pdf">http://www.etf.europa.eu/eventsmgmt.nsf/(getAttachment)/13AD8F52774785E9C125731E004E92E3/\$File/Overview_of_the_VET_System_Jordan_Abdalla_020707.pdf</a>



West Bank & Gaza	2007	<a href="http://www.etf.europa.eu/eventsmgmt.nsf/(getAttachment)/58BB821C41FD143FC125731E004B3138/\$File/Apprenticeship%20in%20Palestinian%20TVET%20System%20-%20WGBS%20-%20Kuhail_020707.pdf">http://www.etf.europa.eu/eventsmgmt.nsf/(getAttachment)/58BB821C41FD143FC125731E004B3138/\$File/Apprenticeship%20in%20Palestinian%20TVET%20System%20-%20WGBS%20-%20Kuhail_020707.pdf</a>
Israel	2006	<a href="http://www.etf.europa.eu/eventsmgmt.nsf/(getAttachment)/7F20DC9B12A08BCCC125731E004BC9FC/\$File/APPRENTICESHIP_SYSTEM_IN%20ISRAEL_Levinson_020707.pdf">http://www.etf.europa.eu/eventsmgmt.nsf/(getAttachment)/7F20DC9B12A08BCCC125731E004BC9FC/\$File/APPRENTICESHIP_SYSTEM_IN%20ISRAEL_Levinson_020707.pdf</a>
Chile	2006	p. 200 in <a href="https://books.google.co.uk/books?id=EUDIAAAQBAJ&amp;pg=PA199&amp;lpg=PA199&amp;dq=chile+apprenticeships&amp;source=bl&amp;ots=JIGc4Q-5V5&amp;sig=Puwk6MWJ9mRO4XpRXxBrJ_MQ-I4&amp;hl=en&amp;sa=X&amp;ved=0ahUKEwiOm5S5rcDUAhUKBMAKHYYuiB5gQ6AEIOjAE#v=onepage&amp;q=chile%20apprenticeships&amp;f=false">https://books.google.co.uk/books?id=EUDIAAAQBAJ&amp;pg=PA199&amp;lpg=PA199&amp;dq=chile+apprenticeships&amp;source=bl&amp;ots=JIGc4Q-5V5&amp;sig=Puwk6MWJ9mRO4XpRXxBrJ_MQ-I4&amp;hl=en&amp;sa=X&amp;ved=0ahUKEwiOm5S5rcDUAhUKBMAKHYYuiB5gQ6AEIOjAE#v=onepage&amp;q=chile%20apprenticeships&amp;f=false</a>
Botswana	2005	<a href="http://opus.bath.ac.uk/50948/1/Ian_Morris_Research_Thesis_idm_july_2015.pdf">http://opus.bath.ac.uk/50948/1/Ian_Morris_Research_Thesis_idm_july_2015.pdf</a>
Fiji	2003	<a href="http://www.ilo.org/ifpdial/information-resources/national-labour-law-profiles/WCMS_158895/lang--en/index.htm">http://www.ilo.org/ifpdial/information-resources/national-labour-law-profiles/WCMS_158895/lang--en/index.htm</a>

Appendix 3. Overview of key features of apprenticeship in the eight selected countries

Country	Participation in apprenticeship per 1000 in the labor force	Age of apprentices	Historical context	Particular features
Australia	22	Mixed model of younger and older apprentices	Introduced in 1901	The conflation of apprenticeships and traineeships in the data provision make it difficult to separate issues related to each type of provision
Denmark	47	Mixed model of younger and older apprentices	Dates back to the Middle Ages, with ongoing changes	Strength and large scale of the dual system in Denmark
Egypt	1	Predominantly school leavers	Formal apprenticeship provision dates back to the 1950s	The strength and popularity of the higher education route, the institutional vocational routes, as well as informal apprenticeship, make it difficult for apprenticeship to flourish
England	32	Mixed model of younger and older learners	Origins in the Middle Ages, with a long hiatus before the more recent apprenticeships were introduced	Policy busyness in terms of rapid and frequent policy change involving apprenticeship
Finland	18	The majority of apprentices are over 25	Apprenticeship relatively recent, with expansion 2000-2012	Generally oriented to adult learners, seen as a ‘second chance’ route
Germany	31	Predominantly school leavers	Dates back to the Middle Ages, with the Vocational Education and Training Law of 1969 establishing the tenets of the current system	The established nature of the ‘Dual System’, and the powerful role played by stakeholders including employer bodies and trade unions
India	1	Predominantly school leavers	Relatively recent, with first apprenticeship mentioned in 1927	The dominance of higher education as an aspiration, on the one hand, and informal apprenticeship models, on the other, potentially limits the capacity for growth of formal apprenticeship
South Africa	5	Mixed model of younger and older learners, although the average age of apprentices is high at 28.	Formal apprenticeship introduced in the mid-20th century by the apartheid government.	Complexity of the pathway with learnerships and apprenticeships on offer. Complex patterns of participation relative to gender, ethnicity and geographical location

## About the Authors

**Maia Chankseliani** is Associate Professor of Comparative and International Education at the Department of Education and Fellow at St Edmund Hall, University of Oxford. Maia is affiliated with The Centre for Comparative and International Education and The Centre on Skills, Knowledge and Organisational Performance (SKOPE), and leads a flagship master's program at the department, the MSc in Comparative and International Education. Maia is interested in the role of education and training in inclusive economic growth and well-being for all; this includes but is not limited to the study of equal access to quality education and training, marketization of education and training, vocational excellence, internationalization of higher education.

**Ewart Keep** is Director of the Centre on Skills, Knowledge and Organisational Performance based at the Department of Education, Oxford University. He holds the Chair in Education, Training and Skills. He has advised parliamentary committees at Westminster and Holyrood, as well as the OECD, H M Treasury, DBIS, DfE, the Cabinet Office, the National Audit Office, and government departments in New Zealand and Australia. He has published extensively on apprenticeships, lifelong learning, higher education policy, the link between skills and economic performance, managerial attitudes towards investment in skill, and how public policy on education and training is created and enacted.

**Stephanie Wilde** is a research officer at the Department of Education, University of Oxford. She completed a PGCE (Modern Languages), MSc (Comparative and International Education) and an ESRC-funded D.Phil at the Department of Education, and has worked as a researcher on a number of projects, including the Nuffield Review of 14-19 Education and Training, and the Vocational Excellence project (<http://vocationalexcellence.education.ox.ac.uk/>). She also worked as a qualitative researcher on the Mindfulness and Resilience in Adolescence (MYRIAD), research project, based at the Department of Psychiatry, University of Oxford. This project examined key factors affecting the implementation of mindfulness in secondary schools.

## About Oxford University Department of Education



The University of Oxford aims to sustain excellence in every area of its teaching and research, and to maintain and develop its position as a leader amongst world-class universities. Placing an equally high value on research and on teaching, the colleges, departments and faculties of Oxford aspire both to lead the international research agenda and to offer a unique and exceptional education to our undergraduate and graduate students. Research at Oxford combines disciplinary depth with an increasing focus on inter-disciplinary and multi-disciplinary activities.

Oxford University Department of Education is a research-led department, carrying out research which is of relevance not only to academics in the field of education and related disciplines, but also to teachers, teacher educators, other education professionals, and policy makers. Its policy of developing both depth and breadth of research expertise remains central to successfully maintaining and enhancing our position as an internationally recognized center of outstanding research. The 2014 Research Excellence Framework evaluation placed the department as the leader for education research in the United Kingdom. We have a world class reputation for research, as illustrated by our publication and funding portfolio, indicators of international and national academic leadership, research prizes, and commitment to mobilizing research for the improvement of policy and practice and the benefit of children, parents, and communities. The department houses The Centre for Comparative and International Education and The Centre on Skills, Knowledge and Organisational Performance (SKOPE).

## About WISE



world innovation summit for education

مؤتمر القمة العالمي للابتكار في التعليم

An Initiative of Qatar Foundation

The World Innovation Summit for Education was established by Qatar Foundation in 2009 under the leadership of its Chairperson, Her Highness Sheikha Moza bint Nasser. WISE is an international, multi-sectoral platform for creative, evidence-based thinking, debate, and purposeful action toward building the future of education. Through the biennial summit, collaborative research and a range of on-going programs, WISE is a global reference in new approaches to education.

The WISE Research series, produced in collaboration with experts from around the world, addresses key education issues that are globally relevant and reflect the priorities of the Qatar National Research Strategy. Presenting the latest knowledge, these comprehensive reports examine a range of education challenges faced in diverse contexts around the globe, offering action-oriented recommendations and policy guidance for all education stakeholders. Past WISE Research publications have addressed issues of access, quality, financing, teacher training, school systems leadership, education in conflict areas, entrepreneurship, early-childhood education, and twenty-first century skills.

## Acknowledgments

We are grateful to a range of people who have supported this project and made this research possible. First, we would like to thank Her Highness Sheikha Moza bint Nasser, Chairperson of Qatar Foundation, and the leadership of Qatar Foundation for their unwavering commitment to the cause of education globally. The authors would also like to acknowledge members of the WISE team, including Dr. Asmaa Alfadala, Dr. Ahmed Baghdady, Malcolm Coolidge, and Omar Zaki for their support throughout the study. We would like to thank Law Alsobrook and Patty Paine for their valuable contributions to the design and editing of this report. We would like to thank our colleague Susan James Relly for her support in planning this project, Ashmita Randhawa, Pola Orlowska, and Huiting Xu for their searches for relevant statistics and contributions to setting up the international database on apprenticeship enrollments. We would like to acknowledge that the idea of the report title came during the conversation with our colleague David Phillips.

## References

- Adams, A. V. (2010). *The Mubarak Kohl initiative—dual system in Egypt: An assessment of its impact on the school to work transition*. Retrieved from [http://epp-egypt.net/uploads/resources/2012-10\\_Assessment\\_of\\_DS\\_in\\_Egypt\\_en.pdf](http://epp-egypt.net/uploads/resources/2012-10_Assessment_of_DS_in_Egypt_en.pdf)
- Adonis, A. (2012). *Education, education, education: Reforming England's schools*. London: Biteback.
- Ahmed, T. (2016). *Labour market outcome for formal vocational education and training in India: Safety net and beyond*. IIMB Management Review, 28(2), 98–110. <https://doi.org/10.1016/j.iimb.2016.05.002>
- Aho, E., Pitkanen, K., & Sahlberg, P. (2006). *Policy development and reform principles of basic and secondary education in Finland since 1968 (No. 36871)*. The World Bank. Retrieved from <http://documents.worldbank.org/curated/en/124381468038093074/Policy-development-and-reform-principles-of-basic-and-secondary-education-in-Finland-since-1968>
- Álvarez-Galván, J.-L. (2015). *A Skills beyond School Review of Egypt*. OECD Publishing. <https://doi.org/10.1787/9789264209626-en>
- Amin-Smith, N., Cribb, J., & Sibiet, L. (2017). *Reforms to apprenticeship funding in England*. Retrieved from [https://www.ifs.org.uk/uploads/publications/comms/R124\\_Green%20Budget\\_%208.%20Apprenticeships.pdf](https://www.ifs.org.uk/uploads/publications/comms/R124_Green%20Budget_%208.%20Apprenticeships.pdf)
- APPG. (2017). *Annual Report 2016–2017*. APPG. Retrieved from <https://connectpa.co.uk/wp-content/uploads/2017/07/2017-Annual-Report-APPG-Apprenticeships-low-res.pdf>
- AQF Council. (2011). *Australian Qualifications Framework*. Retrieved from <https://www.aqf.edu.au/sites/aqf/files/aqf-1st-edition-july-2011.pdf>
- Australian Apprenticeships. (2013). *Incentives*. Retrieved 2 July 2017, from <https://www.australianapprenticeships.gov.au/programs/incentives>
- Baethge, M., & Wolter, A. (2015). *The German skill formation model in transition: from dual system of VET to higher education? Journal for Labour Market Research*, 48(2), 97–112. <https://doi.org/10.1007/s12651-015-0181-x>
- Ball, S. J. (2008). *The education debate*. Bristol: Policy Press.
- Barber, M. (2008). *Instruction to deliver: Tony Blair, public services and the challenges of achieving targets*. London: Methuen.
- BBC. (2017). *Dating-style app needed for Welsh apprenticeships*. Retrieved 14 July 2017, from <http://www.bbc.co.uk/news/uk-wales-40186674>
- BEIS. (2017). *Apprenticeship pay survey 2016: England (BEIS Research Paper No. 15)*. Retrieved from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/630082/apprenticeship-pay-survey-2016-report-england.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/630082/apprenticeship-pay-survey-2016-report-england.pdf)
- Biavaschi, C., Eichhorst, W., Giulietti, C., Kendzia, M., Muravyev, A., Pieters, J., ... Zimmermann, K. (2012). *Youth Unemployment and Vocational Training (No. IZA DP No. 6890)*. The Institute for the Study of Labor (IZA). Retrieved from <http://ftp.iza.org/dp6890.pdf>
- BIBB. (2015). *BIBB Report 1/2015*. Retrieved 29 June 2017, from <https://www.bibb.de/en/25852.php>
- BIBB. (2016a). *Financing of vocational education and training in Germany*. Retrieved 8 May 2017, from <https://www.bibb.de/en/41380.php>



- BIBB. (2016b). *VET data report Germany 2015*. Federal Institute for Vocational Education and Training (BIBB). Retrieved from <https://www.bibb.de/veroeffentlichungen/en/publication/show/8095>
- BIBB. (2017a). *Datenreport zum Berufsbildungsbericht 2017*. Informationen und Analysen zur Entwicklung der beruflichen Bildung. BIBB. Retrieved from [https://www.bibb.de/dokumente/pdf/bibb\\_datenreport\\_2017\\_vorversion.pdf](https://www.bibb.de/dokumente/pdf/bibb_datenreport_2017_vorversion.pdf)
- BIBB. (2017b). *The East is catching up*. Retrieved 8 May 2017, from [https://www.bibb.de/en/pressemitteilung\\_57414.php](https://www.bibb.de/en/pressemitteilung_57414.php)
- Bishop, D., & Hordern, J. (2017). *Degree apprenticeships: higher technical or technical higher (education)?* Retrieved from <http://www.gatsby.org.uk/uploads/education/reports/pdf/degree-apprenticeships-report.pdf>
- Blechinger, D., & Pfeiffer, F. (1996). *Technological change and skill obsolescence: the case of German apprenticeship training* (ZEW Discussion Papers No. 96-15). ZEW - Zentrum für Europäische Wirtschaftsforschung / Center for European Economic Research. Retrieved from <https://ideas.repec.org/p/zbw/zewdip/9615.html>
- BMBF. (2005). *The 2005 Vocational Training Act*. Retrieved from [https://www.bmbf.de/pub/The\\_2005\\_Vocational\\_Training\\_Act.pdf](https://www.bmbf.de/pub/The_2005_Vocational_Training_Act.pdf)
- BMBF. (2016). *Report on Vocational Education and Training 2016*. Retrieved 3 February 2017, from [https://www.bmbf.de/pub/Berufsbildungsbericht\\_2016\\_eng.pdf](https://www.bmbf.de/pub/Berufsbildungsbericht_2016_eng.pdf)
- Bolton College. (2015). *5 Reasons You're Never Too Old to Do an Apprenticeship*. Retrieved 31 July 2017, from <https://www.boltoncollege.ac.uk/blog/5-reasons-you%E2%80%99re-never-too-old-do-apprenticeship>
- Bonnal, L., Mendes, S., & Sofer, C. (2002). *School to work transition: apprenticeship versus vocational school in France*. *International Journal of Manpower*, 23(5), 426-442. <https://doi.org/10.1108/01437720210436046>
- Bosch, G. (2017). *Different national skills systems*. In *The Oxford Handbook of Skills and Training* (pp. 424-443). Oxford: Oxford University Press.
- Bradley, S. (1995). *The youth training scheme: A critical review of the evaluation literature*. *International Journal of Manpower*; Bradford, 16(4), 30.
- Brockmann, M. (2010). *Identity and apprenticeship: the case of English motor vehicle maintenance apprentices*. *Journal of Vocational Education & Training*, 62(1), 63-73. <https://doi.org/10.1080/13636820903461354>
- Brockmann, M. (2013). *Learning cultures in retail: apprenticeship, identity and emotional work in England and Germany*. *Journal of Education and Work*. Retrieved from <http://www.tandfonline.com/doi/abs/10.1080/13639080.2012.661847>
- Brockmann, M., Clarke, L., & Winch, C. (2011). *Knowledge, skills and competence in the European labour market : what's in a vocational qualification?* London: Routledge.
- Brown, P., Lauder, H., & Ashton, D. (2011). *The Global Auction: The Broken Promises of Education, Jobs, and Incomes*. Oxford, New York: Oxford University Press.
- CEDEFOP. (2004). *From divergence to convergence. A history of vocational education and training in Europe*. *Vocational Training European Journal*, 6-17.
- CEDEFOP. (2012). *Vocational education and training in Denmark*. Retrieved from <http://www.cedefop.europa.eu/fr/publications-and-resources/publications/4112>

- CEDEFOP. (2016, February 23). *Norway: a new brand promotes enterprises that take apprentices*. Retrieved 17 July 2017, from <http://www.cedefop.europa.eu/en/news-and-press/news/norway-new-brand-promotes-enterprises-take-apprentices>
- Chadderton, C., & Wischmann, A. (2014). *Racialised norms in apprenticeship systems in England and Germany*, 66(3), 330–347.
- Chankseliani, M., & James Relly, S. (2015). *From the provider-led to an employer-led system: implications of apprenticeship reform on the private training market*. *Journal of Vocational Education & Training*, 67(4), 515–528. <https://doi.org/10.1080/13636820.2015.1076499>
- Chankseliani, M., & James Relly, S. (2016). *Three-capital approach to the study of young people who excel in vocational occupations: a case of WorldSkills competitors and entrepreneurship*. *International Journal for Research in Vocational Education and Training*, 3(2). Retrieved from <http://www.ijrvet.net/index.php?journal=IJRVET&page=article&op=view&path%5B%5D=144>
- Chankseliani, M., James Relly, S., & Laczik, A. (2016). *Overcoming vocational prejudice: how can skills competitions improve the attractiveness of vocational education and training in the UK?* *British Educational Research Journal*, 42(4), 582–599. <https://doi.org/10.1002/berj.3218>
- Chankseliani, M., James Relly, S., & Mayhew, K. (2015). *Benefits of Developing Vocational Excellence. A Report to the National Apprenticeship Service of Project 3 (Phase II) of the DUVE suite of projects*. Oxford, UK: University of Oxford. Retrieved from <https://www.worldskillsuk.org/media/2350/project-3-benefits-04112015.pdf>
- Chankseliani, M., James, S., & Mayhew, K. (2015). *WorldSkills competitors and entrepreneurship (DuVE: Developing and understanding Vocational Excellence)*. Oxford, UK: University of Oxford. Retrieved from <http://vocationalexcellence.education.ox.ac.uk/our-research/project-5/>
- City and Guilds. (2014). *Sense and instability: Three decades of skills and employment policy*. London: City and Guilds. Retrieved from <http://www.cityandguilds.com/~media/Documents/news-insight/oct-14/CGSkillsReport2014%20pdf.ashx>
- City Press. (2012, June 23). *Young, jobless and desperate – Will FET colleges fix our future?* Retrieved 14 July 2017, from <http://www.news24.com/Archives/City-Press/Young-jobless-and-desperate-Will-FET-colleges-fix-our-future-20150429>
- Collins, R. (1979). *The Credential society: an historical sociology of education and stratification*. Academic Press.
- Collins, R. (2002). *Credential Inflation and the Future of Universities*. In S. Brint (Ed.), *The Future of the City of Intellect: The Changing American University* (1 edition, pp. 23–46). Stanford, Calif: Stanford University Press.
- Couldrey, M., & Loveder, P. (2017). *The future of Australian apprenticeships: report of the stakeholder forum, Canberra, 25 October 2016*.
- Culpepper, P. D. (2001). *Employers, Public Policy, and the Politics of Decentralized Cooperation in Germany and France*. In P. A. Hall & D. W. Soskice (Eds.), *Varieties of capitalism: the institutional foundations of comparative advantage* (pp. 276–307). Oxford: Oxford University Press. Retrieved from <http://www.loc.gov/catdir/enhancements/fy0612/2001033838-t.html>
- Culpepper, P. D. (2003). *Creating cooperation: how states develop human capital in Europe*. Ithaca: Cornell University Press.
- Culpepper, P. D., & Finegold, D. (2001). *The German Skills Machine: Sustaining Comparative Advantage in a Global Economy*. Bergham Books.

## References

- Danish Ministry of Education. (2014). *Improving Vocational Education and Training*. Danish Ministry of Education. Retrieved from <http://eng.uvm.dk/upper-secondary-education/vocational-education-and-training--vet->
- Denham, J. (2016). *Employer support for Higher Level Skills*. London: LSE, Institute of Public Affairs. Retrieved from <http://www.lse.ac.uk/website-archive/IPA/ResearchAndEngagement/EmployerSupportForHigherLevelSkills/LSE-AoCResearchProject.pdf>
- Department for Education. (2016). *Employment and earnings outcomes of higher education graduates: Experimentatl data from the Longitudinal Education Outcomes (LEO) dataset SFR36/2016*. Retrieved 24 July 2017, from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/543794/SFR36-2016\\_main\\_text\\_LEO.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/543794/SFR36-2016_main_text_LEO.pdf)
- Department of Higher Education & Training. (2016). *Statistics on Post – School Education and Training in South Africa: 2014*. Pretoria, South Africa: Department of Higher Education & Training. Retrieved from <http://www.justice.gov.za/commissions/FeesHET/docs/2014-Statistics-Post-School-ET-SA.pdf>
- Department of Labour. (2014). *Basic Guide to Sector Education and Training Authorities (SETAs) – Department of Labour*. Retrieved 6 July 2017, from <http://www.labour.gov.za/DOL/legislation/acts/basic-guides/basic-guide-to-sector-education-and-training-authorities-setas>
- Destatis. (2015). *Staat & Gesellschaft – Berufliche Bildung – Berufliche Bildung – Statistisches Bundesamt (Destatis)*. Retrieved 23 June 2017, from <https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/BildungForschungKultur/BeruflicheBildung/Tabellen/AzubiAusbildungsbereich.html>
- DIHK. (2017). *Education and training – Deutscher Industrie- und Handelskammertag [Artikel]*. Retrieved 6 July 2017, from <https://www.dihk.de/en/segments/training/education-training>
- EPDC. (2014). *South Africa*. National Education Profile. 2014 Update. Education Policy and Data Center. Retrieved from [https://www.epdc.org/sites/default/files/documents/EPDC%20NEP\\_South%20Africa.pdf](https://www.epdc.org/sites/default/files/documents/EPDC%20NEP_South%20Africa.pdf)
- Eraut, M., & Hirsh, W. (2007). *The significance of workplace learning for individuals, groups and organisations*. Retrieved from <https://ora.ox.ac.uk/objects/uuid:903bda08-1eab-4695-949a-1601e1af5273/datastreams/ATTACHMENT01>
- ETF. (2017). *Egypt Education, training and employment developments 2016*. Retrieved from [http://www.etf.europa.eu/webatt.nsf/o/DoCEE2F12BD31483C12580E6005211D2/\\$file/Egypt%202016.pdf](http://www.etf.europa.eu/webatt.nsf/o/DoCEE2F12BD31483C12580E6005211D2/$file/Egypt%202016.pdf)
- European Commission. (2012). *Apprenticeship supply in the Member States of the European Union: final report*. Luxembourg: EUR-OP. Retrieved from <http://bookshop.europa.eu/uri?target=EUB:NOTICE:KE3012434:EN:HTML>
- European Commission. (2013). *Apprenticeship and traineeship schemes in EU 27: Key Success factors – a guidebook for policy planners and practitioners*. European Commission. Retrieved from [ec.europa.eu/social/BlobServlet?docId=11348&langId=en](http://ec.europa.eu/social/BlobServlet?docId=11348&langId=en)
- European Commission. (2014). *Mutual Learning Programme Database of National Labour Market Practices*. Denmark - Adult Apprenticeships. European Commission. Retrieved from <http://ec.europa.eu/social/main.jsp?catId=1080&langId=en&practiceId=32>
- European Commission. (2015). *High-performance apprenticeships and work-based learning: 20 guiding principles | VOCEDplus, the international tertiary education and research database*. Retrieved from <http://www.voced.edu.au/content/ngv%3A71563>

- European Commission. (2016a). *Education and Training Monitor 2016*. Denmark. European Commission. Retrieved from [https://ec.europa.eu/education/sites/education/files/monitor2016-dk\\_en.pdf](https://ec.europa.eu/education/sites/education/files/monitor2016-dk_en.pdf)
- European Commission. (2016b). *Erasmus+ Project "National Authorities for Apprenticeships: Policy learning and support to promoting apprenticeship systems and VET policy experimentation under the European Alliance for Apprenticeship"*. Synthesis report. European Commission. Retrieved from <http://ec.europa.eu/programmes/proxy/alfresco-webscripts/api/node/content/workspace/SpacesStore/552a32f4-7ca3-4ce5-900b-c002f6eb4851/Country%20VET%20report%20Denmark.pdf>
- Evans, D. (2013, May 31). *Vocational education can give people a life of dignity*. Times Educational Supplement, pp. 20–22.
- EY-FICCI. (2013). *Reaping India's promised demographic dividend – industry in driving seat*. Ernst & Young Global Limited; Federation of Indian Chambers of Commerce and Industry. Retrieved from [http://www.ey.com/Publication/vwLUAssets/EY-Government-and-Public-Sector-Reaping-Indias-demographic-dividend/\\$FILE/EY-Reaping-Indias-promised-demographic-dividend-industry-in-driving-seat.pdf](http://www.ey.com/Publication/vwLUAssets/EY-Government-and-Public-Sector-Reaping-Indias-demographic-dividend/$FILE/EY-Reaping-Indias-promised-demographic-dividend-industry-in-driving-seat.pdf)
- Finnish National Board of Education. (2016). *Key Figures on Apprenticeship Training in Finland*. Finnish National Board of Education. Retrieved from [http://www.oph.fi/english/publications/2016/key\\_figures\\_on\\_apprenticeship\\_training\\_in\\_finland](http://www.oph.fi/english/publications/2016/key_figures_on_apprenticeship_training_in_finland)
- Fisher, C. (1986). *Organizational Socialization: An integrative review*. In K. . Rowland & G. . Ferris (Eds.), *Research in Personnel and Human Resources Management* (Vol. 4, pp. 101–145). Greenwich, CT: JAI Press.
- Fowler, C. (2017). *The boundaries and connections between the VET and higher education sectors: 'confused, contested and collaborative'*. NCVER, Adelaide. Retrieved from [https://www.ncver.edu.au/\\_\\_data/assets/word\\_doc/0028/158707/Boundaries\\_-and-\\_connections\\_between\\_VET\\_-and-\\_higher\\_ed\\_sectors.docx](https://www.ncver.edu.au/__data/assets/word_doc/0028/158707/Boundaries_-and-_connections_between_VET_-and-_higher_ed_sectors.docx)
- Frankfurter Allgemeine. (2014, May 6). *Berufswahl: Frauen werden keine Maurer*. FAZ.NET. Retrieved from <http://www.faz.net/1.2925670>
- Fuller, A., Leonard, P., Unwin, L., & Davey, G. (2015). *Does apprenticeship work for adults? the experiences of adult apprentices in England*. London, UK: UCL Institute of Education. Retrieved from <http://www.llakes.ac.uk/sites/llakes.ac.uk/files/Adult%20Apprenticeship.pdf>
- Fuller, A., & Unwin, L. (2003a). *Creating a 'Modern Apprenticeship': A critique of the UK's multi-sector, social inclusion approach*. *Journal of Education and Work*, 16(1), 5–25. <https://doi.org/10.1080/1363908022000032867>
- Fuller, A., & Unwin, L. (2003b). *Learning as Apprentices in the Contemporary UK Workplace: creating and managing expansive and restrictive participation*. *Journal of Education and Work*, 16(4), 407–426. <https://doi.org/10.1080/1363908032000093012>
- Fuller, A., & Unwin, L. (2011). *Apprenticeship as an evolving model of learning*. *Journal of Vocational Education & Training*, 63(3), 261–266. <https://doi.org/10.1080/13636820.2011.602220>
- Fuller, A., & Unwin, L. (2012). *What's the Point of Adult Apprenticeships?* *Adults Learning*, 23(3), 8–13.
- Fuller, A., & Unwin, L. (2013). *Apprenticeships and the concept of occupation*. Retrieved from <http://www.gatsby.org.uk/uploads/education/reports/pdf/apprenticesfullpvs.pdf>
- Fuller, A., & Unwin, L. (2016). *The aims and objectives of apprenticeships*. In *Where next for apprenticeships?* (pp. 11–17).

## References

- Gang, I. N., Sen, K., & Yun, M.-S. (2017). *Is Caste Destiny? Occupational Diversification among Dalits in Rural India*. *The European Journal of Development Research*, 29(2), 476–492. <https://doi.org/10.1057/s41287-016-0011-1>
- Gessler, M., & Peters, S. (2017). *Implementation of dual training programmes through the development of boundary objects: A case study*. *Educar*, 53(2), 309–331.
- Goldin, C. (1999). *Egalitarianism and the Returns to Education during the Great Transformation of American Education*. Retrieved from <https://dash.harvard.edu/handle/1/2623652>
- Green, A. (1998). *Core Skills, Key Skills and General Culture: In Search of the Common Foundation in Vocational Education*. *Evaluation & Research in Education*, 12(1), 23–43. <https://doi.org/10.1080/09500799808666929>
- Härtel, M. (2017). *Germany: BIBB*. In C. Latchem (Ed.), *Using ICTs and Blended Learning in Transforming TVET* (pp. 59–72). UNESCO Commonwealth of Learning. Retrieved from <http://unesdoc.unesco.org/images/0024/002474/247495e.pdf>
- Hasluck, C., & Hogarth, T. (2010). *The net benefits to employers' investments in apprenticeships : case study evidence from the UK*. *The Canadian Apprenticeship Journal*, Vol.2. Retrieved from <http://journals.sfu.ca/caj/index.php/caj-jca/article/view/11/32>
- Hobbs, J. J. (2016). *Fundamentals of World Regional Geography*. Cengage Learning.
- Holmes, C., & Mayhew, K. (2015). *Over-qualification and skills mismatch in the graduate labour market*. London: CIPD. Retrieved from [https://www.cipd.co.uk/Images/over-qualification-and-skills-mismatch-graduate-labour-market\\_tcm18-10231.pdf](https://www.cipd.co.uk/Images/over-qualification-and-skills-mismatch-graduate-labour-market_tcm18-10231.pdf)
- Holmes, C., & Mayhew, K. (2016). *Alternative pathways into the labour market*. London: CIPD. Retrieved from <https://www.cipd.co.uk/knowledge/work/trends/alternative-labour-market-pathways>
- House of Commons. (2016). *Apprenticeship statistics: England*. House of Commons. Retrieved from [researchbriefings.files.parliament.uk/documents/SN06113/SN06113.pdf](https://researchbriefings.files.parliament.uk/documents/SN06113/SN06113.pdf)
- House of Commons. (2017). *Apprenticeships Policy in England: 2017*. House of Commons. Retrieved from [researchbriefings.files.parliament.uk/documents/SN03052/SN03052.pdf](https://researchbriefings.files.parliament.uk/documents/SN03052/SN03052.pdf)
- ILO. (2012). *Statistical update on employment in the informal economy*. ILO - Department of Statistics. Retrieved from [http://laborsta.ilo.org/applv8/data/INFORMAL\\_ECONOMY/2012-06-Statistical%20update%20-%20v2.pdf](http://laborsta.ilo.org/applv8/data/INFORMAL_ECONOMY/2012-06-Statistical%20update%20-%20v2.pdf)
- ILO. (2016). *Labour force*. Definition. [Document]. Retrieved 9 July 2017, from [http://www.ilo.org/global/statistics-and-databases/statistics-overview-and-topics/WCMS\\_470304/lang-en/index.htm](http://www.ilo.org/global/statistics-and-databases/statistics-overview-and-topics/WCMS_470304/lang-en/index.htm)
- ILO, & World Bank. (2013). *Possible futures for the Indian Apprenticeship System: Options paper for India (Report)*. International Labour Organization. Retrieved from [http://www.ilo.org/newdelhi/whatwedo/publications/WCMS\\_234727/lang-en/index.htm](http://www.ilo.org/newdelhi/whatwedo/publications/WCMS_234727/lang-en/index.htm)
- Ilott, O., Norris, E., Randall, J., & Bleasdale, A. (2016). *Making Policy Stick: Tackling long-term challenges in government*. London: Institute for Government. Retrieved from <https://www.instituteforgovernment.org.uk/sites/default/files/publications/5225%20IFG%20-%20Making%20Policy%20Stick%20WEB.pdf>
- James, S. (2016). *Developing and Understanding Vocational Excellence: Final Report*. Retrieved from <http://vocationalexcellence.education.ox.ac.uk/wordpress/wp-content/uploads/2016/03/DuVE-project-Final-report.pdf>

- James, S., & Holmes, C. (2012). *Developing vocational excellence: learning environments within work environments*. Retrieved from <https://ora.ox.ac.uk/objects/uuid:do5ef697-a287-4914-ad9f-5e8965bb6d81>
- Jørgensen, C. H. (2017). *From apprenticeships to higher vocational education in Denmark – building bridges while the gap is widening*. *Journal of Vocational Education & Training*, 69(1), 64–80. <https://doi.org/10.1080/13636820.2016.1275030>
- Kærgård, N. (2010). *Social cohesion and the transformation from ethnic to multicultural society: The Case of Denmark*. *Ethnicities*, 10(4), 470–487. <https://doi.org/10.1177/1468796810378323>
- Keep, E. (2002). *The English Vocational Education and Training Policy Debate—Fragile ‘Technologies’ or Opening the ‘Black Box’: Two competing visions of where we go next*. *Journal of Education and Work*, 15(4), 457–479. <https://doi.org/10.1080/1363908022000023579>
- Keep, E. (2006a). *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. <https://doi.org/10.1080/13636820500505819>
- Keep, E. (2006b). *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. <https://doi.org/10.1080/13636820500505819>
- Keep, E. (2009). *The limits of the possible: shaping the learning and skills landscape through a shared policy narrative*. Retrieved from <https://ora.ox.ac.uk/objects/uuid:c00b434d-f70b-47d4-a9a0-f1301cf5b49b/datastreams/ATTACHMENT01>
- Keep, E. (2012). *Education and industry: taking two steps back and reflecting*. *Journal of Education and Work*, 25(4), 357–379. <https://doi.org/10.1080/13639080.2012.708727>
- Keep, E. (2014). *The Role of Higher Education within Broader Skills Policies, a Comparison of Emerging Scottish and English Approaches*. *Higher Education Quarterly*, 68(3), 249–266. <https://doi.org/10.1111/hequ.12050>
- Keep, E. (2015a). *Governance in English VET: On the functioning of a fractured ‘system’*. *Research in Comparative and International Education*, 10(4), 464–475.
- Keep, E. (2015b). *Unlocking workplace skills: What is the role for employers?* Retrieved from [https://www.cipd.co.uk/Images/unlocking-workplace-skills-role-employers\\_2015-november\\_tcm18-10227.pdf](https://www.cipd.co.uk/Images/unlocking-workplace-skills-role-employers_2015-november_tcm18-10227.pdf)
- Keep, E. (2016). *Improving skills utilisation in the UK—Some reflections on what, who and how?* Retrieved from <https://ora.ox.ac.uk/objects/uuid:fac4684f-7de8-408d-bac0-b6b767a38479>
- Keep, E., & James Relly, S. (2016). *What next for apprenticeships? In Where next for apprenticeships? CIPD*. Retrieved from [https://www.sheffield.ac.uk/polopoly\\_fs/1.596842!/file/apprenticeship-report-cipd-2016.pdf](https://www.sheffield.ac.uk/polopoly_fs/1.596842!/file/apprenticeship-report-cipd-2016.pdf)
- Keep, E., & James, S. (2011). *Employer demand for apprenticeships*. In *Rethinking apprenticeships* (pp. 55–65). London: IPPR. Retrieved from [www.bkeditorial.org.uk/download/i/mark\\_dl/u/4008144669/4560861965/apprenticeships\\_Nov2011\\_8028.pdf#page=52](http://www.bkeditorial.org.uk/download/i/mark_dl/u/4008144669/4560861965/apprenticeships_Nov2011_8028.pdf#page=52)
- Keep, E., & Mayhew, K. (2004). *The economic and distributional implications of current policies on higher education*. *Oxford Review of Economic Policy*, 20(2), 298–314.
- Kirby, P. (2015). *Levels of success: The potential of UK apprenticeships*. Retrieved from <https://www.suttontrust.com/wp-content/uploads/2015/10/Levels-of-Success3.pdf>



## References

- Kivinen, O., & Peltomäki, M. (1999). *On the Job or in the Classroom? The apprenticeship in Finland from the 17th century to the 1990s*. *Journal of Education and Work*, 12(1), 75–93. <https://doi.org/10.1080/1363908990120105>
- Knight, B. (2012). *Evolution of apprenticeships and traineeships in Australia: an unfinished history*. National Centre for Vocational Education Research. Retrieved from [https://www.ncver.edu.au/\\_\\_data/assets/file/0010/4132/2444.pdf](https://www.ncver.edu.au/__data/assets/file/0010/4132/2444.pdf)
- Kraak, A. (2008a). *A critical review of the National Skills Development Strategy in South Africa*. *Journal of Vocational Education & Training*, 60(1), 1–18. <https://doi.org/10.1080/13636820701828762>
- Kraak, A. (2008b). *Incoherence in the South African labour market for intermediate skills*. *Journal of Education and Work*, 21(3), 197–215. <https://doi.org/10.1080/13639080802214050>
- Kuczera, M. (2017a). *Incentives for apprenticeship (OECD Education Working Papers No. 152)*. Paris: OECD Publishing. Retrieved from <http://dx.doi.org/10.1787/55bb556d-en>
- Kuczera, M. (2017b). *Striking the right balance (OECD Education Working Papers No. 153)*. <https://doi.org/10.1787/995ff01-en>
- Lanning, T. (2016). *Where Next for Apprenticeships? London: CIPD*. Retrieved from <https://www.cipd.co.uk/knowledge/fundamentals/people/routes-work/where-next-for-apprenticeships-report>
- Lerman, R. I. (2017). *Skill development in middle-level occupations: The role of apprenticeship training*. In *The Oxford Handbook of Skills and Training* (pp. 180–200). Oxford University Press.
- Liu, M., & Finegold, D. (2017). *Emerging economic powers: The transformation of the skills systems in China and India*. In *The Oxford Handbook of Skills and Training* (pp. 529–553). Oxford: Oxford University Press.
- London Economics. (2013). *An international comparison of apprentice pay: Final Report*. Retrieved from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/289425/London\\_Economics\\_Apprentice\\_Pay\\_FINAL.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/289425/London_Economics_Apprentice_Pay_FINAL.pdf)
- Marock, C. (2011). *Considering key themes relating to the objectives of the NQF and the post-school objectives*. Johannesburg, South Africa: Centre for Education Policy Development. Retrieved from <http://www.voced.edu.au/content/ngv:58473>
- Martin, C. J. (2017). *Skill builders and the evolution of national vocational training systems*. In J. Buchanan, D. Finegold, K. Mayhew, & C. Warhurst (Eds.), *The Oxford handbook of skills and training* (pp. 36–53). Oxford: Oxford University Press.
- Mayhew, K., James, S., Chankseliani, M., & Laczik, A. (2013). *Benefits of Developing Vocational Excellence. A Report to the National Apprenticeship Service of Project 3 of the DUVE suite of projects*. Oxford, UK: University of Oxford. Retrieved from <https://www.worldskillsuk.org/media/1823/duve-project-3-final-report-phase-1.pdf>
- Ministry of Education of Egypt. (2014). *Egypt country report for the 2014 ministerial conference on youth employment: How to Improve, Trough Skills Development and Job Creation, Access of Africa's Youth to the World of Work*. Arab Republic of Egypt Ministry of Education. Retrieved from [http://www.adeanet.org/min\\_conf\\_youth\\_skills\\_employment/sites/default/files/u24/Egypt%20Country%20Report\\_o.pdf](http://www.adeanet.org/min_conf_youth_skills_employment/sites/default/files/u24/Egypt%20Country%20Report_o.pdf)
- Ministry of Home Affairs. (2011). *Census of India 2011. Release of Primary Census Abstract. Data Highlights*. Retrieved 19 June 2017, from [http://idsn.org/wp-content/uploads/user\\_folder/pdf/New\\_files/India/2013/INDIA\\_CENSUS\\_ABSTRACT-2011-Data\\_on\\_SC-STs.pdf](http://idsn.org/wp-content/uploads/user_folder/pdf/New_files/India/2013/INDIA_CENSUS_ABSTRACT-2011-Data_on_SC-STs.pdf)
- Mohrenweiser, J., & Zwick, T. (2009). *Why do firms train apprentices? The net cost puzzle reconsidered*. *Labour Economics*, 16(6), 631–637. <https://doi.org/10.1016/j.labeco.2009.08.004>



- Molz, A. (2015). *Delivering TVET through Quality Apprenticeships: on line conference organized by UNESCO-UNEVOC*. Background note. UNESOC. Retrieved from [www.unevoc.unesco.org/e-forum/BackgroundNote-VC-Apprenticeship-Molz.pdf](http://www.unevoc.unesco.org/e-forum/BackgroundNote-VC-Apprenticeship-Molz.pdf)
- Musset, P., Álvarez-Galván, J.-L., & Field, S. (2014). *A Skills beyond School Review of South Africa*. OECD Publishing. <https://doi.org/10.1787/9789264223776-en>
- NAPS. (2014). *National Apprenticeship Promotion Scheme*. Retrieved 18 July 2017, from <http://www.skilldevelopment.gov.in/assets/images/announcements/FAQ-NAPS.pdf>
- NATS. (2017). *National Apprenticeship Training Scheme (NATS)*, Ministry of Human Resource Development. Retrieved 23 June 2017, from <http://mhrdnats.gov.in/>
- NCVER. (2010). *Australian vocational education and training statistics*. Apprentice and trainee destinations. NCVER. Retrieved from [https://www.ncver.edu.au/\\_\\_data/assets/file/0023/7529/aats\\_dest\\_2010\\_2262.pdf](https://www.ncver.edu.au/__data/assets/file/0023/7529/aats_dest_2010_2262.pdf)
- NCVER. (2016a). *Apprentices and trainees 2015: infographic*. National Centre for Vocational Education. Retrieved from <https://www.ncver.edu.au/data/data/infographics/apprentices-and-trainees-2015-infographic>
- NCVER. (2016b). *Completion and attrition rates for apprentices and trainees 2015*. National Centre for Vocational Education Research. Retrieved 13 July 2017, from <https://www.ncver.edu.au/publications/publications/all-publications/completion-and-attrition-rates-for-apprentices-and-trainees-2015>
- NCVER. (2016c). *Total VET graduate outcomes 2016 summary findings*. Retrieved 6 July 2017, from <https://www.ncver.edu.au/data/data/all-data/total-vet-graduate-outcomes-2016-summary-findings>
- Newton, B., & Williams, J. (2013). *Under-representation by gender and race in apprenticeships*. Institute for Employment Studies. Retrieved from <https://www.tuc.org.uk/sites/default/files/UnderRepresentationInApprenticeships.pdf>
- Niakooee, S. A. (2013). *Contemporary Arab Uprisings: Different Processes and Outcomes*. Japanese Journal of Political Science, 14(3), 421–445. <https://doi.org/10.1017/S1468109913000170>
- Nielsen, K., & Pedersen, L. T. (2011). *Apprenticeship rehabilitated in a postmodern world?* *Journal of Vocational Education & Training*, 63(4), 563–573. <https://doi.org/10.1080/13636820.2011.600833>
- Noonan, P., & Pilcher, S. (2017). *Finding the truth in the apprenticeships debate*. Melbourne, Australia: Mitchell Institute. Retrieved from <http://apo.org.au/system/files/103121/apo-nid103121-417056.pdf>
- Noronha, C. (2011). *Informal Training for Skilled Workers: Issues Arising from a Qualitative Study in Four Sites in Rajasthan and Madhya Pradesh*. *International Journal of Training Research*, 9, 110–122.
- Norris, E., & Adam, R. (2017). *All Change: Why Britain is so prone to policy reinvention and what can be done about it*. London: Institute for Government. Retrieved from [https://www.instituteforgovernment.org.uk/sites/default/files/publications/IfG\\_All\\_change\\_report\\_FINAL.pdf](https://www.instituteforgovernment.org.uk/sites/default/files/publications/IfG_All_change_report_FINAL.pdf)
- Odora, R. J., & Naong, M. N. (2014). *Distigmatisation of Apprenticeship-A Vehicle for Entrepreneurship Promotion and Job Creation among Further Education and Training College Students*. *Journal of Asian and African Studies*, 49(4), 457–472.
- OECD. (2010). *Learning for jobs: Summary and policy messages*. Retrieved 20 February 2017, from <http://www.oecd.org/edu/skills-beyond-school/46972427.pdf>

## References

- OECD. (2014). *Germany. Keeping the edge: Competitiveness for inclusive growth (Better Policies)*. OECD. Retrieved from <https://www.oecd.org/germany/Better-policies-germany.pdf>
- OECD. (2016a). *Back to Work: Denmark Improving the Re-employment Prospects of Displaced Workers: Improving the Re-employment Prospects of Displaced Workers*. OECD Publishing.
- OECD. (2016b). *Society at a Glance 2016*. OECD Publishing. <https://doi.org/10.1787/9789264261488-en>
- OECD, & ILO. (2017). *Engaging Employers in Apprenticeship Opportunities*. Paris: Organisation for Economic Co-operation and Development. Retrieved from <http://www.oecd.org/industry/engaging-employers-in-apprenticeship-opportunities-9789264266681-en.htm>
- ONS. (2011a). *2011 Census – Office for National Statistics*. Retrieved 30 August 2017, from <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/2011census/2013-05-16#ethnicity>
- ONS. (2011b). *2011 Census analysis: Ethnicity and religion of the non-UK born population in England and Wales*. Office for National Statistics. Retrieved from <https://www.ons.gov.uk/peoplepopulationandcommunity/culturalidentity/ethnicity/articles/2011censusanalysisethnicityandreligionofthenonukbornpopulationinenglandandwales/2015-06-18#appendix>
- ONS. (2014). *Qualifications and Labour Market Participation in England and Wales*. Retrieved from [http://dera.ioe.ac.uk/23755/1/dcp171776\\_367378.pdf](http://dera.ioe.ac.uk/23755/1/dcp171776_367378.pdf)
- OPH. (2010). *Vocational education and training in Finland*. Vocational competence, knowledge and skills for working life and further studies. Finnish National Board of Education. Retrieved from [http://www.oph.fi/download/131431\\_vocational\\_education\\_and\\_training\\_in\\_finland.pdf](http://www.oph.fi/download/131431_vocational_education_and_training_in_finland.pdf)
- OPH. (2016). *Key Figures on Apprenticeship Training in Finland*. Finnish National Board of Education. Retrieved from [http://www.oph.fi/english/publications/2016/key\\_figures\\_on\\_apprenticeship\\_training\\_in\\_finland](http://www.oph.fi/english/publications/2016/key_figures_on_apprenticeship_training_in_finland)
- OPH. (2017a). *Statistics of the month: Most apprenticeship students are adult learners*. Retrieved 19 June 2017, from [http://www.oph.fi/english/current\\_issues/101/0/statistics\\_of\\_the\\_month\\_most\\_apprenticeship\\_students\\_are\\_adult\\_learners](http://www.oph.fi/english/current_issues/101/0/statistics_of_the_month_most_apprenticeship_students_are_adult_learners)
- OPH. (2017b). *Statistics of the month: Proportion of foreign language speakers has grown particularly in vocational education and training*. Retrieved 19 June 2017, from [http://www.oph.fi/english/current\\_issues/101/0/statistics\\_of\\_the\\_month\\_proportion\\_of\\_foreign\\_language\\_speakers\\_has\\_grown\\_particularly\\_in\\_vocational\\_education\\_and\\_training](http://www.oph.fi/english/current_issues/101/0/statistics_of_the_month_proportion_of_foreign_language_speakers_has_grown_particularly_in_vocational_education_and_training)
- Østerlund, R. (2012). *Education and Training in Denmark*. Oesterlund Education Consult. Retrieved from <http://www.dhet.gov.za/Archive%20Manuals/Denmark/Education%20and%20Training%20in%20Denmark.docx>
- Pfeifer, H. (2016). *Firms' Motivation for Training Apprentices: An Australian-German Comparison*. NCVER. Retrieved from <https://www.ncver.edu.au/publications/publications/all-publications/firms-motivation-for-training-apprentices-an-australian-german-comparison>
- Pilz, M., Uma, G., & Venkatram, R. (2015). *Skills development in the informal sector in India: The case of street food vendors*. *International Review of Education*, 61(2), 191–209. <https://doi.org/10.1007/s11159-015-9485-x>
- Poulsen, S. B., & Eberhardt, C. (2016). *Approaching Apprenticeship Systems from a European Perspective (Discussion Paper No. 171)*. BIBB. Retrieved from <https://www.bibb.de/veroeffentlichungen/en/publication/show/7987>

- Ryan, P., Backes-Gellner, U., Teuber, S., & Wagner, K. (2013). *Apprentice pay in Britain, Germany and Switzerland: Institutions, market forces and market power*. *European Journal of Industrial Relations*, 19(3), 201–220. <https://doi.org/10.1177/0959680113494155>
- Sennett, R. (2008). *The Craftsman*. London: Penguin. Retrieved from <https://www.penguin.co.uk/books/55381/the-craftsman/>
- Shadbolt, N. (2016). *Shadbolt review of computer sciences degree accreditation and graduate employability*. HM Government. Retrieved from [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/518575/ind-16-5-shadbolt-review-computer-science-graduate-employability.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/518575/ind-16-5-shadbolt-review-computer-science-graduate-employability.pdf)
- Shury, J., Vivian, D., Kik, G., Skone James, A., Tweddle, M., Wrathall, H., & Morrice, N. (2017). *Employer perspectives survey 2016 – GOV.UK*. Department of Education, Social Science in Government. Retrieved from <https://www.gov.uk/government/publications/employer-perspectives-survey-2016>
- Skills Funding Agency. (2017). *FE data library: apprenticeships*. Retrieved 7 June 2017, from <https://data.gov.uk/dataset/fe-data-library-apprenticeships/>
- Sloane, P. F. E. (2014). *Professional Education Between School and Practice Settings: The German Dual System as an Example*. In S. Billett, C. Harteis, & H. Gruber (Eds.), *International Handbook of Research in Professional and Practice-based Learning* (pp. 397–425). Springer Netherlands. [https://doi.org/10.1007/978-94-017-8902-8\\_15](https://doi.org/10.1007/978-94-017-8902-8_15)
- Smith, E., & Kemmis, R. B. (2013). *Towards a model apprenticeship framework: A comparative analysis of national apprenticeship systems*. International Labour Organization. Retrieved from [http://www.ilo.org/newdelhi/whatwedo/publications/WCMS\\_234728/lang--en/index.htm](http://www.ilo.org/newdelhi/whatwedo/publications/WCMS_234728/lang--en/index.htm)
- Smith, E., Kemmis, R. B., & Comyn, P. (2014). *How Can the Expansion of the Apprenticeship System in India Create Conditions for Greater Equity and Social Justice?* *Australian Journal of Adult Learning*, 54(3), 368–388.
- Smith, S., Joslin, H., & Jameson, J. (2015). *Progression of apprentices to higher education – 2nd cohort update*. Retrieved from <http://gala.gre.ac.uk/15096/>
- Soskice, D. (1994). *Reconciling Markets and Institutions: The German Apprenticeship System*. In L. M. Lynch (Ed.), *Training and the private sector: international comparisons* (pp. 26–60). Chicago ; London: University of Chicago Press.
- Statistics Finland. (2016). *Population 31.12. by Area, Population indicator and Year*. Retrieved 19 June 2017, from [http://pxnet2.stat.fi/PXWeb/PXWeb/pxweb/en/StatFin/StatFin\\_\\_vrm\\_\\_vaerak/060\\_vaarak\\_tau\\_107.px/](http://pxnet2.stat.fi/PXWeb/PXWeb/pxweb/en/StatFin/StatFin__vrm__vaerak/060_vaarak_tau_107.px/)
- Statistics South Africa. (2013). *General Household Survey*. Statistical Release P0302. Statistics South Africa. Retrieved from <https://www.statssa.gov.za/publications/P0302/P03022013.pdf>
- Steedman, H. (2012). *Overview of apprenticeship systems and issues: ILO contribution to the G20 Task Force on Employment | VOCEDplus, the international tertiary education and research database*. Geneva: ILO. Retrieved from <http://www.voced.edu.au/content/ngv%3A54504>
- Steedman, H., Wagner, K., & Foreman, J. (2003). *The impact on firms of ICT skill-supply strategies: An Anglo-German comparison*. Retrieved from <http://cep.lse.ac.uk/pubs/download/dp0575.pdf>
- Stenström, M.-L., & Virolainen, M. (2014a). *The current state and challenges of vocational education and training in Finland*. Nord-VET. Retrieved from [https://www.researchgate.net/profile/Maarit\\_Virolainen/publication/275800605\\_The\\_current\\_state\\_and\\_challenges\\_of\\_vocational\\_education\\_and\\_training\\_in\\_Finland/links/554717400cf24107d3980fad.pdf](https://www.researchgate.net/profile/Maarit_Virolainen/publication/275800605_The_current_state_and_challenges_of_vocational_education_and_training_in_Finland/links/554717400cf24107d3980fad.pdf)

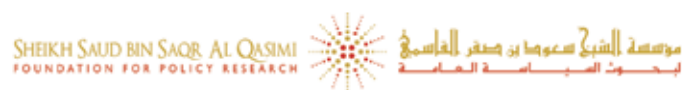
## References

- Stenström, M.-L., & Virolainen, M. (2014b). *The history of Finnish vocational education and training*. Nord-VET. Retrieved from <http://nord-vet.dk/indhold/uploads/History-of-Finnish-VET-29062014final.pdf>
- Streeck, W. (1989). *Skills and the Limits of Neo-Liberalism: The Enterprise of the Future as a Place of Learning*. *Work, Employment and Society*, 3(1), 89–104. <https://doi.org/10.1177/0950017089003001006>
- Sung, J., & Raddon, A. (2017). *Approaches to skills in the Asian developmental states*. In *The Oxford Handbook of Skills and Training* (pp. 509–528). Oxford: Oxford University Press.
- Sweet, R. (2009). *Work-Based Learning Programmes for Young People in the Mediterranean Region: Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, the Occupied Palestinian Territory, Syria, Tunisia and Turkey*. Comparative Analyses.
- Tant, O., & Sherlock, N. (2011). *Reinventing the apprenticeship: An employer's perspective*. In *Rethinking apprenticeships* (pp. 66–70).
- Tholen, G. (2017). *Graduate Work: Skills, Credentials, Careers, and Labour Markets*. Oxford, New York: Oxford University Press.
- Trampusch, C., & Eichenberger, P. (2012). *Skills and Industrial Relations in Coordinated Market Economies – Continuing Vocational Training in Denmark, the Netherlands, Austria and Switzerland*. *British Journal of Industrial Relations*, 50(4), 644–666. <https://doi.org/10.1111/j.1467-8543.2011.00864.x>
- UIS. (2016). *UNESCO Institute of Statistics Data*. Retrieved from <http://data.uis.unesco.org/Index.aspx>
- UIS email communication. (2017, March 31). *Email communication with the UNESCO Institute of Statistics*.
- Unwin, L. (1990). *Learning to live under water: The 1988 Education Reform Act and its implications for further and adult education*. In M. Flude & M. Hammer (Eds.), *The Education Reform Act, 1988: its origins and implications* (pp. 241–255). London: Falmer.
- Unwin, L. (2010). *Learning and working from the MSC to New Labour: young people, skills and employment*. *National Institute Economic Review*, 212(1), 49–60.
- van Rensburg, D. J., Visser, M., Wildschut, A., Roodt, J., & Kruss, G. (2012). *A technical report on learnership and apprenticeship population databases in South Africa: Patterns and shifts in skills formation*. Retrieved from [zotero://attachment/169/](https://zotero://attachment/169/)
- Wakeham, W. (2016). *Wakeham Review of STEM degree provision and graduate employability*. Retrieved from [http://dera.ioe.ac.uk/16297/2/ind-16-6-wakeham-review-stem-graduate-employability\\_Redacted.pdf](http://dera.ioe.ac.uk/16297/2/ind-16-6-wakeham-review-stem-graduate-employability_Redacted.pdf)
- Westermann, W. L. (1914). *Apprentice Contracts and the Apprentice System in Roman Egypt*. *Classical Philology*, 9(3), 295–315.
- Wilde, S., & James Relly, S. (2015). *WorldSkills UK training managers: Midas touch or fool's gold?* *International Journal for Research in Vocational Education and Training*, 2(2), 85–98.
- Williams, J., Foley, B., & Newton, B. (2013). *Report for unionlearn and the National Apprenticeship Service: Research into under-representation, by gender and ethnicity, in apprenticeships (No. 503)*. Brighton, UK: Institute for Employment Studies. Retrieved from <http://www.employment-studies.co.uk/system/files/resources/files/503.pdf>
- Windley, G. (2017). *Indigenous VET participation, completion and outcomes: change over the past decade*. Retrieved from <https://www.ncver.edu.au/publications/publications/all-publications/indigenous-vet-participation-completion-and-outcomes-change-over-the-past-decade>

- Wolf, A. (2002). *Does Education Matter?, Myths About Education and Economic Growth*. Retrieved from <https://www.penguin.co.uk/books/25535/does-education-matter/>
- Wolter, A., & Kerst, C. (2015). *The 'academization' of the German qualification system: Recent developments in the relationships between vocational training and higher education in Germany*. *Research in Comparative and International Education*, 10(4), 510–524.
- Wolter, S. C., & Ryan, P. (2011). *Apprenticeship*. In E. A. Hanushek, S. Machin, & L. Woessmann (Eds.), *Handbooks in Economics* (Vol. 3, pp. 521–576). The Netherlands: North-Holland. Retrieved from <https://olc.worldbank.org/sites/default/files/Handbook%202010%20Apprentice%20article%20%281%29.pdf>
- World Bank. (2008). *At the Crossroads: Choices for Secondary Education in Sub-Saharan Africa (Africa Human Development Series)*. Washington DC: Africa Human Development Department, World Bank. Retrieved from <https://openknowledge.worldbank.org/bitstream/handle/10986/6537/453970PUB097801EoONLY10Aug029102008.pdf?sequence=1&isAllowed=y>
- World Bank. (2016a). *Labor force, female (% of total labor force)*. Retrieved 18 June 2017, from <http://data.worldbank.org/indicator/SL.TLF.TOTL.FE.ZS>
- World Bank. (2016b). *Labor force, total | Data*. Retrieved 8 July 2017, from <http://data.worldbank.org/indicator/SL.TLF.TOTL.IN>
- World Bank. (2016c). *World Bank list of economies 2016*. Retrieved from <http://siteresources.worldbank.org/DATASTATISTICS/Resources/CLASS.XLS>
- World Bank. (2016d). *World Bank Open Data*. Retrieved from <http://data.worldbank.org/>
- Wyman, N. (2017). *America's Got Talent – Trump's Spotlight On Apprenticeships*. *Forbes*. Retrieved from <http://www.forbes.com/sites/nicholaswyman/2017/06/16/americas-got-talent-trumps-spotlight-on-apprenticeships/>
- Ziderman, A. (2016). *Funding mechanisms for financing vocational training: An analytical framework (Working Paper No. 110)*. IZA Policy Paper. Retrieved from <https://www.econstor.eu/handle/10419/157300>



WISE would like to acknowledge the support of the following organizations:











# wise

world innovation summit for education  
مؤتمر القمة العالمي للابتكار في التعليم

An Initiative of Qatar Foundation

wise|research