

International approaches to the development of intermediate level skills and apprenticeships

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Abbreviations

ABS	Australian Bureau of Statistics
ACCI	Australian Chamber of Commerce and Industry
ANTA	Australian National Training Authority
APL	Accreditation of prior learning
AQF	Australian Qualifications Framework
AQTF	Australian Quality Training Framework
AU\$	Australian Dollars (1 AU\$ = 0.74555 EUR)
BBL	Work-based vocational training (<i>beroepsbegleidende leerweg</i>) (Netherlands)
BDI	Federation of German Industry (<i>Bundesverband der Deutschen Industrie</i>)
BIBB	Federal Institute for Vocational Education and Training (<i>Bundesinstitut für Berufsbildung</i>) (Germany)
BMBF	Federal Ministry for Education and Research (<i>Bundesministerium für Bildung und Forschung</i>) (Germany)
BOL	School-based vocational training (<i>beroepsopleidende leerweg</i>) (Netherlands)
CBS	Statistics Netherlands (<i>Centraal Bureau voor de Statistiek</i>)
COLO	[Association of] National centres of expertise on vocational education, training and the labour market (<i>Samenwerkende kenniscentra voor beroepsonderwijs en bedrijfsleven</i>) (Netherlands)
CVET	Continuing vocational education and training
DEEWR	Department for Education, Employment and Working Relations (Australia)
DFAT	Department for Foreign Affairs and Trade (Australia)
DGB	German Federation of Trades Unions (<i>Deutscher Gewerkschaftsbund</i>)
EU	European Union
EUR	Euros
FNV	Federation of Dutch Trade Unions (<i>Federatie Nederlandse Vakbeweging</i>)
HAVO	Senior general secondary education (<i>hoger algemeen voortgezet onderwijs</i>) (Netherlands)
HBO	Higher vocational education (<i>hoger beroepsonderwijs</i>) (Netherlands)
IAB	Institute for Employment Research (<i>Institut für Arbeitsmarkt- und Berufsforschung</i>) (Germany)
IVET	Initial vocational education and training
IW	Institute for Economic Research (Cologne) (<i>Institut der deutschen Wirtschaft (Köln)</i>) (Germany)
KBA	Knowledge Centre for Vocational Training and Labour Market (<i>Kenniscentrum Beroepsonderwijs Arbeidsmarkt</i>) (Netherlands)
MBO	Senior secondary vocational education (<i>middelbaar beroepsonderwijs</i>) (Netherlands)
MCVTE	Ministerial Council for Vocational and Technical Education (Australia)
NCVER	National Centre for Vocational Education Research (Australia)

OCW	Ministry of Education, Culture and Science (<i>Ministerie van Onderwijs, Cultuur en Wetenschap</i>) (Netherlands)
OECD	Organisation for Economic Coordination and Development
PP	Percentage points
ROA	Research Centre for Education and the Labour Market (Netherlands)
ROC	Regional Training Centres (<i>Regionale opleidingscentra</i>) (Netherlands)
RTO	Registered Training Organisation (Australia)
SME	Small and medium-sized enterprises
TAFE	Technical and Further Education (Australia)
US\$	US Dollars (1 US\$ = 0.74749 EUR)
VET	Vocational education and training
VMBO	Pre-vocational education (<i>voorbereidend middelbaar beroepsonderwijs</i>) (Netherlands)
VWO	Pre-university education (<i>voorbereidend wetenschappelijk onderwijs</i>) (Netherlands)
WEB	Vocational Training Act (<i>Wet en educatie en beroepsonderwijs</i>) (Netherlands)
WO	University education (<i>wetenschappelijk onderwijs</i>) (Netherlands)

Overview

This work was commissioned in response to increasing strategic and policy focus on developing intermediate level skills in the UK, particularly through the use of apprenticeships. It seeks to provide a better understanding of how other countries have developed intermediate level skills and what part apprenticeships play within their skills systems.

Following horizon scanning, three countries were selected as case studies for the research: Australia, Germany and the Netherlands. All three countries were considered to be examples of countries which, first, have each developed an efficient and successful training system that has existed for more than a decade and second, use alternative approaches along the principal antagonisms in intermediate vocational training: (a) company-based training *versus* school-based training; (b) initial training *versus* lifelong learning; (c) theoretical *versus* practical knowledge; and (d) modular *versus* curricula-based training.

The main report, *International Approaches to the Development of Intermediate Level Skills and Apprenticeships: Synthesis Report*, contains summaries of the case studies, discusses findings with respect to UK policy learning, draws broad conclusions with respect to the character and effectiveness of the intermediate levels skills systems in the countries studied, and discusses the relevance of international policy experience for the UK. It is available at: www.ukces.org.uk.

The full case studies are presented in alphabetical order by country below.

Case Study A: Australia

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A1. Summary and key findings

Australia undertook a major exercise to modernise its intermediate vocational training system and to expand overall training participation in the 1990s. It created a modularised and output-oriented system which is used by people of all ages, addressing the training needs of both school-leavers and adults. Its flexible modular structure allows learners to achieve completed formal qualifications, single certified modules, or courses without formal qualification. It covers around 80 per cent of all occupations in Australia and ranges from ISCED levels 2 to 4.

The intermediate VET system is based on the Australian Qualifications Framework (AQF) and the Australian Quality Training Framework (AQTF). The AQF defines the attainable certificates for six intermediate qualification levels. Developed by the industries, training packages determine how AQF qualifications in particular occupations can be achieved. The AQTF regulates the standards for registered training organisations (RTOs).

In 2009, 1.7 million people were enrolled in the publicly financed VET system of whom 20 per cent were apprenticeships or traineeships (henceforth, for simplicity, both will be referred to as 'apprenticeships' or as 'apprentices', except where explicitly distinguished)¹, which combine paid work with structured training, either on-the-job or off-the-job. About 1.2 million people attended courses at an intermediate level.

Due to its modular structure, high permeability is achieved within the intermediate VET system and in transition to higher education. Modularisation, however, also means that completion rates are low: in 2005 only 27 per cent of the students achieved an AQF qualification, even though 79 per cent completed one of the modules. Transition rates to the labour market, however, are high: in 2009, 76 per cent of all VET graduates were employed within six months of completing their training. Apprentices achieved an even higher rate of 86 per cent.

The intermediate VET system is seen as an important ingredient for Australia's competitiveness as it provides the skills for a major part of the workforce. The government continuously reviews a 'National Skills Needs List' in order to avoid skills

¹ In Australia, apprenticeships and traineeships are essentially the same type of training, but can be distinguished by the fact that apprenticeships last three to four years, whereas traineeships last between six months and two years, have lower skills requirements than apprenticeships and often take place in sales, service and clerical occupations. The term 'Australian Apprenticeships' can be used to refer to both.

shortages. Particular benefits are paid to employers who train apprentices in these trades. Employers can send their employees to attend particular courses in public VET, which enables employers to adapt to changing skills requirements quickly. This is appreciated as contributing to the overall flexibility of the workforce and to economic restructuring.

The system is funded by the federal and regional governments, employers and individuals. Total expenditure on intermediate VET is estimated to be about one per cent of GDP, half of which is from government contributions and the other half from employers. The contribution of individuals is unknown due to varying training fees, but it is considerably lower than the contribution made by students in higher education.

All three parties involved in intermediate VET face costs and benefits of intermediate training (see Table A1.1): employers, who train their employees further, face costs in terms of support for staff doing formal courses, fees and paid time off. For about one third of employers apprenticeships are successful ways to meet skills needs. As a result, supervision costs are the largest component of costs whereas apprentices' wages and training fees are more or less outweighed by the productive contributions of the apprentices. Employer benefits increase when the apprentices are taken on by the employer after completing training, as the company gains motivated, familiar employees and saves recruitment costs for external employees.

Participants benefit from training in terms of life-time benefits in the form of increased future labour market opportunities and higher future earnings. In Australia, people with intermediate level skills earn on average 19 per cent more than those with below secondary education. They are also less often unemployed (-2.6 percentage points) and more often in employment (19 percentage points). During training, the highest costs for apprentices and other types of intermediate level VET trainees are foregone earnings in another (unskilled) job.

The government profits from investment in intermediate level VET via positive tax returns from a more highly skilled workforce and lower unemployment risks. The modular and output-oriented training system provides a flexible workforce and contributes to Australia's competitiveness. The Australian intermediate VET system thus provides a 'win-win-win' outcome for all stakeholders.

One of the main achievements of Australia's intermediate level VET system is the high participation rate of adults in vocational training. This results both in opportunities for catching up on missed training and lifelong learning for an ageing workforce. It offers sufficient flexibility to companies to adjust rapidly to changing skills needs. As the VET system allows a selective approach to training, it does not force participants to complete

qualifications. The system is, however, at risk of being driven by current needs of employers and trainees.

Nevertheless, the fact that many people work in different occupational groups from those in which they initially trained not only reflects the flexibility of the training system but indicates the relevance of generic skills training provided by the system. Public institutions, however, are aware of the potential weakness of training standards. In order to enforce national standards and the Australian Qualifications Framework, there are moves towards having a single national VET regulator rather than the current state and territory based system.

Table A1.1 Costs and benefits of intermediate level skills in Australia

Employer costs	Employer benefits
<p><i>Participants in institutional pathway</i> Support for staff doing formal courses – fees and paid time off</p> <p><i>Apprentices</i> Direct costs:</p> <ul style="list-style-type: none"> Apprenticeship wages – largely outweighed by productive contribution of apprentices/trainees (Annual wages measured in the last week of training ranged between AU\$ 31,300/€23,336 and AU\$ 39,300/€29,300 in 2009) (NCVER, 2010f) Recruitment costs If a group training provider is used: fees paid by employers to a group training company <p>Indirect costs:</p> <ul style="list-style-type: none"> Apprentice supervision costs (largest part of costs) Administration costs Extra maintenance and material waste Loss of training investment in case of poaching 	<p><i>Participants in institutional pathway</i></p> <ul style="list-style-type: none"> Meeting specific job- or business-related skills for their organisations Keep up with demands of new technology - increased competitiveness of company Fulfilling legislative or licensing requirements of particular jobs Improving overall management of human resources Higher productivity from trained workers A competitive edge in attracting and retaining workers <p><i>Apprentices</i></p> <ul style="list-style-type: none"> High productive contribution of apprentice Government incentives (4% of operating expenditure in 2009) (NCVER, 2010a); effect of incentive payments is evaluated to be minimal Employers can show altruism <p><i>If an apprentice is taken on:</i></p> <ul style="list-style-type: none"> Recruitment decision: selection of future employees during training period Avoidance of specific skills shortages Returns for training depend on the provision of future career paths for apprentices/trainees, for retaining their commitment and motivation
Participant costs	Participant benefits
<p><i>Participants in institutional pathway</i></p> <ul style="list-style-type: none"> Dominant part of costs is forgone earnings: (expected wages in an unskilled alternative job minus actual wages). In OECD (2010a) calculation of net present value of intermediate training, forgone earnings were €16,939 for males and €17,476 for females Course fees (in OECD calculations of net present value of intermediate training, direct training costs per individual were €2,161) Student fees strongly vary. In 2009 student fees and charges were 4% of operating revenues in the public VET system (AU\$ 292.8 million/€218.3 million) (NCVER, 2010a) <p><i>Apprentices</i></p> <ul style="list-style-type: none"> Dominant part of costs are foregone earnings (as above) Costs associated with training: such as tools, textbooks, safety equipment not paid for by the employer that takes on apprentices Travel costs Course fees (as above) 	<p><i>Participants in institutional pathway and apprentices/trainees</i> Life-time benefits (OECD, 2010a):</p> <ul style="list-style-type: none"> Low unemployment rate of 2.6% (- 2.6 percentage points in comparison to a person with below upper secondary education) Higher employment rate: 80.9% (+ 19.4 percentage points in comparison to a person with below upper secondary education) 19 % higher wages compared to a person with below upper secondary education) High net present values of training at intermediate level (€63,148 for males and €32,580 for females/life-time investment) <p><i>Apprentices</i></p> <ul style="list-style-type: none"> Apprenticeship wage (see employer costs) Occasional incentives paid to apprentices
Government costs	Government benefits
<p>Operating expenditures of VET were AU\$ 6803.4 million/ €4738.6 million in 2009 (NCVER, 2010a). Thereof:</p> <ul style="list-style-type: none"> 58% for VET staff costs 26% for supplies and services 4% grants & subsidies 8% for payments to non-TAFE providers for VET 4% for depreciation and amortisation 	<ul style="list-style-type: none"> High income tax effect (€26,949 for males and €19,329 for females; value above OECD (2010a) average) High reduction of unemployment costs (€6,888 for males and €3059 for females) (OECD, 2010a) Addressing and reducing skills shortages Flexible workforce due to modular and output-oriented training system has a positive impact on competitiveness Comparatively low public net present value €20,569 for males and €21,219 for females (OECD, 2010a)

Source(s): NCVER (2010a, 2010f); OECD (2010a); Economix.

A2. Characteristics of the intermediate vocational education and training system

A2.1 Economic and social background

Mainland Australia comprises 7.69 million square kilometres (DFAT, 2011), whereas the estimated resident population was only 22.27 million in March 2010 (ABS, 2010a). Thus, Australia has the lowest population density in the OECD area (OECD, 2009).

Australia is a federal state with six states that have their own constitution, and ten territories of which only two are part of the mainland. The states are New South Wales, Victoria, Queensland, South Australia, Western Australia and Tasmania. The two major mainland territories are the Northern Territory and the Australian Capital Territory. The governing responsibility is shared between three levels: the federal Australian Government, the governments of the six states and two territories and more than 700 local government authorities (DFAT, 2011).

Within the last century, the economic success of the country was based on agriculture, and later, mineral and fuel resources. Even though these sectors are still important, Australia has increasingly become a knowledge-based economy (DFAT, 2011). This is reflected in the level of educational attainment of the populace (OECD, 2010a):

- 36 per cent graduated at tertiary level (ISCED 5/6)
- 34 per cent at secondary II level or post secondary non-tertiary level (ISCED 3/4)
- 22 per cent have a lower secondary education (ISCED 2)
- 8 per cent have no school leaving certificate higher than primary education

The labour market is characterised by a high share of independent contractors and a large share of part-time and casual employment. Of the 10.66 million people employed in 2009, 81 per cent were employees, 10 per cent were independent contractors and 9 per cent were 'other business operators' (a special form of self-employment). Only 61 per cent of employees had paid leave entitlements (paid sick and/or paid holiday leave) (ABS, 2009). In 2009, about one quarter of employees were part-time employed, a proportion that is twice as high as the OECD average of 16.2 per cent (OECD, 2010b). Australia has 'a large pool of underemployed workers – comprising full-time workers who have been asked to work part-time during the downturn and so called "involuntary" part-timers who could not find a full-time job' (OECD, 2010c, p.1).

Australia has endured the global financial crisis comparably well, even though growth in real GDP decreased considerably between 2007 and 2009 (from 4.8 per cent to 1.4 per cent). Australia has recovered rapidly due to its exports to Asia and the Australian

Economic Stimulus Plan introduced in 2009.² In the decade before the global financial crisis, Australia's economy had high GDP growth and employment rates. Between 1989 and 2008 the annual average growth rate was 3.3 per cent (OECD, 2009). The unemployment rate rose by about one third between 2008 and 2009 (from 4.3 per cent to 5.7 per cent). In the same time period, youth unemployment increased from 8.9 per cent to 11.6 per cent, although it is still far below the OECD average of 16.4 per cent.

The economy is challenged by skills shortages which emerged during the growth period before the global financial crisis. The aging population will also exacerbate this challenge.

A2.2 Historic evolution

In the 1960s and 1970s the economic significance of traditional manufacturing, mining and agriculture in Australia began to decline and new communications and the financial industry started to grow. Until the 1970s each state and territory administered and developed its training system independently. Apprenticeship training was mainly provided in traditionally male occupations such as construction and engineering. Due to a high unemployment rate in 1973 the Commonwealth Government introduced the National Apprenticeship Assistance Scheme which included more incentives to employers in order to take on more apprentices. In 1974 funding for Technical and Further Education (TAFE) Colleges was introduced.

The next large change in the system was the introduction of traineeships in order to address the high youth unemployment rate in 1985 (Snell and Hall, 2007). Traineeships are shorter than apprenticeships and last between six months and two years, have lower skills requirements and often take place in sales, service and clerical occupations.

In the 1990s large changes took place in the Australian vocational education and training (VET) system as it changed from a system which was largely run by the states and territories, to a system which is coordinated at the national level. The system switched from a content-orientation (dominating elements were training duration or training curricula) to a stronger output-orientation and a national competence-based system of qualifications has been developed (Hoeckel *et al.*, 2008). In 1992 the Australian National Training Authority (ANTA) was established and the strategic input from industry increased. Thus, a VET system which better met the needs of the labour market could be established with more modular and flexible training programmes (BIBB, 2006).

Under the new Commonwealth Government and the Prime Minister John Howard in 1996, significant changes have been implemented in the VET sector, 'with a more pronounced agenda of privatisation and deregulation' (Snell and Hall, 2007, p. 502). In particular, New Apprenticeships, which combine apprenticeships and traineeships, were

² For information on the Australian Economic Stimulus Plan, see the [Australian Government](#) website.

introduced in 1998 as well as Australian Apprenticeship Centres which served as sign-up agencies. Moreover, training packages have been developed and subsidies for employers to take on apprentices have also been expanded. In order to increase competition in the sector, the training market has been opened to private registered training organisations (RTOs) and group training organisations (GTOs). Thus, funding in the training market has been dispersed competitively between private and public training providers (Stanwick, 2009). In addition, subsidised training has been opened up to existing employees for the first time. These changes have resulted in the doubling of numbers participating in training in the decade between 1997 and 2006 and have changed the profile of apprentices considerably (Snell and Hart, 2007). In 2005, the Howard Government reorganised the institutions involved in the VET sector and transferred the responsibility for VET from ANTA to the Department of Education, Science and Training.

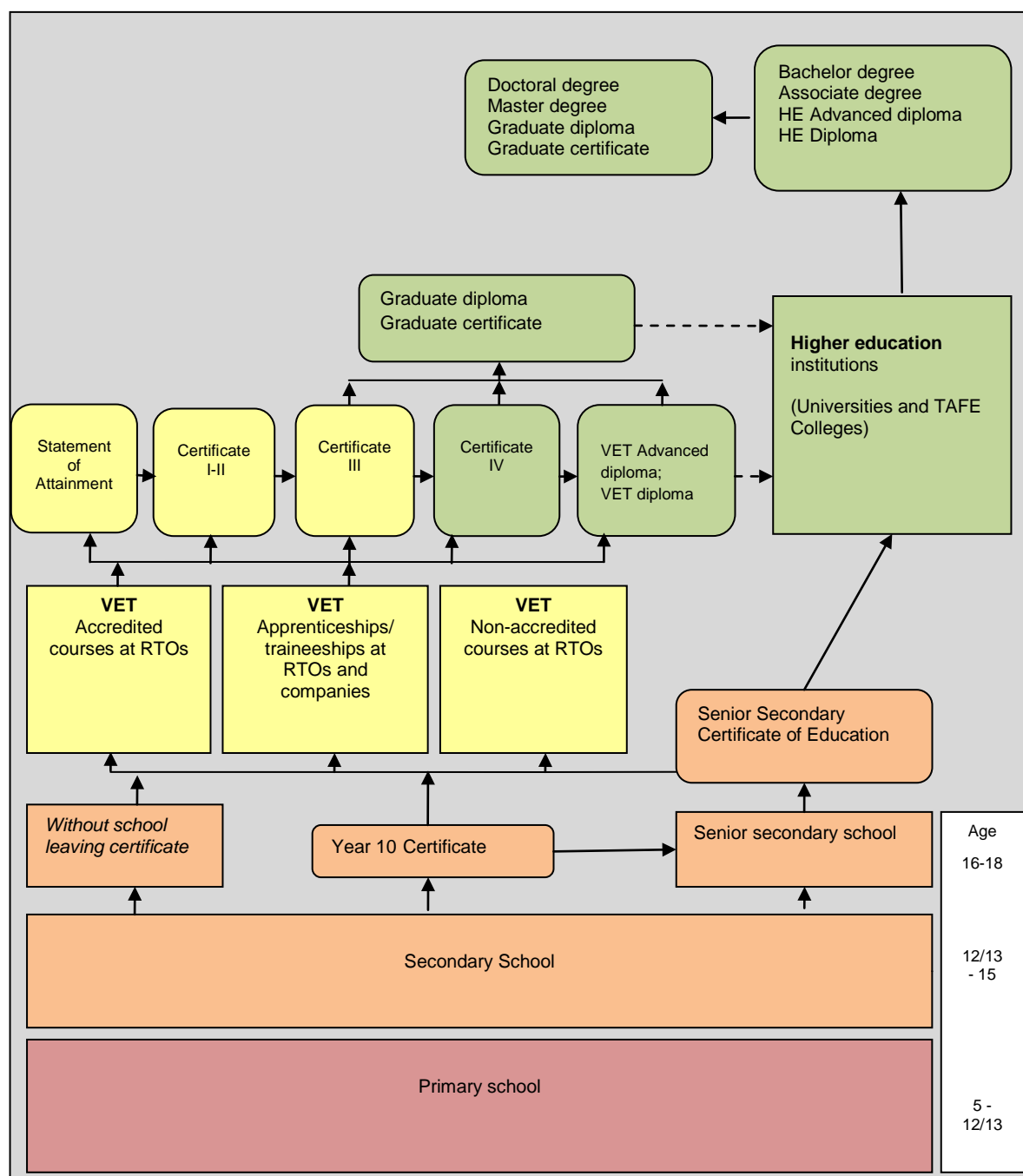
A2.3 Principal structure of education system

The Australian VET system is characterised by a focus on lifelong learning and a modular structure. It is designed for people who enter the workforce for the first time, wish to re-enter the workforce after a period of absence or people who want to update or upgrade their skills. Thus, the VET system meets the needs of people of all ages, not just young people. While VET mainly trains learners for the intermediate and lower occupational levels, tertiary education serves the 'professional end of the labour market' (Knight and Mlotkowski, 2009, p. 21).

Figure A2.1 gives an overview of education and training in Australia. Education in Australia is compulsory for children between five and fifteen years of age. These ages sometimes vary slightly between states, as does the grade structure of schools. The last two years of secondary education (senior secondary school) are usually not compulsory (Koutsogeorgopoulou, 2009).

The general education and training system starts with primary education which is delivered in primary schools, followed by secondary education which comprises secondary schools and senior secondary schools. Young people can achieve a Year 10 Certificate or continue at Senior Secondary School to achieve a Senior Secondary Certificate of Education after Year 12. This certificate allows one to enter higher/tertiary education, which is provided by universities and Technical and Further Education (TAFE) Colleges.

Figure A2.1 Education and training in Australia: Overview



Source: [Australian Government website \(2011a\)](#); *Economix*.

In the VET system accredited (formal; leading to a recognised qualification), non-accredited courses (non-formal and do not end with a recognised qualification) and apprenticeships can be achieved. Due to the modular character of the VET system it is also possible to achieve single units of competencies from AQF qualifications, so-called AQF 'statements of attainment' which can be accumulated to provide a complete qualification.

Accredited courses and apprenticeships lead to different AQF qualifications: Certificates I and II (which take between 1-2 years); Certificates III and IV (2-4 years); VET Diplomas (2 years); and VET Advanced Diplomas (2-3 years).

Intermediate level skills are defined according to the AQF qualifications Certificate I (ISCED 2C), Certificate II (ISCED 3C) and Certificate III (ISCED 4B). More than two thirds of the qualifications achieved in the public VET system are at intermediate level (NCVER, 2010a).

After completing Certificate III, IV, the VET Diploma or VET Advanced Diploma, Vocational Graduate Diplomas (6 months) and Graduate Certificates (1 year) can be achieved. These two qualifications and VET Diplomas/Advanced Diplomas can be accredited towards higher education degrees. Non-accredited courses do not end with a qualification.

Moreover, the VET system provides a wide range of programmes which address specific learner groups (such as culturally appropriate training for Indigenous Australians; courses for people with disabilities; English courses for immigrants).

A2.3.1 Australian Qualifications Framework (AQF)

The AQF is a comprehensive and nationally consistent framework which regulates post-compulsory education. It was introduced in 1995 and comprises qualifications from the school sector, the vocational education sector and the higher education sector (Table A2.1). AQF qualifications are based on the level of learning outcomes achieved instead of on the length of the course. They are formal certificates which are issued by recognised training organisations (RTO). Statements of attainment (single units of competences) can be accumulated to provide a complete qualification. This modular structure of training increases the flexibility of the system and makes it attractive for adult learners (BIBB, 2006).

Table A2.1 Australian Qualifications Framework categories and ISCED equivalents

Post-compulsory secondary education accreditation	VET accreditation	Higher education (HE) accreditation	International standard classification of education (ISCED) equivalent
Statement of attainment (for partial completion of a full qualification)			None
Senior secondary certificate	Certificate I		2C
	Certificate II		2C
	Certificate III		3C
	Certificate IV		4B
	VET diploma	HE diploma	5B
	VET advanced diploma	HE advanced diploma	5B
		Associate degree	5A
		Bachelor degree	5A
		HE graduate certificate	5A
		HE graduate diploma	5A
		Masters degree	5A
		Doctoral degree	6

Source: Hoeckel et.al. (2008); NCVER (2007); Economix.

A2.3.2 Australian Quality Training Framework (AQTF)

The AQTF is a national set of standards which help to ensure there are 'nationally consistent, high-quality training and assessment services in the VET system' (training.com.au, 2010). Thus, it 'underpins the provision of competency-based, quality-assured training with nationally recognised units of competency and qualifications' (OECD and CERI, 2009, p. 7).

The AQTF comprises two sets of standards – one for RTOs and one for training providers that wish to become an RTO. The national sets of standards give assurance to industry that particular quality standards are met when training takes place under this framework. Recently a voluntary 'excellence' criterion has been added to the AQTF which focuses on encouraging high performance amongst training providers (Stanwick, 2009).

The AQF and the AQTF will be reviewed and updated in forthcoming years in order to improve the national consistency of the system. Along the same time frame, the VET system will move to a single national VET regulator rather than the current state and territory based regulation system. The number of available qualifications will be reduced and the contents are being reviewed (Expert interview).

A2.3.3 Training packages

Training packages play a central role for AQF qualifications and function as quality assurance instruments (BIBB, 2006). They comprise a set of nationally endorsed competency standards, assessment guidelines and AQF qualifications for specific industries, sectors or enterprises (Service Skills Australia, 2010). Training packages determine the necessary combination of single units of competency ('statements of attainment'), which is required for each recognised qualification. The specialty of training packages is that they do not restrict the way in which training time is allocated. The responsibility for choosing and applying appropriate teaching and learning models and assessment methods lies with the RTOs. Currently about 70 training packages exist (OECD and CERI, 2009).³

Training packages are developed by Industry Skills Councils and are continually reviewed and updated with various consultations with employers, industry associations, unions, government and other stakeholders. Small changes in training packages can be undertaken by skills councils, whereas larger changes must be submitted to the National Quality Council (Service Skills Australia, 2011).

³ In addition to training packages a small number of national courses also exist which were developed under the former Australian Recognition Framework and which have not been replaced by training package qualifications.

Training packages comprise assessment guidelines which determine an assessment framework for units of competency. They also define possible ways of achieving an AQF qualification or statements of attainment by means of:

- formal or informal education and training;
- experiences in the workplace;
- general life experience;
- any combination of the above.

When an individual already possesses competencies required for the selected AQF qualification, these can be directly assessed and certified against units of competency in the training package – which reduces the training period required (Service Skills Australia, 2010).

Example of training package: Retail Services training package

As an example, the Retail Services training package determines the different AQF qualifications which can be achieved under this training package as well as the necessary number of core units and elective units required (Table A2.2).

Table A2.2 Qualification requirements of the Retail Services training package

Qualification code and title	Number of core units required	Number of elective units required	Total number of units required
Certificate I in Retail Services	5	N/A	5
Certificate II in Community Pharmacy	19	3	22
Certificate II in Retail	9	5	14
Certificate II in Wholesale	10	4	14
Certificate III in Community Pharmacy	21	13	34
Certificate III in Retail	3	7	10
Certificate III in Wholesale	3	7	10
Certificate IV in Community Pharmacy	22	11	33
Certificate IV in Retail Management	3	7	10
Diploma of Retail Management	2	7	9
Diploma of Visual Merchandising	26	6	32

Source: Service Skills Australia (2010).

In the following table, Certificate II in Retail is described in more detail. The training package first describes the job roles of this AQF qualification and points out that it would be suitable for an apprenticeship pathway. It comprises the core units set out in the table below and several other elective units.

Table A2.3 Core units for Certificate II in Retail

Core units
Apply point-of-sale handling procedures Interact with customers Organise and maintain work areas Communicate in the workplace Operate retail technology Work effectively in a retail environment Perform stock control procedures Apply safe working practices Minimise theft

Source: Service Skills Australia (2010).

A2.3.4 Apprenticeships and traineeships

Apprenticeships and traineeships are available to everyone as no formal entry qualification is required. They lead to nationally recognised AQF qualifications and skills which build the foundations for continuing education and training in working life.

Apprenticeships combine in-company training (about 80 per cent of the time) with off-the-job training mainly in TAFE institutes. The duration is three to four years. In the 1990s the apprenticeship model was expanded with the introduction of traineeships in occupations other than trade, for example sales, service and clerical occupations. Traineeships have lower skill requirements than apprenticeships and usually last between six months and two years (usually one year) (Knight and Mlotkowski, 2009). However, due to the introduction of a number of higher level and longer traineeships within the last few years the distinction between apprenticeships and traineeships has become somewhat blurred, and the term 'Australian Apprenticeships' is often used for both. Nevertheless, some states and territories still make use of the distinction (training.com.au).

Those interested in apprenticeships⁴ receive information about occupations as well as training and career options on several websites.⁵ Students can also contact career advisers or teachers at school. Finally, interested persons have to find an employer for an apprenticeship where they apply for a training occupation of choice. Job vacancies for apprenticeships are advertised in local newspapers or on the web, for example at the Australian [JobSearch](http://www.jobsearch.gov.au) website. People can also contact Job Services Australia – the Australian Government's national employment services system or local Australian Apprenticeships Centres who help to find employers who provide apprenticeships ([jobguide](http://jobguide.deewr.gov.au) homepage, 2011).

Apprenticeships combine paid work with structured training which can be on-the-job, off-the-job or a combination of both. Like the other parts of the VET system, it is competence-based, which means that the duration of training depends on the time the

⁴ Again, herein used to refer to both apprenticeships and traineeships, unless otherwise distinguished.

⁵ www.jobsearch.gov.au/careers ; www.jobguide.deewr.gov.au/; myfuture.edu.au/ www.aajobpathways.com.au/ www.aatinfo.com.au/

individual needs to reach the required skills levels. Previously acquired experiences and statements of attainment can be accredited (Australian Apprenticeships, 2010).

Apprenticeships can be delivered in different forms:

- Australian School-based Apprenticeships, which allow students from Year 10 to combine completing school and starting an Australian Apprenticeship.
- Full-time Australian Apprenticeships mean the apprentice spends the whole week with on-the-job training in the company and off-the job training with a chosen training provider.
- Part-time Australian Apprenticeships are often used by small and medium sized enterprises. A minimum number of hours of on-the-job and off-the-job training per week are provided to the apprentice (e.g. 15 hours per week).
- Existing staff that have already worked at the company for more than three months full-time or 12 months part-time or casually, are given the opportunity to upgrade their skills. Due to the recognition of on-the-job experience the training is more cost-effective and faster. Companies which provide this type of training are eligible for Australian Government funding.
- Group training organisations (see below).

Today apprenticeships are available at different certificate levels and for more than 500 occupations in most sectors of business and industry, such as those listed below.

Table A2.4 Sectors providing apprenticeships (and traineeships)

<ul style="list-style-type: none"> • Agriculture, Horticulture and related industries • Automotive • Building and Construction • Business Services • Financial Services • Food • Hairdressing • Community Services and Health • Information Technology • Light Manufacturing • Local Government • Metals and Engineering 	<ul style="list-style-type: none"> • Printing • Process Manufacturing • Property Services • Public Services • Retail • Seafood • Sport and Recreation • Telecommunications • Tourism • Transport and Distribution • Utilities and Energy
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Source: [Australian Apprenticeships website](#) (2010).

An interesting feature of the system is the national policy called 'user choice', which governs the flow of public funds to RTOs and was introduced under the New Apprenticeships reform in 1998 (Snell and Hart, 2007). User choice enables employers and their apprentices to choose the RTO for the off-the-job training part on their own. However, the introduction of more competition in training markets and the availability of

user choice have sometimes been hampered by ‘the desire of most states to maintain the viability of their TAFE institutions’ (Knight and Mlotkowski, 2009, p. 38).

Group training organisations (GTOs) match Australian apprentices with host employers by selecting apprentices and arranging and monitoring on-the-job and off-the-job training. They are financed by the Australian state and territory governments and from a minimal charge applied to host employers. Employers benefit from working with a GTO because they incur fewer administrative duties. In addition they don’t have to provide a permanent position for the apprentice as the GTO acts as the primary employer of the apprentice. In 2010, more than 35,000 enterprises and over 40,000 Australian Apprentices worked with GTOs (training.com.au).

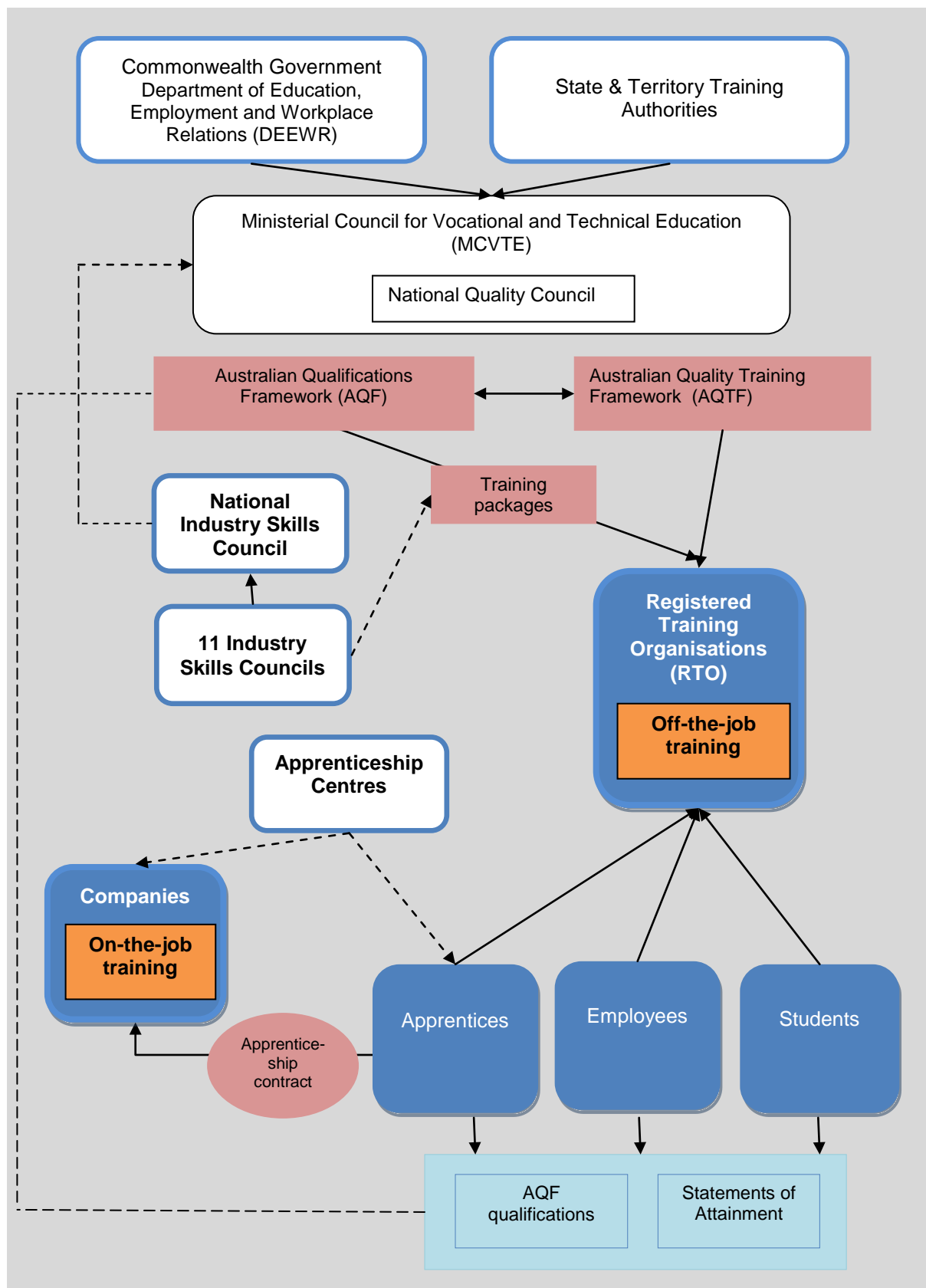
A legal contract between an employer and an apprentice is necessary, which determines, among other things, the training wage and conditions. In addition, the employer has to determine a training plan with details about on-the-job and off-the-job training. This plan has to be endorsed by the chosen training provider. The contract and the training plan have to be submitted to the relevant state or territory training authority (training.com.au).

A2.4 Institutional organisation and VET providers

The Australian government and the six state and two mainland territory governments are responsible for the VET system (see Figure A2.2). The responsible government body for VET policy is the Ministerial Council for Vocational and Technical Education (MCVTE), which is composed of state, territory and Australian government ministers responsible for vocational education and training. MCVTE is accountable for strategic policy, planning and performance as well as key cross-sectoral issues impacting on the national training system, which comprise workforce planning (including skills needs and skills forecasting), and articulation between higher education and vocational education and training. An important committee of the MCVTE is the National Quality Council, which comprises representatives from government, industry groups, unions, employee organisations and training providers. It is responsible for the current and future quality of VET. For example it developed the AQTF and monitors it on behalf of the ministers (Knight and Mlotkowski, 2009).

The state and territory training ministries are responsible for planning and reporting on VET strategies, administering the funding, Australian Apprenticeships and VET in schools as well as supporting RTOs. Moreover, they accredit courses and register training providers within the Australian Quality Training Framework.

Figure A2.2 Institutional structure of intermediate vocational training



Source: Economix.

In order to guarantee strong industry leadership in the VET system 11 Industry Skills Councils exist, which collect information about industry training needs from employers, unions and professional industry associations. They see themselves as 'pivotal change agents within the national training system' ([Industry Skills Councils website](#), 2011). They develop training packages and give advice in training matters ([training.com.au](#)). The head organisation is called the National Industry Skills Council which gives advice to ministers regarding training needs, future training priorities and workforce planning (Knight and Mlotkowski, 2009). In addition to Industry Skills Councils, Skills Australia (an independent statutory body) exists, which was announced in the Australian government's 'Skilling Australia for the Future' policy in 2008⁶. It gives advice to ministers regarding current, emerging and future workforce skills needs and workforce development needs in Australia ([Skills Australia website](#), 2011).

Due to the strong involvement of industries, Australia's VET system is often called an industry-led or business-led training system. However, closer scrutiny suggests that:

Industry engagement has led to a system that is a partnership between businesses and employers on the one hand and the national and state governments and government agencies on the other. Organisations representing non-government providers, employees and specific interest groups also have a key role in some areas (Cully *et al.*, 2009, p. 23).

According to expert interviews, the role of social partners (trades unions and employer representatives) is not as strong in Australia as in some other countries, e.g. in Germany. They are represented in the National Quality Council, work together with Industry Skills Councils and have an advisory function.

In Australia, Australian Apprenticeship Centres exist which operate from more than 500 sites across the country ([training.com.au](#)). They are contracted by the Australian government to provide assistance to employers, training providers, apprentices and trainees. They administer incentive payments to employers and personal benefits to eligible apprentices. They also assist in the signing of training contracts and generally promote apprenticeships in the local area (Australian Apprenticeships, 2010).

VET is delivered by registered training organisations (RTOs). Training providers who want to provide accredited courses have to apply to become an RTO, thus these can be either government or private providers (NCVER, 2007). Australia has about 5,000 RTOs, of which 3,700 are private providers in VET. The majority of students in publicly funded VET, however, are engaged with publicly funded RTOs (ABS, 2010b). Statistics about students in privately funded training are not available.

⁶ For more information see the DEEWR website at:
http://www.deewr.gov.au/Ministers/Gillard/Media/Releases/Pages/Article_081029_121206.aspx

Government (public) registered training organisations come in the following types:

- Technical and Further Education (TAFE) institutions
- Secondary schools and colleges
- Universities
- Agricultural and technical colleges
- Community organisation providers.

Private registered training organisations provide a range of accredited (recognised under a formal training framework) and non-accredited courses. They comprise:

- Enterprises training their own employees
- Private training and business colleges
- Specialist bodies providing training within their industry
- Adult and community organisations.

In 2009, the majority of students (77 per cent) who undertook training at a publicly funded training provider attended a Technical and Further Education (TAFE) institution or another governmental provider, 9 per cent attended community organisation providers and 14 per cent attended other registered training providers, which also include private providers delivering publicly funded VET (NCVER, 2010a).

The National Centre for Vocational Education Research (NCVER) provides comprehensive information about publicly funded VET. However, the publications only cover a small part of training provided by private providers (that which receives public funding), even though private providers play an important part in VET training. According to estimates about private providers by NCVER (Harris *et al.*, 2006), the number of students at private RTOs was 2.2 million (standard error of around 10 per cent) in 2003 compared to 1.7 million in the public sector in the same year. About 170,000 of these students were also covered in NCVER counts of public funded training, as students were publicly funded. Private RTOs are part of a very diverse group which deliver a wide range of accredited and non-accredited VET courses. The majority of private RTOs are small in terms of number of employees (about three quarters employed 20 or fewer employees).

A2.5 Funding

VET is funded by governments, employers and individuals. Initial vocational education and training is mainly financed by the government while employers are major contributors to the cost of continuing training (Ball, 2005).

According to a publication of NCVER, the government (federal, state and territorial combined) spends about 0.5 per cent of GDP on VET training (this does not include expenditure on schools and higher education) (Knight and Mlotkowski, 2009).

In 2009 the Australian, state and territory governments spent AU\$ 4.7 billion (€3.5 billion) on VET, which is equivalent to an increase of 6.4 per cent in comparison to 2008. State and territory governments funded 68.1 per cent of public VET and the Australian government funded 31.9 per cent (Australian Government, 2011a).

There is no definite information available about employers' expenditure; however some of the limited information available suggests that they spent roughly the same amount as the government (Knight and Mlotkowski, 2009). Only relatively old estimates exist for employers' contributions: the Australian National Training Authority (ANTA, 1999) estimated the total costs of VET in 1996 to be AU\$ 8.55 billion (€6.37 billion) and of that, the employers' share equalled AUS 3.89 billion (€2.90 billion; 45 per cent). In 2005, Richardson presented a 'less than accurate' approximation of employer contribution of AU\$ 16 billion for 1996 (Richardson, 2005). The expenditure contributed to VET by individuals is largely unknown.

A3. Performance of intermediate vocational education and training

A3.1 Participation rates

A3.1.1 Public VET system

The total number of students in the public VET system (all levels) has consistently increased over recent years. Altogether, 1.7 million people participated in the public VET system in 2009 (equivalent to about 11 per cent of the population aged 15-64) (NCVER, 2010a). One fifth of those in the public VET system were apprentices (NCVER, 2010a). In comparison, the number of students enrolled in higher education was 1.1 million in 2008 (DEEWR, 2009).

With respect to intermediate level VET, precise participation rates (including both those enrolled in courses that do lead to AQF qualifications and those that don't) are not available. However, estimates can be derived: according to the National Centre for Vocational Education Research (NCVER, 2010a), 69 per cent (912,000 students) of those participating in courses leading to an AQF qualification, and more than half of all participants in the public VET system (53 per cent), studied at intermediate level in 2009 (see Table A3.1). If we assume (albeit arbitrarily) that the same proportion (69 per cent) of those studying on courses that *do not* lead to AQF qualifications were at intermediate level (258,000 students), we can estimate that in total 1.2 million people (about 8 per cent of the 15-64 population) were enrolled in the public VET system at an intermediate level.

Table A3.1 VET participants by qualification, 2005 and 2009

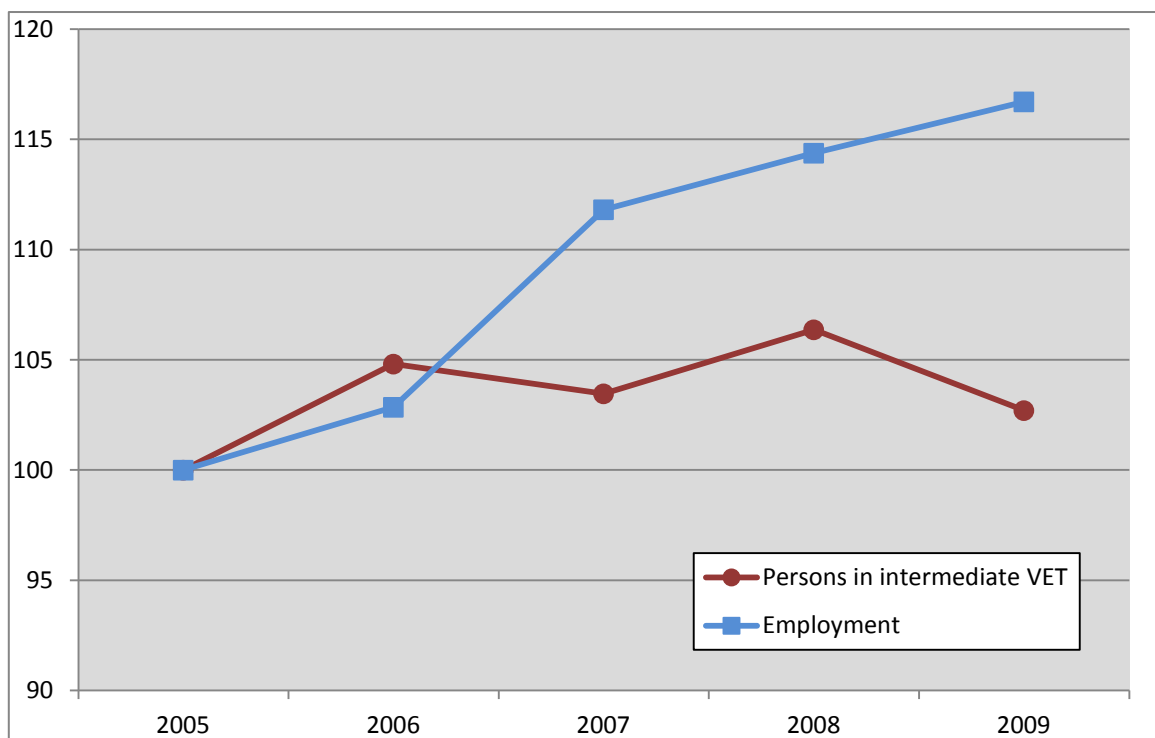
		2005	2009		2005-09
		('000)	('000)	% of all students	% change
AQF qualifications					
	Diploma or higher ⁷	173.1	200.0	11.7	15.5
	Certificate IV	179.1	218.5	12.8	22.0
Intermediate level	Certificate III	437.7	525.8	30.8	20.0
	Certificate II	249.3	295.6	17.3	18.6
	Certificate I	96.7	90.1	5.3	-6.8
<i>AQF intermediate level VET sub-total</i>		<i>783.7</i>	<i>911.5</i>	<i>53.4</i>	<i>16.3</i>
<i>AQF sub-total</i>		<i>1,135.9</i>	<i>1,330.0</i>	<i>77.9</i>	<i>17.1</i>
Non-AQF qualifications					
	Other recognised courses	277.5	209.5	12.3	-24.5
	Non-award courses	94.7	59.7	3.5	-37.0
	Subject only—no qualification	142.7	107.5	6.3	-24.7
<i>Non-AQF sub-total</i>		<i>514.9</i>	<i>376.7</i>	<i>22.1</i>	<i>-26.8</i>
Total students		1,650.8	1,706.7	100.0	3.4

Source: NCVER (2010a, 2011).

⁷ This category includes, VET Diplomas and Advanced Diplomas, Associate Degrees, Bachelor's degrees, Graduate Certificates and Graduate Diplomas

In Figure A3.1, we see that the strong growth in employment between 2005 and 2009 has not lead to an increase in intermediate VET participation. The employment growth seems to cover higher skills levels.

Figure A3.1 Development of employment and persons in intermediate VET
Index 2005=100



Note: Participants in intermediate VET are those who participate in courses leading to an AQF qualification at an intermediate level (Certificate I-III) plus those studying on courses at intermediate level that do not lead to AQF qualifications (using the equivalent proxy proportions as used in the estimation approach above)

Source(s): ABS (2010c); NCVER(2010b); Economix.

As stated earlier, in terms of intermediate level skills, it is difficult to find consistent data on participation rates that incorporate both public and privately funded provision and which includes those not studying towards an AQF qualification. However, as shown in Table A3.2, it is possible to explore the profile of participants in the public VET system across all levels (NCVER, 2010a). The age structure of participants is particularly eye-catching as the system is able to integrate a large share of both adults and young people (Table A3.2). In 2009, 26 per cent were between 15 and 19 years of age and 17 per cent between 20 and 24 years of age, while 55 per cent of participants were 25 or older. The age structure reflects the high share of part-time students (86 per cent), many of whom attend courses alongside working. In 2009, just over half (53 per cent) of those enrolled in the public VET system were males and about 6 per cent had a disability.

Table A3.2 Public VET student characteristics, 2008-2009

	2008	2009		2008–09 % change
	('000)	('000)	%	
Sex				
Males	889.9	896.2	52.5	0.7
Females	807.6	805.6	47.2	-0.2
Not known	2.3	4.8	0.3	107.4
Age				
14 and under	13.2	12.9	0.8	-2.2
15 to 19	443.8	447.4	26.2	0.8
20 to 24	279.4	287.4	16.8	2.9
25 to 44	596.0	601.4	35.2	0.9
45 to 64	319.8	312.7	18.3	-2.2
65 and older	28.1	25.9	1.5	-7.8
Not known	19.4	18.9	1.1	-2.9
Study mode				
Part-time students	1487.0	1466.5	85.9	-1.4
Full-time students	212.7	240.1	14.1	12.9
Apprentices				
Apprentices undertaking off-the-job training	355.7	345.8	20.3	-2.8
Non-apprentices	1344.0	1360.9	79.7	1.3
Students with a disability				
Students with a disability	99.5	100.9	5.9	1.4
Others	1600.3	1605.8	94.1	0.3
English (main language spoken at home)				
Non-English	248.1	254.3	14.9	
Others	1451.6	1452.4	85.1	
Total students	1699.7	1706.7	100.0	0.4

Source: NCVER (2010a).

The most popular fields of study were management and commerce (19.2 per cent) and engineering and related technologies (16.6 per cent) (see Table A3.3). Regarding the type of accreditation, it is evident that the majority of students (66.2 per cent) in the public VET system participated in courses which are regulated under a national training package. Only 13.7 per cent attended courses which lead to other accredited courses and 6 per cent attended courses which did not lead to an accredited qualification.

Table A3.3 Students by field of education and type of accreditation, 2008-2009

	2009		2008–09% change
	('000)	%	
Field of education			
Natural and Physical Sciences	6.3	0.4	4.4
Information Technology	33.2	1.9	1.1
Engineering and Related Technologies	283.6	16.6	0.4
Architecture and Building	126.1	7.4	4.9
Agriculture, Environmental and Related Studies	71.0	4.2	0.0
Health	89.3	5.2	11.1
Education	57.2	3.4	15.2
Management and Commerce	328.4	19.2	-4.9
Society and Culture	176.4	10.3	-0.2
Creative Arts	49.4	2.9	13.2
Food, Hospitality and Personal Services	183.4	10.7	0.9
Mixed Field Programmes	195.0	11.4	0.2
Subject only—no qualification	107.5	6.3	-6.9
Type of accreditation			
National training package qualifications	1130.0	66.2	6.7
National accredited courses	233.3	13.7	-4.8
Other courses	235.9	13.8	-15.8
Subject only - no accreditation	107.5	6.3	-6.9
Total students	1706.7	100.0	0.4

Source: NCVER (2010a).

A3.1.2 Apprentices

After the New Apprenticeship reform in 1998, the number of apprentices⁸ significantly increased by 62 per cent (NCVER, 2010b). On 30 June 2010 there were 440,600 apprentices in training, which is an increase of 3.2 per cent compared to the previous year (NCVER, 2010c). This number exceeds the number in Table A3.2, which gives information about publicly funded VET only. As apprenticeships and traineeships can take place in private-funded settings or with training which is fully on-the-job, the number presented in this section is higher.

In 2009, 345,800 apprentices undertook off-the-job training in the publicly funded VET system (NCVER, 2010a). Of these a surprisingly high proportion were older adults: while 31 per cent were 19 years of age or younger and 26 per cent were between 20 and 24 years of age, 30 per cent were aged between 25 and 44 years and as many as 13 per cent were 45 years of age or over (NCVER, 2010c). The majority of apprentices were male (66 per cent) and 76 per cent studied full-time (persons in training as of 30 June 2010) (NCVER, 2010c).

Table A3.4 shows that by far the largest proportion of apprenticeships take place in the occupational group of technicians and trades workers (47 per cent), followed by clerical and administrative workers (15 per cent). Regarding AQF qualifications it is interesting to

⁸ By this we mean 'apprentices and trainees'.

note that almost three quarters of apprentices (73 per cent) are in courses which lead to Certificate III (ISCED 4B) (NCVER, 2010c).

**Table A3.4 Apprentices by field of education and type of accreditation
as of 30 June 2010**

	as at 30 June 2010	
	('000)	%
Field of education		
Managers and professionals	14.9	3.4
Technicians and trades workers	207.2	47.0
Community and personal service workers	48.9	11.1
Clerical and administrative workers	66.4	15.1
Sales workers	45.9	10.4
Machinery operators and drivers	31.9	7.2
Labourers	25.4	5.8
AQF qualification level		
Certificate I or II	34.1	7.7
Certificate III	321.8	73.0
Certificate IV	74.5	16.9
Diploma/Advanced diploma	10.2	2.3
Total students	440.6	100.0

Source: NCVER (2010c).

Company participation

According to results from the *Survey of Employer Use and Views* by NCVER (2009), 56.7 per cent of employers in Australia made use of the VET system in 2009 for qualifying their employees, which is an increase of 2.7 percentage points from 2007. These employers had staff undertaking nationally recognised training or public VET to meet required vocational qualifications. Another form of use of the VET system is the training of apprentices.

The proportion of employers who have provided apprenticeships has increased over the last few years: in 2009, 30.6 per cent of employers had at least one apprentice in comparison to 29.1 per cent in 2007 and 28.2 per cent in 2005 (NCVER, 2009).

Companies with a higher number of employees are more likely to train apprentices than small companies. In 2009, 68.3 per cent of companies with more than 100 employees trained apprentices or trainees. For companies with between 10 and 99 employees the rate was 41.1 per cent and for companies with between 1 and 9 employees the rate was 25.6 per cent (NCVER, 2009).

In the 12 months ending 30 June 2010 the number of apprenticeship commencements was 293,000 – an increase of 9.2 per cent from the previous year (NCVER; 2010c).

A3.2 Transition rates

A3.2.1 Completion rates and drop-out rates

In 2009, 351,600 students completed an AQF qualification in the public VET system and the number of modules and units successfully completed was 537,800 (number of qualification equivalents) (NCVER, 2010b).

There is no publication of annual completion rates and estimations by NCVER exist for 2005 only (Table A3.5):⁹ They revealed a completion rate of 27.1 per cent for VET students who commenced training in 2005 (Mark and Karmel, 2010). It is important to bear in mind that the Australian VET system is a modular system which allows students to attend single courses (and achievement of statements of attainments) without completing an AQF qualification. Thus, these low completion rates reflect the flexibility of the system rather than high drop-out rates. A more suitable measure of successful student participation is the load pass rate that measures the proportion of modules passed, which was 79.1 per cent in 2005 (76.4 per cent in 2002). Thus, only 21.1 per cent of hours of VET were unsuccessfully completed.

Table A3.5 **Calculated completion rates (and load pass rates) for 2005**
commencing cohort of VET course enrolments

AQF qualification level	Completion rate of commencing course enrolments (%)		Load pass rates (%)	
	Whole population	Full-time, aged 25 and under, with no prior VET qualification	Whole population	Full-time, aged 25 and under, with no prior VET qualification
Diploma and above	28.6	36.3	79.5	79.0
Certificate IV	31.7	34.5	77.0	76.2
Certificate III	33.5	40.3	83.6	79.5
Certificate I/II	19.9	28.8	72.7	70.8
Total	27.1	34.7	79.1	77.5

Source: Mark and Karmel (2010).

Regarding completion rates of apprentices and trainees, one concern is high attrition rates: in the 12 months ending 30 June 2010 the number of cancellations and withdrawals was 126,000 in comparison to 293,900 commencements and 164,500 completions in the same year (NCVER, 2010b). The overall completion rate was 56.2 per cent in 2009 – an increase of 5.4 percentage points compared to 2007. The attrition rate was 43.5 per cent in 2009 (38.8 per cent in 2007). Increases in completions and decreases in cancellations were strongest in non-trade occupations, in particular for sales

⁹ A Markov chain estimation model based on VET data about all VET courses from 2004 to 2006 was used.

workers, clerical and administrative workers as well as machinery operators and drivers (NCVER, 2010d).

An analysis of non-completion of apprentices and trainees by NCVER (2010b) revealed that poor working conditions and a bad working relationship with the boss were the most important reasons for non-completion in 2010 (34.7 per cent). In 2010 there was a rise in apprentices and trainees who left training because they were made redundant or lost their job (18.7 per cent in 2010 compared with 8.2 per cent in 2008).

Other reasons for non-completion included personal reasons, unhappiness with the training or unhappiness with the work or industry. According to an expert interview the available data does not give a complete picture of the nature of 'non-completions', as little is known about training that takes place in private settings where providers are not in receipt of public VET funding (Expert interview).

A3.2.2 Upward mobility

Accreditation rules make the Australian intermediate VET system permeable. RTOs are required to recognise AQF qualifications and statements of attainment which have been issued by other RTOs. Also, if one already has competencies achieved from prior learning, these can be assessed and certified directly, reducing the training period and facilitating the switch between qualifications. In 2009, 24.6 per cent of graduates and 12.8 per cent of module completers were able to shorten the length of their training due to the recognition of their prior experiences and skills (NCVER, 2010e).

The transition between VET programmes and higher education is possible due to 'articulation' agreements which allow credit transfers between these two parts of the education system. In particular, graduates of a Diploma, Advanced Diploma, Graduate Certificate or Graduate Diploma can continue in the higher education sectors. A Diploma can be accredited as up to one year advanced standing in a Bachelor's degree programme and an Advanced Diploma can be accredited as up to two years advanced standing in a Bachelor's programme. Those who hold a Graduate Certificate or Graduate Diploma can continue to a coursework Master Degree programme ([Australian Government](#) website, 2011b). An expert interview revealed that articulation between VET and higher education formally exists because of the AQF, but in reality it is more ad hoc and complex and often depends on individual agreements between faculties in universities and VET providers.

According to the Department of Education, Employment and Workplace Relations (DEEWR), 10.1 per cent of commencing domestic undergraduate students in 2006, were admitted to university on the basis of prior VET studies (in comparison to 8.9 per cent in 2002). The proportion of university students who gained entry and credit (i.e. some

shortening of the duration of their university courses) due to prior VET courses was 3.4 per cent, which is an increase of 0.8 percentage points in comparison to 2002 ([DEEWR website](#)).

A3.2.3 Longitudinal perspective

As in other countries, the attainment of VET qualifications is related to better employment outcomes. According to a survey of NCVER (2010e), 76.3 per cent of VET graduates in 2010 and 73.5 per cent of persons who completed a module were employed six months after completing their training (see Table A3.6). About one third of graduates and 4.4 per cent of module completers were enrolled in further study after training, and the majority of these graduates attended a further course at a TAFE institute.

Table A3.6 Employment and further study outcomes of graduates and module completers
(2009 and 2010, in %)

	Graduates		Module completers	
	2009	2010	2009	2010
After training (as at 28 May 2010)				
Employed	77.8	76.3	74.1	73.5
Not employed	22.2	23.7	25.9	26.5
Unemployed	11.3	13.1	10.3	10.8
Not in the labour force (economically inactive)	10.4	10.2	14.9	15.2
Employed before training	74.9	72.7	75.8	72.4
Difference in proportion of employed from before training to after	2.9	3.6	-1.7	1.1
Employed in first full-time job after training ^{1,2}	17.0	16.9	14.5	15.5
Employed or in further study after training ^{1,2}	87.6	86.6	77.1	75.6
Enrolled in further study after training ^{1,2}	32.1	32.1	4.6	4.4
Studying at university ¹	6.7	6.8	4.6	4.4
Studying at TAFE institute ¹	17.7	17.3	na	na
Studying at private provider or other registered provider ²	7.5	7.5	na	na
¹ These questions were not asked of students from community education providers. Therefore, the percentage reported represents the proportion of graduates or module completers, respectively, excluding those from community education providers.				
² For module completers, the only further study included is university study as, by definition, module completers have left the VET system.				

Source: NCVER (2010e).

Graduates who attended courses with a Certificate III level and higher had better employment chances after completing training (81.5 per cent for Diploma and above; 81.2 per cent for Certificate III or IV) than those with lower qualification levels (Certificate I or II; 60.2 per cent). Of those who were not employed before training, 42.8 per cent of graduates of VET qualifications and 29.8 per cent of module completers were employed after training (NCVER, 2010e).

Graduates of apprenticeships had an employment rate of 86.3 per cent after completing training. The employment rate was higher for those who completed trade-related courses than non-trade related courses (93.4 per cent vs. 83.0 per cent). Of graduates of apprenticeship courses in a trade occupation, 79.5 per cent were employed in the same occupational group as the training course compared with 34.9 per cent of graduates of a non-trade occupation (NCVER, 2010e).

According to another destination survey of NCVER (2010f) a large number of those who completed training (70.8 per cent) were employed in the same occupation as their apprenticeship and 67.5 per cent of completers stated that they were employed with the same employer. Of non-completers, 73.4 per cent were employed nine months after the cancellation date, 26.2 per cent in the same occupation as the apprenticeship and 16.4 per cent with the same employer.

A3.3 Efficiency

A3.3.1 Economic benefits and labour market flexibility

The Australian VET system is very flexible as it provides initial and continuing VET in the form of AQF qualifications, single statements of attainment or unaccredited courses. Thus, it satisfies the needs of many people at different points in their lives (Hoeckel, *et al.*, 2008). The labour market benefits from this flexible VET system, as the skills of employees can be expanded quickly. Moreover it suits the fact that many young people do not choose a 'straight-line' career and test out a variety of jobs and industries (Expert interview).

As the VET system allows a selective approach, it does not force participants to complete qualifications. This creates the risk that qualification standards become weakened. The opinion of our experts remained ambivalent: on the one hand the interviews revealed that consistent quality standards are achieved by the AQTF (Expert interviews). On the other hand, most of the experts saw some room for improving the consistency of outcomes and assessment rules for RTOs (Expert interviews). In the coming years changes are planned in the Australian VET system to update the Australian Qualification Framework and to improve national consistency of training and assessment standards. One single VET regulator rather than the current state/territory based system will be implemented (Expert interviews).

Another efficient characteristic of the VET system is the strong influence of industrial bodies on VET policies and priorities, which increases the match between employer needs and VET provisions (Expert interview).

A3.3.2 Social integration

The intermediate VET system contributes to social integration, as attaining VET qualifications is a vital precondition for participating in the labour market and thus also in society. In comparison to other OECD countries the youth unemployment rate is lower in Australia, 11.6 per cent compared with 16.4 per cent OECD average in 2009 (OECD, 2009). According to the expert interviews, the Australian VET system particularly supports youth integration. However, as it addresses all age groups it also supports lifelong learning.

The intermediate VET system provides opportunities to 'second-chance students' who previously failed at primary or secondary education. The needs of these students, who often have a focus on practical skills, are met in the intermediate VET system (Expert interview). Moreover, results from *the Longitudinal Surveys of Australian Youth* concerning students that left school early in 2005, showed that disengagement from school does not necessarily mean disengagement from learning (Curtis and McMillan, 2008). Almost two thirds of 1,321 surveyed people aged 17 who did not complete school were in full-time employment (including Australian Apprenticeships), 6 per cent were in full-time education and training and 2 per cent were combining part-time employment and education. About 15 per cent were partly engaged in 'learning or earning' and another 15 per cent were unemployed or not part of the labour force (economically inactive). When we consider those that left school early and who are engaged in VET only, gender differences become apparent: male non-completers were mostly enrolled in apprenticeships (i.e. the longer, higher level apprenticeships and not traineeships) while females more often enrolled in other VET courses or traineeships in 2005.

Within the intermediate VET system the inclusion of disadvantaged groups such as people with disabilities, young people with a low socio-economic background and indigenous people is particularly addressed. At the national level action groups and task forces exist, which give advice on particular training requirements and strategies for indigenous Australians, people with a disability and others who are disadvantaged or have special needs (Cully et al., 2009). Moreover, the Australian government's social inclusion agenda claims to improve participation in social and economic life for all Australians. An important part of this is access to education and training (Treasury of the Commonwealth of Australia, 2010).

One target group which needs particular attention is indigenous people. In 2009, 4.4 per cent of participants in the public VET system were indigenous students, compared to a share of 2.7 per cent in the population as a whole. Indigenous people more often complete lower VET qualifications than non-indigenous people and fewer of them are employed six months after graduation than non-indigenous (65.0 per cent vs. 76.8 per

cent) (NCVER, 2010g). A review by NCVER suggests that community involvement, the incorporation of indigenous identities, cultures, knowledge and values, and flexibility in course design is necessary to make sure that VET meets the aspirations and needs of indigenous Australians (Miller, 2005). According to an OECD review in 2008, the challenge of better integration of Australia's indigenous people into the labour market has been recognised by the Australian government, and serious attempts to address their needs in the VET system are visible.

A4. Economic and social impact

A4.1 Public net present value

From the government's perspective investments in intermediate vocational training have positive long-term economic advantages, as a broad skills base is created and skills shortages can be addressed. Australia's economy benefits from skills provided *via* intermediate VET, which improves the flexibility of the labour market and supports restructuring processes.

The benefits of the government's investments in VET become visible in the form of income tax effects and social contribution effects. According to calculations of the OECD (2010a), the public net present value for an individual obtaining upper secondary or post-secondary non-tertiary education as part of their initial education in 2005 was US\$ 27,518 (€20,569) for males and US\$ 28,387 (€21,219) for females in Australia. These values are lower than the OECD average (23 per cent lower for males and 2 per cent lower for females). Thereby, the state mostly benefits from an income tax effect (US\$ 36,052/ €26,948 for males and US\$ 25,858/ €19,329 for females) and an unemployment effect (US\$ 9,215/ €6,888 for males and US\$ 4,092/ €3,058 for females) as the risk of unemployment decreases with higher levels of education.

A4.2 Challenges regarding demographic change and skills shortages

Industry representatives see an increasing risk of skills shortages. Skills Australia (2010), claims to deepen the skills of the workforce and increase productivity in order to maintain Australia's competitive advantage. This is important in the light of increasing global competition, and in order to keep up with technological changes (Skills Australia, 2010).

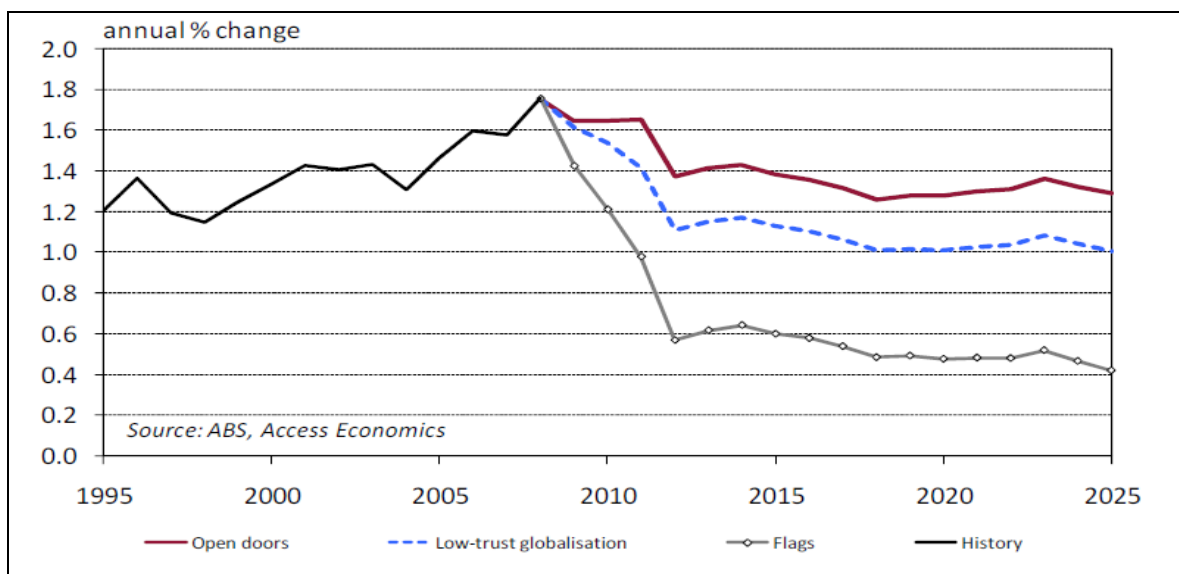
Skills shortages are mainly driven by demographic change and the *Intergenerational Report 2010* by the Treasury of the Commonwealth of Australia (2010) estimates a decreasing proportion of working age people: in 2050, for each Australian aged 65 years and over, there will be only 2.7 people of working age compared to 5.0 working aged people today and 7.5 in 1970.

Besides initiatives to improve the skills base, immigration plays an important role in addressing skills gaps. Australia is known for its pro-active and skills-oriented immigration policy. A point system is applied with a focus on educational and occupational attributes. Thus, migration policies are targeted at economic migrants with particular skills for addressing particular skills needs (Heinrich-Böll-Stiftung, 2010).

On behalf of Skills Australia the economic consultancy Access Economics (2009) developed three scenarios about the future demand for post-school skills up to 2025. In

all scenarios the working age population declines, due to an ageing population (see Figure A4.1). The projected growth strongly varies between the scenarios due to different assumptions regarding economic growth and net migration.

Figure A4.1 Projected growth in working age population (15-64 years old)



Source: Access Economics (2009)

The share of people holding post-school qualifications is expected to increase in all scenarios (71 per cent - 75 per cent), a trend which has already been visible in recent years: the share of people employed with post-school qualifications rose from 55.7 per cent in 2003 to 59.7 per cent in 2008. This development is in line with changes in the Australian economy towards a more skilled and a more productive economy over time (Access Economics, 2009).

The most optimistic scenario expects a significant gap between student demand and labour market demand particularly in higher education. The gap will become narrower from 2012 onwards due to demographic developments. Future skills deficits could be attenuated by higher net migration and further skills development in terms of higher year 12 completion rates as well as training or retraining for people over the age of 24.

Against the background of these scenarios, the intermediate VET system will be challenged to provide enough people with the required skills, which will make up-skilling existing workers more important. The Department of Education, Employment and Workplace Relations (DEEWR) addresses skills shortages in Australia with the National Skills Needs Lists which contain (currently 57) trades where a national shortage has been identified (Table A4.1). It is regularly reviewed by DEEWR in consultation with employers and industries. In order to increase the number of apprentices and trainees in these trades, particular incentives are exclusively available for employers or apprentices/trainees in these trades (see Sections A5.3 and A6.3).

Table A4.1 National Skills Needs List

Trades in the National Skills Needs List		
<ul style="list-style-type: none"> • Aircraft maintenance engineer (Avionics) • Aircraft maintenance engineer (Mechanical) • Automotive electrician • Baker • Binder and finisher • Boat builder and repairer • Bricklayer • Butcher • Cabinetmaker • Carpenter • Carpenter and joiner • Cook • Drainer • Electrical powerline tradesperson • Electrician (Special class) • Electronic equipment tradesperson • Fibrous plasterer • Fitter 	<ul style="list-style-type: none"> • Flat glass tradesperson • Floor finisher • Furniture finisher • Furniture upholsterer • Gasfitter • General electrician • General plumber • Hairdresser • Joiner • Lift Mechanic - from 14 April 2008 • Locksmith • Mechanical services and air-conditioning plumber • Metal fabricator • Metal machinist (First class) • Motor mechanic • Optical mechanic • Painter and decorator • Panel beater • Pastry cook • Picture framer 	<ul style="list-style-type: none"> • Pressure welder • Printing machinist • Refrigeration and air-conditioning mechanic • Roof plumber • Roof slater and tiler - from 14 April 2008 • Screen printer • Shearer • Sheetmetal worker (First class) • Signwriter • Solid plasterer • Stonemason • Toolmaker • Tree surgeon • Vehicle body maker • Vehicle painter • Vehicle trimmer • Wall and floor tiler • Welder (First class) • Wood machinist (A-grade)

Source: Australian Government (2010).

A4.3 Economic restructuring and competitiveness

A4.3.1 Economic restructuring

Intermediate VET seems to deliver a large share of generic skills, and according to the NCVER *Student Outcomes Survey 2009* (NCVER, 2010e) almost half of all graduates (48.6 per cent) work in a different occupational group than their training course was in. Only 29.6 per cent work in the same occupational group as their training course. Of those employed in another occupational group, 33.2 per cent stated that training was highly or somewhat relevant to their current job. However, the lack of a tight link between the training system and the labour market is typical for Australia's society and an indication that many skills are learned on the job (and that skills result from both formal training and work experience). It also means that skills learned in training are transferable (Karmel, 2009). The wide distribution of qualified workers to different occupational groups can be assumed to be supportive of restructuring processes, as the workforce seems to be very flexible and able to adapt to changes in work processes. In addition, employees' skills gaps can be filled quickly because of the broad supply of courses available in the intermediate VET system.

Comparisons of qualification profiles for occupational groups from 1996 to 2006 showed changes in the proportions of people with different qualifications. Even though a trend to more high-level qualifications was visible, the comparison demonstrated that no predominant qualification profile is required in most occupations. In trades, relatively little changes in qualification levels were visible while possession of a degree became more

important in different occupations and in occupations outside traditional 'degree' jobs (Karmel, 2009). This comparison provides evidence that many occupations seem to be flexible regarding the qualifications of employees. This flexibility could also be supportive for restructuring processes.

Expert interviewee statements are also supportive of a strong link between intermediate VET and the restructuring processes in the economy, as the following statement shows:

As with most other developed countries, Australia is moving towards a service economy. The intermediate VET system has enabled the Australian economy to make this economic transition and to improve productivity. The switch to a competency-based system 20 years ago facilitated keeping up the pace of change in technology. Moreover, competitiveness strongly depends on the interaction [between] higher skilled employees and employees holding intermediate level skills (Expert interview).

A4.3.2 Competitiveness

Intermediate VET plays an important role for Australia's economy and its competitiveness. Deepening skills and increasing labour productivity will be important for maintaining the competitive advantage of Australia as well as a high standard of living (Skills Australia, 2010). Moreover, as pointed out by an expert interviewee, much innovation comes through the intermediate VET system helping to improve competitiveness. The manufacturing sector, in particular, depends on vocational skills to use and apply up-to-date technology (Expert interview).

The current VET strategy *Shaping our Future* highlights the importance of VET for Australia's competitiveness:

The future success of individuals, communities, regions and the nation will increasingly depend on high-level knowledge and skills that are transferable between industries. (...) The capacity of individuals to work effectively and safely and engage with society, the competitiveness of industry, the adaptability of communities, regions and the nation – will all depend on Australia's education and training capacity (ANTA, 2004, p. 7).

A4.4 Adjustment needs from the public stakeholders' perspective

A4.4.1 Priorities of the government

The Department of Education, Employment and Workplace Relations (DEEWR) implemented national training strategies with long-term objectives for the Australian VET system. Over the last few decades three main strategies have been developed: *Towards a Skilled Australia* (1994-1998)¹⁰, *A Bridge to the Future* (1998-2003)¹¹ and *Shaping our*

¹⁰ Australian National Training Authority (ANTA) (1994).

¹¹ ANTA (1998).

Future (2004-2010).¹² The DEEWR monitors and evaluates the outcomes from each of the national strategies (training.com.au).

The current strategy, *Shaping our Future* aims to provide a skilled workforce for industry and to put employers and individuals at the centre of VET. The strategy has three main goals (ANTA, 2004, p.1):

- VET works for Australian businesses – making businesses internationally competitive;
- VET works for people – giving Australians world-class skills and knowledge;
- VET works for communities – building inclusive and sustainable communities.

These objectives are targeted by 12 broad strategies, which include aims to: increase participation and achievement, particularly with existing workers; improve the image of VET; sustain investments in RTOs; strengthen industry's role in anticipating skill requirements; and improve learning pathways.

The 2010-2011 budget committed AU\$ 660 million (€493 million) towards investment in training. The four year skills package aims to improve training in the VET system and adult numeracy, literacy and language skills of Australians. A Critical Skills Investment Fund was created to provide 39,000 additional training places in sectors with high skills demands. In addition, about 22,500 new apprenticeship commencements via the Apprentice Kickstart programme, which is aimed at SMEs, will be supported. Moreover, the government will strengthen the quality of VET, for example by expanding income contingent loans for supporting Australians to attain a higher level of technical and trade skills. The introduction of the Quality Skills Incentive Scheme targets the improvement of standards and the performance of large VET providers. In addition, the establishment of a new National Vocational Education Regulator and Standards Council is planned (the Hon Julia Gillard MP Media Release, 2010).

A4.4.2 View of social partners

In 2010 Skills Australia presented a national workforce development strategy which claims to improve adult language, literacy and numeracy skills, and to achieve higher participation rates. They argue that productivity does not just depend on the availability of skills but rather on the way these are actually used. Individual workplaces should be re-examined, with the support of trainers and governments, in order to make better use of skills. Thus, Australia could better prepare itself to improve productivity and to meet future skills needs (Skills Australia, 2010).

¹² ANTA (2004)..

The Australian Chamber of Commerce and Industry (ACCI, 2010) sees investment in human capital to be as important as investment in physical infrastructure. Education and training has to be aligned to industry needs and the 'user choice' principle should be better implemented in the system (see Section A2.3.4). It also particularly calls for boosting the number of Australian apprenticeships. It sees a risk for Australia's future productivity when not enough apprentices are recruited or existing apprentices do not complete their training. Apprenticeships must provide industry-relevant technical skills as well as generic skills (e.g. language, literacy and numeracy skills).

The Australian Council of Trade Unions (2009) calls for a strong VET system with effective union representation and effective industry advisory structures. In their view, the system must be nationally consistent and qualification outcomes have to be portable. The VET system also has to form a more effective pathway between school and work.

A4.4.3 Suggestions by the OECD

In the OCED (2008) project *Learning for Jobs*, the VET system in Australia was reviewed and the following challenges were identified:

- There is some lack of clarity, and potentially duplication, in the respective roles of Commonwealth, states and territories in planning the VET system and delivering services
- Contrary to other parts of the education system, there are no clear and simple rules on entitlement to funding
- For higher level VET, there is no clear rationale for why the funding regime is different from that applying to higher education
- There are difficulties in providing a reliable foundation in skills forecasts for planned VET provision
- Despite the strong evidence base, there are gaps in the available data, and the data currently available is not as fully exploited as it might be
- Training packages are large and cumbersome making them difficult to use
- Despite a common national qualifications system, there are wide variations in the assessment standards which are applied
- The workforce of VET trainers in training providers is ageing, and trainers' knowledge of the modern workplace is sometimes inadequate (Hoeckel *et al.*, 2008, pp.12-13).

These challenges were identified in 2008. Since then some changes have occurred. Comprehensive skills forecasts (Section A4.2) have been published which now build a reliable foundation for VET planning. According to an expert interview, initiatives were started to review and simplify training packages and assessment standards in the national qualification system. The identified challenge regarding different entitlements of funding, however, still seems to be an ongoing issue.

A5. Responsiveness of employers

A5.1 Employers' motivation

Employers play a critical role in the VET system, as they are the ultimate users of skills developed through training. An empirical analysis published by NCVER, the *Survey of Employer Use and Views of the VET System*, showed the reasons for making use of apprenticeships and traineeships, nationally recognised training courses and unaccredited training (Smith *et al.*, 2009).

Almost half of all the employers (46 per cent) who provided apprenticeships and traineeships said that they normally use apprenticeships and traineeships to meet a specific skills need in the company. Besides this business-related reason the improvement of the overall level of skills in the workforce and/or provision of staff with a nationally recognised qualification was important too (30 per cent). Almost one quarter of employers said they employ apprentices and trainees for altruistic or ethical reasons (helping young people or giving something back to the industry). However this reason was almost always stated in conjunction with other reasons, most commonly with skills-related or employment-related reasons. A small number of employers (16 per cent) cited they train apprentices and trainees for financial reasons, which means they use apprentices and trainees as a cheap source of labour or they claim that apprenticeships and traineeships are cost-effective (Smith *et al.*, 2009)

The most important reason for employers making use of nationally recognised training for their workforce is to meet external requirements (e.g. legislative or licensing requirements) or to fulfil the requirements of industrial agreements, awards or enterprise agreements (33 per cent of employers). Over one quarter of employers (27 per cent) gave 'provision of specific job-related or business-related skills for their organisation' as the reason. About one quarter of companies who make use of this type of training want to enhance their competitiveness by improving quality, or keep up with the demands of new technology. In addition, some employers use nationally recognised training to improve their overall management of human resources. In this case, nationally recognised qualifications are seen as an 'exchange' for increased employee loyalty to the company (Smith *et al.*, 2009).

The Australian VET system also makes use of unaccredited training courses. Of those employers who make use of this type of training, 56 per cent do so because they wish to improve the overall skills level of the workforce or want to enhance the competitive position of the company (40 per cent of employers). A smaller share of employers (18 per cent) stated that they use unaccredited training courses to create a more responsive and

flexible workforce (Smith *et al.*, 2009). In this context, this form of training is also used to develop a more strategic approach to the use of human resources.

These survey findings point out the importance training has for raising the overall skills levels of the workforce, as well as increasing the competitiveness of organisations. It also provides evidence that training is becoming more integrated with other human resource objectives in some Australian organisations.

A5.2 Costs of training

Understanding the costs of training is fundamental, as employers are deterred from taking on apprentices if costs are too high. As in other countries the costs of apprenticeships is a topic of controversy in Australia. An older study from Dockery *et al.* (2001) found that costs for New Apprenticeships are on average AU\$ 38,000 (€28,300) for four years and that, on average, employers had net losses over the training period of apprentices. Chapman and Cully (2002) have been critical about these calculations and have pointed out that employers would simply stop training apprentices in the numbers they do if costs were really that high. So far no reliable and representative information about average costs of apprenticeship training is available.

In general, apprenticeship training generates the following costs (Nechvoglod *et al.*, 2009):

- Direct costs, comprising apprentices' wages and training fees (which the employers pay to external training providers) and recruitment costs.
- Indirect costs, comprising apprentice supervision costs (the time fully qualified workers spend supervising apprentices), administration costs (time spent on developing training plans, organising off-the-job training etc.) and extra maintenance and materials wastage.

More recently, NCVER presented case study evidence of electrical and plumbing apprentices (Nechvoglod *et al.*, 2009). Observation numbers were too low to give average costs, but the study concludes that the largest part of costs for employers are apprentice supervision costs. The effect of government incentives was observed to be minimal. The relationship between apprentices' productivity and the apprenticeship wage was very close, meaning that the costs incurred for apprentices' wages are neutralised by apprentice productivity.

Australian apprenticeship wages differ according to the level of qualification, training year, industry and the type of apprenticeship (school-based, part-time or full-time). No data concerning average apprenticeship wages is available. However, the *Apprentice and Trainees Destination Survey 2010* by NCVER (2010f) asked apprentices and trainees

nine months after leaving training for their average annual income during the last week of their apprenticeship. Those who completed their training said they earned, on average, AU\$ 39,300 – AU\$ 36,000 (€26,800) in a trade and AU\$ 40,700 (€30,300), in a non-trade occupation. These are higher wages than that stated by those who did not complete their training (on average AU\$ 31,300): AU\$ 26,500 (€19,800) and AU\$ 34,700 (€25,900), for trade and non-trade occupations respectively. However, these survey results do not tell us the year or what qualification level the apprentice was at.

A5.3 Direct and indirect returns

A study by NCVER (Blandy *et al.*, 2000) based on a pilot survey of 40 Australian companies and case study evidence revealed that Australian employers provide extensive training for new employees, who spend, on average, half of their first three months of employment in training. Training was mainly provided as formal off-the-job training and informal on-the-job training and was provided by co-workers. In comparison to results from the USA, Australian employees paid more for training in terms of accepting lower starting salaries. Australian employers were able to capture almost all productivity gains from incoming employees' training. The study concluded a positive impact from companies' investment in training on their productivity and profitability. Returns from training were particularly high when training was highly specific, rapidly accomplished and in relation to the introduction of new technology or working patterns.

Another study by NCVER (Smith *et al.*, 2005) about enterprises' attitudes towards nationally recognised training for existing workers, revealed the following benefits for companies when existing workers are given the opportunity to attain AQF qualifications. The reported benefits were:

- a structured approach to training and to career progression;
- the opportunity to integrate training with normal work and to customise training packages to enterprise needs;
- confidence in the quality of work undertaken by employees and the ability to demonstrate this to external parties;
- a competitive edge in attracting and retaining staff;
- access to funding to help cover training costs;
- the ability to reward and motivate employees and validate their working experiences; and
- a basis for reshaping human resource management systems around competency standards (Smith *et al.*, 2005, p.8).

When we consider apprenticeships only, employers benefit from the productive work carried out by apprentices during the training period. As in other countries, Australian apprenticeships are connected to positive returns on investments for employers. Businesses particularly benefit from taking on apprentices from their productivity, savings

on materials and capital costs, worker motivation, improved quality and service and staff retention (training.com.au). One specialty of Australian apprenticeships is the flexibility regarding qualification levels and on/off-the-job training times. Thus, training times can be adapted individually to meet the needs of companies.

When Australian employers use apprenticeships, this is connected to a recruitment decision and a skill formation decision. In a case study analysis by Smith (2006), it becomes apparent that employers consider specific labour shortages and hire apprentices and trainees to tackle those shortages either immediately or in the future. Companies seem to benefit from apprentices and trainees when they can provide them with career paths as this attracts new recruits and increases their commitment and motivation.

Employers who train Australian Apprentices are eligible for a wide range of benefits (Australian Government, 2011b). Table A5.1 summarises the most important ones. Employers of Australian Apprentices are eligible to claim up to AU\$ 4,000 (€3,000) for completion of an Australian Apprentice at the Certificate III or higher level. Different special incentive payments for taking on apprentices exist, which are targeted to increase employer take-up rates. For example AU\$ 1,500 are paid for apprenticeship training of mature-aged workers. Some states and territories provide particular incentives to employers (Cully, 2008). However, a study by NCVER showed that cost-effectiveness was a very low-rated reason for employers to provide apprenticeships (Smith *et al.*, 2009). Several expert interviewee statements concur that high governmental incentive payments for employers (about AU\$ 1 billion per year) are sometimes not valued as highly as they might be. For example:

The design of government incentive payments is quite unique in comparison to other countries. Employers receive comparably large amounts when they hire apprentices or trainees and when training is completed. However, it does not seem to increase completion rates and is sometimes used as a form of wage subsidy by employers. An expert panel, established by the government, is currently reviewing the structure of incentive payments and its report to Government will be made public in the coming months.

Table A5.1 Australian Apprenticeships incentive payments for employers

Amount in AU\$	Description of incentives
1,250	Standard Commencement payment for an employer who commences an Australian Apprentice in a Certificate II qualification.
1,500	Standard Commencement payment for an employer who commences an Australian Apprentice in a Certificate III or higher.
750	Standard Recommencement payment for employers who recommence an Australian Apprentice in a Certificate III or higher.
2,500	Standard Completion payment for employers of Australian Apprentices who successfully complete a Certificate III or higher.
1,000	Special Rural and Regional Skills Shortages Commencement payment for rural and regional employers who commence an Australian Apprentice in a Certificate III or IV qualification leading to an occupation listed on the National Skills Needs List in a non-metropolitan area.
up to a maximum of AU\$ 7,800 per annum for the first 12 months and up to a maximum of AU\$ 5,200 per annum for the second 12 months of the full-time Australian Apprenticeship	Support for Adult Australian Apprentices: Australian government financial support is available for adult workers (aged 25 years or over) to upgrade their skills through an Australian Apprenticeship at the Certificate III or IV level in an occupation listed on the National Skills Needs List. The payment is made to either the employer or the Australian Apprentice depending on the actual wage paid to the Australian Apprentice.
750	Mature Aged Workers Commencement and Completion payment for an employer who commences an eligible Australian Apprentice in a Certificate II or higher level qualification who is a person aged 45 years or more.
750	Mature Aged Workers Commencement and Completion payment for an employer of an Australian Apprentice who successfully completes a Certificate II or higher level qualification and who attracted a Mature Aged Worker commencement incentive.

Source: Australian Government (2011b).

A5.4 Adjustment needs from employers' perspectives

An employer survey by NCVER (2009) revealed that the majority of employers were satisfied that training met their skills needs (83.2 per cent of employers with apprentices, 85.8 per cent of employers using nationally recognised training other than an apprenticeship). Only, 10.2 per cent of employers with apprentices were dissatisfied with the training. Among these, reasons included poor quality or a low standard of training (32.1 per cent), not enough focus on practical skills (29.7 per cent) or poor attitude of apprentices or trainees (25.2 per cent). Of the employers that used nationally recognised training other than apprenticeships, 6.7 per cent were dissatisfied with the training as a means of meeting their skills needs. 39.4 per cent of them stated that the training was of poor quality or a low standard, 39.2 per cent said that relevant skills were not taught and 34.3 per cent stated that there was not enough focus on practical skills.

A6. Responsiveness of participants

A6.1 Participants' motivation

Participants in the public VET system or apprentices are motivated to embark on training in order to obtain a qualification, to increase future earnings prospects and/or to increase their labour market opportunities.

The *Student Outcomes Survey 2010* carried out by NCVER (2010e) revealed that 80.3 per cent of VET graduates cited employment-related reasons for training. Such examples included training being required for their job, gaining extra skills for their current job, getting a job or attempting to take a different career path. Besides employment-related reasons, 15.4 per cent cited 'personal development' as a reason and 4.3 per cent stated training to fulfil the requirements to be able to start another course of study.

According to the *Apprentice and Trainees Destination Survey 2010* by NCVER (2010f), 65.7 per cent of those who completed their apprenticeships undertook the training for employment-related reasons (such as wanting to work in that type of job, a requirement for a job, or due to a non-mandatory recommendation from the employer). Almost one third (30 per cent) cited training-related reasons, such as achieving a recognised qualification or certificate or an opportunity to acquire further knowledge and skills. In addition, 3.6 per cent also cited they wanted to improve their future prospects.

A6.2 Costs of training

The majority (about three quarters) of the costs for public VET training are borne by the federal and state or territory governments. The contribution of student fees and charges was moderate and equalled 4 per cent of VET revenues in 2009 (NCVER, 2010h). Student fees and charges in VET vary regarding concession rates, hours of delivery and individual institutes, which impose extra fees for resources and materials. In all state and territory governments, except the Northern Territory, policies regulate fees and charges of TAFE institutions. However, as public VET providers can raise additional student fees and charges, the real cost of VET courses for individuals is not known. For example the standard student fee (including materials and resources charges) ranged between 2 and 10 per cent of full costs of the course leading to a Certificate Level I in Hospitality (Kitchen Operations) (Watson, 2005). Nevertheless, the contribution of VET participants is considerably lower than the contribution made by students at higher education for universities (Watson, 2005).

When we look at apprentices only, the following costs incur (Nechvoglod *et al.*, 2009):

- Opportunity costs: expected wages in an unskilled alternative job minus the actual apprentice wage;
- Costs associated with training, e.g. for tools, textbooks, safety equipment which is not paid for by the employer;
- Travel costs: costs for travelling to and from the training;
- Occasional training costs, if an apprentice has to bear costs for off-the-job training.

The analysis of Nechvoglod *et al.* (2009) on behalf of NCVER revealed that the main costs for apprentices are opportunity costs in the form of foregone earnings:

The pay-back time varies, depending on the alternative wage or allowance that the apprentice would have received had an apprenticeship not been taken up and the margin between wages of skilled and unskilled workers (Nechvoglod *et al.*, 2009, p. 25).

The pay-back period is shorter for younger people due to lower forgone earnings in another job.

A6.3 Direct and indirect returns

A6.3.1 Training allowances and incentive payments

During the training period apprentices directly benefit from training wages, although an average amount is unknown (see Section A5.2). They are also eligible for a number of incentive payments, which are listed in Table A6.1 below.

Table A6.1 Australian Apprenticeships incentive payments for apprentices

Amount in AU\$	Description of incentives
Up to a maximum of AU\$ 7,800 per annum for the first 12 months and up to a maximum of AU\$ 5,200 per annum for the second 12 months of the full-time Australian Apprenticeship	The Support for Adult Australian Apprentices payment is made to either the employer or the Australian Apprentice depending on the actual wage paid to the Australian Apprentice. Australian government financial support is available for adult workers (aged 25 years or over) to upgrade their skills through an Australian Apprenticeship at the Certificate III or IV level in an occupation listed on the National Skills Needs List
From 1 January 2011, eligible Australian Apprentices who commence or recommence their Australian Apprenticeship on or after 1 January 2009 may be eligible for payments of AU\$ 800 at the three month point, AU\$ 1000 at the 12 and 24 month points, AU\$ 1200 at the 36 month point and AU\$ 1500 on successful completion of the Australian Apprenticeship	The Tools for Your Trade payment is available to eligible Australian Apprentices undertaking a Certificate III or IV Australian Apprenticeship leading to an occupation listed on the National Skills Needs List, a Certificate II, III or IV Australian Apprenticeship in an agricultural occupation, and, if in rural and regional Australia, a horticultural occupation.
Eligible persons can receive the first year rate of AU\$ 77.17 per week up to twelve months, a further twelve months assistance at the second year rate of AU\$ 38.59 per week, and a further twelve months assistance at the third year rate of AU\$ 25 per week.	Living Away From Home Allowance: Australian Apprentices undertaking a Certificate II or higher level qualification may be eligible for the Living Away From Home Allowance if they have to move away from their parental/guardian home for the first time to commence or remain in an Australian Apprenticeship, or are homeless.

Source: Australian Government (2011b).

A6.3.2 Life-time benefits of training

Life-time benefits of training appear in the form of higher earnings and better employment chances: in Australia those with an intermediate (upper secondary and post-secondary non-tertiary) education earn on average 19 per cent more (figures from 2005) than a worker with a qualification below upper secondary level (OECD, 2010a). However, they still earn on average 31 per cent less than somebody with tertiary education.

As in other countries higher education levels result in better labour market opportunities. In 2008 the unemployment rate was 5.2 per cent for those with below upper secondary education and only 2.6 per cent for those with upper secondary and post-secondary non-tertiary (i.e., intermediate level) education. In tertiary education the rate was even lower, at 2.1 per cent. The same dynamic becomes visible in employment rates which were 61.5 per cent, 80.9 per cent and 83.1 per cent in 2008, respectively (OECD, 2010a).

The OECD (2010a) also calculated the private net present value of investing in upper secondary education or post-secondary non-tertiary vocational training. Life-time costs and benefits are discounted back to the start of the investment. Graduates benefit from gross earnings and unemployment effects, while social contribution, income taxes and

transfer effects reduce the net present value. In Australia it was US\$ 84,480 (€63,148) for men and US\$ 43,586 (€32,580) for women in 2006 (Table A6.2). Thus, the net present value for males considerably exceeds the OECD average of US\$ 67,902 (€50,756) and the female net present value is a little lower than the OECD average of US\$ 47,064 (€35,179).

Table A6.2 Private net present value for an individual obtaining upper secondary or post-secondary non-tertiary education in Australia (2005)

US\$	Male	Female
Direct costs	-2,891	-2,891
Forgone earnings	-22,661	-23,380
Total costs	-25,553	-26,271
Gross earnings benefits	114,598	94,207
Income tax effects	-45,267	-29,950
Social contribution effect	0	0
Transfers effect	-1,364	-17,689
Unemployment effect	42,065	23,289
Total net benefits	110,032	69,857
Net present value	84,480	43,586

Source: OECD (2010a).

According to the *Student Outcomes Survey 2010* by NCVER (2010e), graduates and module completers experienced particular benefits from training at work: of the graduates that were employed before the training, 18.6 per cent were employed at a higher skill level after training as well as 9.8 per cent of those who completed modules. Also, 70.9 per cent of VET graduates and 52.5 per cent of module completers received a job-related benefit from training.

The *Apprentices and Trainees Destinations Survey* by the NCVER (2010f) showed the average annual income after apprenticeships: for those who completed their apprenticeship in a trade occupation it was AU\$ 52,500 (€39,100) and in a non-trade occupation it was AU\$ 45,900 (€34,200). For those who did not complete their apprenticeship it was AU\$ 39,000 (€29,100) and AU\$ 41,700 (€31,100), respectively.¹³ The wage differential favouring completers over non-completers of apprenticeships is therefore more marked for those completing apprenticeships in a trade occupation than for those in a non-trade occupation.

¹³ These survey results include all AQF qualifications available for apprentices and trainees, which explains the comparatively high values.

A6.4 Adjustment needs from participants' perspectives

The *Student Outcomes Survey* by NCVER (2010e) revealed a positive evaluation of VET courses in 2010 (including off-the-job apprentice training):

- About 89 per cent of graduates and 84 per cent of module completers were satisfied with the training they received in the public VET system.
- Of graduates 85.3 per cent and of module completers 80.1 per cent, reported that they had fully or partly achieved their main reason for training.
- In addition, 77.2 per cent of graduates and 63.1 per cent of module completers who were employed after training, stated that the training content was relevant for their current job.

The *Apprentice and Trainees Destination Survey 2010* by NCVER (2010f) also showed that 87.1 per cent of completers and 50.1 per cent of non-completers were satisfied with their apprenticeship in general. Completers were most satisfied with the fairness of the assessments of skills and knowledge, the type of work and the skills learnt on the job. On the other hand, the largest cause for dissatisfaction was the pay (20.2 per cent of completers). Non-completers were most dissatisfied with the pay (33.4 per cent) and the training provided by their employer (25.2 per cent).

Bibliography (Australia)

- Access Economics (2009) *Economic modelling of skills demand*. Commonwealth of Australia, Canberra. Available: http://www.deewr.gov.au/skills/programs/skillsaustralia/documents/ae_skills_demand.pdf.
- ABS (2010a) *Australian Demographic Statistics Cat. No. 3101.0, March Quarter 2010*. Australian Bureau of Statistics, Canberra. Available: <http://www.abs.gov.au>. [Accessed December 2010].
- ABS (2010b) *Year Book Australia, 2009–10*. Cat. No. 1301.0. Australian Bureau of Statistics, Canberra. Available: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/1301.0>.
- ABS (2010c) *Labour Force, Australia*. Cat. No. 6202.0. Australian Bureau of Statistics, Canberra.
- ABS (2009) *Forms of Employment*. Cat. No. 6359.0. Australian Bureau of Statistics, Canberra. Available: <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6359.0>.
- ACCI (2010) *Boosting Australian Apprenticeships*. ACCI Review number 158. Australian Chamber of Commerce and Industry, Canberra. Available: <http://www.acci.asn.au/getattachment/ccef5c5b-16aa-41de-8aa6-adf132cfa42f/Boosting-Australian-Apprenticeships.aspx>.
- ANTA (2004) *Shaping our Future: Australia's national strategy for vocational education and training 2004-2010*. Australian National Training Authority, Brisbane. Available: http://www.dest.gov.au/NR/rdonlyres/98206EC7-3B9A-4A58-991F-4F28010BF825/16445/national_strategy.pdf.
- ANTA (1999) *Annual national report of the vocational education and training sector 1999*. Australian National Training Authority, Brisbane. Available: <http://www.dest.gov.au/NR/rdonlyres/3E1539C0-44E5-4D29-8C81-277EC76CCDC8/10787/ANR993.pdf>.
- ANTA (1998) *A Bridge to the Future: Australia's national strategy for vocational education and training 1998-2003*. Australian National Training Authority, Brisbane. Available: <http://www.dest.gov.au/NR/rdonlyres/284A2B96-C638-4FE5-BB64-9ABA0372E45E/10996/bridgetothefuture.PDF>.
- ANTA (1994) *Towards a Skilled Australia: A national strategy for vocational education and training 1994-1998*. Australian National Training Authority, Brisbane.

- Australian Apprenticeships, Website of the Australian Government (2010) *What are Australian Apprenticeships Centres?* Available: <http://www.australianapprenticeships.gov.au/about/centres.asp>. [Accessed December 2010].
- Australian Council of Trade Unions (2009) *Future of Work – Vocational Education and Training Policy*. Australian Council of Trade Unions, Melbourne. Available: <http://www.memberconnect.com.au/Images/Dynamic/attachments/6562/Vet%20Policy-%20final.pdf>.
- Australian Government (2011a) *Report on Government Services 2011*. Australian Government, Melbourne. Available: http://www.pc.gov.au/_data/assets/pdf_file/0015/105252/rogs-2011-volume1.pdf.
- Australian Government (2011b) *Summary of the Australian Government Australian Apprenticeships Incentives Program*. Australian Government, Melbourne. Available: <http://www.australianapprenticeships.gov.au/FAQ/Documents/SummIncentive.pdf>.
- Australian Government (2010) *About the National Skills Needs list, Factsheet 10*. Australian Government, Melbourne. Available: <http://www.australianapprenticeships.gov.au/documents/publications/2009/10NationalSkillsNeedsList.pdf>.
- Australian Government website (2011a) *Diagram of education system, Australia*. Available: <http://www.aei.gov.au/AEI/CEP/Australia/EducationSystem/SystemDiagram/default.htm>. [Accessed January 2011].
- Australian Government website (2011b) *Courses and qualifications, Technical and vocational education, Australia*. Available: <http://www.aei.gov.au/AEI/CEP/Australia/EducationSystem/TechVoc/CoursesandQuals/default.htm>. [Accessed January 2011].
- Ball, K. (2005) 'Relative contributions of individuals, industry and government to the costs of VET', in Ball, K. (ed.), *Funding and financing of vocational education and training: Research readings*. National Centre for Vocational Education Research, Adelaide.
- BIBB (2006) *Berufsbildungssystem Australiens*. Bundesinstitut für Berufsbildung, Bonn. Available: <http://www.bibb.de/de/13989.htm>. [Accessed December 2010].

- Blandy, R., Dockery, M., Hawke, A., and Webster, E. (2000) *Does training pay? Evidence from Australian enterprises*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/industry/publications/511.html>.
- Chapman, P. and Cully, M. (2002) 'Getting to the truth about hiring apprentices: A critique of Dockery et al.', in *Australian Bulletin of Labour*, Vol.28, no.1, pp.53–64.
- Cully, M. (2008) *Youth wages, training wages and productivity: the economic anatomy of traineeships*. National Centre for Vocational Education Research, Adelaide.
- Cully, M. and Curtain, R. (2001) *Reasons for new apprentices' non-completions*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/685.html>.
- Cully, M., Knight, B., Loveder, P., Mazzachi, R., Priest, S., and Halliday-Wynes, S. (2009) *Governance and architecture of Australia's VET sector: Country Comparisons, Report prepared for Skills Australia, Final report*. National Centre for Vocational Education Research, Adelaide. Available: http://www.skillsaustralia.gov.au/PDFs_RTfS/NCVER72182REPORTfinal.pdf.
- Curtis, D.C. and McMillan, J. (2008) *School Non-completers: Profiles and Initial Destinations*, Longitudinal Surveys of Australian Youth, Research Report 54. Australian Council for Educational Research, Camberwell. Available: http://www.acer.edu.au/documents/LSAY_Isay54.pdf.
- DEEWR (2011), *Credit Transfer and Articulation*. Department of Education, Employment and Workplace Relations, Canberra. Available: <http://www.deewr.gov.au/HigherEducation/Programs/Quality/QualityAssurance/Pages/CreditTransferArticulation.aspx>. [Accessed April 2011].
- DEEWR (2009) *Students: Selected Higher Education Statistics*. Department of Education, Employment and Workplace Relations, Canberra. Available: http://www.dest.gov.au/sectors/higher_education/publications_resources/profiles/Students/2008_full_year.htm.
- DFAT (2011) *Australia in brief*. Department for Foreign Affairs and Trade, Barton. Available: http://www.dfat.gov.au/aib/island_continent.html. [Accessed March 2011].
- Dockery, A., Kelly, R., Norris, K. and Stromback, T. (2001) 'Costs and benefits of New Apprenticeships', in *Australian Bulletin of Labour*, Vol.27, no.3, pp.192–203.

- Harris, R., Simons, M. and McCarthy, C. (2006) *Private training providers in Australia, Their characteristics and training activities*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/1688.html>.
- Heinrich-Böll-Stiftung (2010) *Mobility & Inclusion, Managing Labour Migration in Europe DOSSIER*. Heinrich-Böll-Stiftung, Berlin. Available: http://www.migration-boell.de/web/migration/46_2413.asp.
- Hoeckel, K. (2008) *Costs and Benefits in Vocational Education and Training*. Organisation for Economic Cooperation and Development, Paris. Available: <http://www.oecd.org/dataoecd/59/31/41538706.pdf>.
- Hoeckel, K., Field, S., Justesen, T. and Kim, M. (2008) *Learning for jobs: OECD reviews of vocational education and training – Australia*. Organisation for Economic Cooperation and Development, Paris. Available: <http://www.oecd.org/dataoecd/27/11/41631383.pdf>.
- Industry Skills Councils website (2011) Available: <http://www.isc.org.au>. [Accessed March 2011].
- Jobguide website (2011) *Five steps to finding an Australian Apprenticeship*. Available: <http://www.jobguide.thegoodguides.com.au/Australian-Apprenticeships/Five-steps-to-finding-an-Australian-Apprenticeship> [Accessed March 2011].
- Karmel, T. (2009) *The contribution of vocational education and training to Australia's skills base*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2151.html>.
- Knight B.; Mlotkowski P. (2009) *An overview of vocational education and training in Australia and its links to the labour market*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/vetsystem/publications/2117.html>.
- Koutsogeorgopoulou, V. (2009) *Enhancing educational performance in Australia*, OECD Economics Department Working Paper No. 678. Organisation for Economic Cooperation and Development, Paris. Available: http://www.oecd.org/topicdocumentlist/0,3448,en_33873108_33873229_1_1_1_1_37455,00.html
- Mark, K. and Karmel, T. (2010) *The likelihood of completing a VET qualification: A model-based approach*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2272.html>.

- Miller, C. (2005) *Aspects of training that meet Indigenous Australians' aspirations: A systematic review of research*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/1625.html>.
- Minister for Employment and Workplace Relations (2010) *Expert panel to advise on apprenticeship reforms*, Media release 16 July, 2010. Department of Education, Employment and Workplace Relations, Canberra. Available: http://www.deewr.gov.au/ministers/crean/media/releases/pages/article_100716_172714.aspx.
- NCVER (2011) *Students and courses 2009: Publicly funded training providers*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2354.html>.
- NCVER (2010a) *Pocket guide, issued 2010*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2299.html>.
- NCVER (2010b) *Historical time series of apprenticeships and traineeships in Australia from 1963*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2329.html>.
- NCVER (2010c) *Australian vocational education and training statistics: Apprentices and trainees, June quarter 2010*. National Centre for Vocational Education Research, Adelaide.
- NCVER (2010d) *Experimental completion and attrition rates for latest commencing apprentices and trainees*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2265.html>.
- NCVER (2010e) *Student outcomes 2010: Australian vocational education and training statistics*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2315.html>.
- NCVER (2010f) *Apprentice and trainee destinations 2010*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2262.html?friendly=printable>.
- NCVER (2010g) *Indigenous students (2009 statistical compendium)*. National Centre for Vocational Education Research, Adelaide.
- NCVER (2010h) *Australian vocational education and training statistics: Financial information 2009*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2305.html>.

- NCVER (2009) *Australian vocational education and training statistics: Employers' use and views of the VET system 2009*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2188.html>.
- NCVER (2007) *Did you know? A guide to vocational education and training in Australia*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/1790.html>.
- Nechvoglod, L., Karmel, T. and Saunders, J. (2009) *The cost of training apprentices*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2129.html>.
- OECD (2010a) *Education at a Glance 2010*, Organisation for Economic Cooperation and Development, Paris.
- OECD (2010b) *Employment Outlook: Moving Beyond the Jobs Crisis*. Organisation for Economic Cooperation and Development, Paris. Available: http://www.tuac.org/en/public/e-docs/00/00/07/4E/document_doc.phtml.
- OECD (2010c) *Employment Outlook 2010 – How does AUSTRALIA compare?* Organisation for Economic Cooperation and Development, Paris. Available: <http://www.oecd.org/dataoecd/14/38/45603025.pdf>.
- OECD (2009) *OECD in Figures 2009*. Organisation for Economic Cooperation and Development, Paris.
- OECD/CERI (2009) *Systemic innovation in the Australian VET system: Country case study report*. Organisation for Economic Cooperation and Development, Paris. Available: <http://www.oecd.org/dataoecd/17/38/42243354.pdf>.
- Richardson, S. (2005) 'New estimates of the employers' contribution to training', in Ball, K. (ed.), *Funding and financing of vocational education and training: Research readings*. National Centre for Vocational Education Research, Adelaide.
- Service Skills Australia (2010) *SIR07 V1.2 Retail Services Training Package, Volume I of V*. Department of Education, Employment and Workplace Relations, Canberra.
- Service Skills Australia website (2011) *Welcome to Service Skills*. Available: <http://www.serviceskills.com.au/>. [Accessed December 2010].
- Skills Australia (2010) *Australian Workforce Futures; A National Workforce Development Strategy*. Commonwealth of Australia, Barton. Available: http://www.skillsaustralia.gov.au/PDFs_RTFS/WWF_strategy.pdf.

- Skills Australia website (2011) *Skills Australia*. Available:
<http://www.skillsaustralia.gov.au/about-us.shtml>. [Accessed December 2010].
- Smith, A., Oczkowski, E. and Hill, M. (2009) *Reasons for training: Why Australian employers train their workers*. National Centre for Vocational Education Research, Adelaide. Available: <http://www.ncver.edu.au/publications/2147.html>.
- Smith, E. (2006) *Australian enterprises' use of apprenticeships and traineeships to meet specific labour shortages*. AVETRA, Wollongong. Available:
<http://www.avetra.org.au/ABSTRACTS2006/PA%200040.pdf>
- Smith, E., Pickersgill, R., Smith, A., and Rushbrook, P. (2005) *Enterprises' commitment to nationally recognised training for existing workers*. National Centre for Vocational Education Research, Adelaide. Available:
<http://www.ncver.edu.au/publications/1550.html>.
- Snell, D. and Hart, A. (2007) 'Vocational training in Australia: is there a link between attrition and quality?', in *Education & Training*, Vol. 49, No. 6, pp. 500-512.
- Stanwick, J. (2009) *Review of Employer Collective Measures: Country Report Australia*. UK Commission for Employment and Skills, Wath-Upon-Deane.
- The Hon Julia Gillard MP and the Hon Wayne Swan MP (2010) *Investing in Skills for Sustainable Growth*, Joint Media Release. Department of Education, Employment and Workplace Relations, Canberra. Available:
http://www.deewr.gov.au/Ministers/Gillard/Media/Releases/Pages/Article_091207_165252.aspx [Accessed December 2010].
- training.com.au website (2010). *Welcome to training.com.au*. Available:
<http://www.training.com.au/pages/menuitem118e29e68c7b0615af17bfae17a62dbc.aspx>. [Accessed January 2011].
- Treasury of the Commonwealth of Australia (2010) *Australia to 2050: Future challenges*. Intergenerational Report 2010. Treasury of the Commonwealth of Australia, Canberra. Available:
http://www.treasury.gov.au/igr/igr2010/report/pdf/IGR_2010.pdf.
- Watson, L. (2005) 'Student fees and charges in VET: Policies and practice', in Ball, K. (ed.), *Funding and financing of vocational education and training: Research readings*. National Centre for Vocational Education Research, Adelaide.

Case Study B: Germany

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B1. Summary and key findings

Intermediate vocational education and training has a long tradition in Germany and is still a dominant part in the education system. It is characterised by dual apprenticeship training, which combines company-based practical experience with school-based general and theoretical learning.¹⁴ The intermediate VET system also comprises training at full-time vocational schools, and the 'transition system' for those who have difficulties in gaining entry to regular training. Intermediate VET in Germany ranges from ISCED levels 2 to 4.

The apprenticeship system provides training in 345 recognised occupations which cover a wide range of manufacturing and service jobs. The courses last between two and three and a half years and provide a professional certificate on successful completion. Training is given on the basis of official training regulations which define the elements of training in companies. Schools provide general education and the theoretical background of the profession. Companies need to be registered for training on the basis of a *Meister* degree or a tertiary education degree of the trainers. Employers must also sign a contract with applicants under private law. Apprenticeship remuneration is equivalent to around one third of the average net income of a skilled worker, but rises for every year of training.

Full-time vocational schools mainly provide training in health and care professions, as well as administrative and technical assistance occupations. Altogether there are 123 certified occupations. The courses take between two and three years and provide generally accepted certificates.

The transition system is organised by the Federal Labour Agency and *Länder* governments to provide pre-vocational training to those who are at risk of being excluded from vocational training or the labour market. These are short-term training measures which are aimed at compensating for the educational deficiencies of young people. Both general education and vocational training is provided under the transition system.

¹⁴ The terms 'dual training', 'dual apprenticeship training' and 'apprenticeship training' are used interchangeably in this report as they essentially refer to the same thing: apprenticeships.

All parts of intermediate vocational training are organised at Federal or *Länder* level. The social partners are strongly involved in apprenticeship training. The system is mainly funded by the Federal Government and the companies which train apprentices. In 2010 the government and employers, together, spent €27.4 bn (1.1 per cent of GDP) on intermediate vocational training. The major part of this amount (74 per cent) was spent on apprenticeship training. Employers contributed 21 per cent to overall costs.

In 2008, 48 per cent of new entrants to intermediate vocational training started dual apprenticeship training, around 18 per cent entered full-time vocational schools, and the remaining 34 per cent were picked up by the transition system. In 2009, around 1.6 million people were enrolled in apprenticeships and 566,000 new training contracts were signed. However, in the same year, in spite of their central role in intermediate vocational training, no more than 24 per cent of German employers provided apprenticeships.

The dual apprenticeship training system and full-time vocational schools are efficient parts of the education system for integrating youth in the labour market. The success rate of apprentices participating in final examinations was 90 per cent in 2009. Nevertheless, 23 per cent of apprenticeship contracts were cancelled early, while 15 per cent of a regular entry cohort into apprenticeship training go on to attain *Meister* certificates.

The majority of graduates from apprenticeship training start working directly after completing their training, and most of them get a permanent job. Graduates from full-time vocational schools are often in temporary jobs or in further education. This confirms the strong integrative power of apprenticeship training which, in contrast to school-based vocational training, builds company-specific knowledge during the training period. School-based training, however, opens better opportunities for upward progression.

All parties involved in intermediate VET face costs and benefits of training: for about one quarter of German employers, apprenticeship training is a successful way of replenishing their workforce. On average, employers were faced with net costs of €3,596 per apprentice per year in 2008. The largest component of the costs takes the form of apprenticeship wages and supervision costs. Employers strongly benefit from the productive contributions of apprentices during training, which equal approximately three-quarters of gross costs.

The major incentive for companies to engage in apprenticeship training is the creation of a skilled workforce and the avoidance of future skills shortages (a reason which has become increasingly important with the shrinking volume of youth cohorts). German companies achieve returns from training investments in two ways: (i) they avoid the high costs of adjustment training for externally recruited workers, and (ii) they extend the payoff periods for training investments by offering long job tenures. Apprenticeship training is also offered if training costs are low or if positive returns from training are

achieved before training is complete (i.e., during the training period). This, however, is the exception rather than the rule. Where these conditions do not apply, employers do not offer apprenticeships.

Participants in intermediate training face costs in terms of foregone earnings in an unskilled job. Nevertheless, they achieve life-time benefits, which more than outweigh their costs: the unemployment rate of a person with intermediate level skills is only one third of that of a person without vocational training, and the wage is 10 per cent higher on average. These are clear signals from the labour market to invest in vocational training at a young age.

The government profits from investments into intermediate VET by positive tax returns, lower unemployment costs, a broad skills base for the labour market and economic growth on the basis of technological competitiveness. The German intermediate VET system thus provides a 'win-win-win' outcome for all stakeholders. It works because it still provides well trained workers with a high degree of both company-specific and generic knowledge. It has a clear and generally accepted structure and it has a strong integrative power. Intermediate level skills will therefore stay important in the future. Around 54 per cent of the workforce in 2025 is expected to hold a vocational certificate from dual apprenticeship training or from full-time vocational schools.

The main criticism of the intermediate vocational training system is directed at the transition system. On the one hand, the participation rate in this 'pre-training' system is too high, indicating failures in other parts of the intermediate VET system. On the other hand it often does not provide certificates which are accredited in regular vocational training.

In the last few decades, Germany has moved towards a service-economy, a trend which challenges the dual apprenticeship approach in various regards. It is centred on production-related occupations for which demand is declining in the long term. It is focused on initial training which is rapidly outdated in the face of technical and organisational change. It teaches practical knowledge while company needs are upgrading towards theoretical knowledge. A more flexible dual apprenticeship training system with more generalisation than specialisation is needed to prepare the workforce for the needs of a knowledge-intensive service economy. Moreover, it needs to be complemented by an efficient lifelong learning system which is required to respond to a rapidly ageing population.

The dual training approach works efficiently in Germany and other countries with a long tradition in this type of training, such as Austria and Switzerland. The social model applied by these countries appears to be an important reason for the effectiveness of apprenticeship training. Only within this balanced framework of burden and profit sharing

among social groups, can training develop its positive impacts. The system would also not work if the governments were not determined to organise vocational training, set the nationwide standards, and provide a major part of the financial resources.

This model is in contrast to the flexibility-oriented models which can be observed in the UK or the USA, and the German approach has been criticised as being inflexible and missing important new markets. The critics, however, underestimate the internal flexibility of the system, which allows companies to change product portfolios, production technologies, and even markets together with the employed workforce. The investments in vocational training have not only been profitable with regard to the efficiency of current production but also with regard to the adjustment capabilities of the workforce.

However, it strongly depends on the willingness of companies to provide adequate training places. This is based on the institutional cooperation between employers, trade unions and governments in these countries. But even under these conditions, the number of apprenticeship places is due to significant cyclical fluctuations. As mentioned above, there is not only a strong need to modernise the system. It also may benefit from a modularised structure in order to achieve higher flexibility with regard to the length and content of training, higher permeability in order to open the opportunities for upward mobility, and the integration of the 'transition system' in order to improve its overall efficiency.

Table B1.1 Costs and benefits of intermediate level skills in Germany

Employer costs	Employer benefits
<p>Employers face average gross costs of €15,288 per apprentice and year:¹⁵</p> <p><i>Direct costs</i></p> <ul style="list-style-type: none"> Apprenticeship allowance (61% of total costs) Miscellaneous costs, e.g. chamber fees (12% of total costs) <p><i>Indirect costs</i></p> <ul style="list-style-type: none"> Apprentice supervision costs (22% of total costs) Administration costs Extra maintenance and material waste (5% of total costs) Loss of training investment in case of poaching <p><i>Net training costs</i> €3,596 per apprentice per year after subtracting the productive work contribution of apprentices</p>	<ul style="list-style-type: none"> Productive contribution of apprentice (€11,692 on average)¹⁵ Government incentives for selected groups of trainees (<i>Ausbildungsbonus</i>)¹⁶ Demonstration of the employer's corporate social responsibility Recognition of the value of 'growing one's own' skilled employees Attractiveness of the employer on labour markets High level of skills supply on the labour market <p><i>If an apprentice is taken on:</i></p> <ul style="list-style-type: none"> Most important: selection of future employees during training period (61 % are taken on by training company¹⁷) Avoiding skills shortages Lower recruitment costs Reduced costs of on-the-job training of externally recruited employees Fully integrated and productive workers
Apprentice costs	Apprentice benefits
<ul style="list-style-type: none"> High opportunity cost: expected wages in an unskilled alternative job minus actual wages (foregone earnings €24,106 for males and €24,314 for females)¹⁸ Costs associated with training: tools, textbooks, safety equipment etc. normally not paid by the employer Travel costs 	<ul style="list-style-type: none"> Apprenticeship allowance Life-time benefits¹⁸ <ul style="list-style-type: none"> Lower unemployment rate of 7.2% (- 9.3 percentage points in comparison to a person with below upper secondary education) Higher employment rate: 75.3% (+ 20 percentage points in comparison to a person with below upper secondary education) 10% higher wages compared to a person with below upper secondary education High private net present values of training: US\$ 43,325 (€32,385) for males, US\$ 28,342 (€21,185) for females over life-time
Government costs	Government benefits
<p>Government spending in 2010 for intermediate VET was €27.4 bn¹⁹, which comprised:</p> <ul style="list-style-type: none"> Dual training (€20.3 bn) Full-time vocational schools (€2.8 bn) Transition system (€4.3 bn) 	<ul style="list-style-type: none"> Broad skills base Reduction of skills shortages Support of innovative potential of the economy High reduction of unemployment costs (€22,282 for males and €11,117 for females, highest value among OECD countries)¹⁸ Income tax effect (€18,670 for males and €17,617 for females)¹⁸ High public net present value US\$ 57,690 (€43,122) for males and US\$ 39,793 (€29,745) for females¹⁹

Source(s): Beicht and Ulrich (2008); BMAS (2008); BMBF (2010a, 2010b, 2010c); OECD (2010); Statistisches Bundesamt (2011); Wenzelmann et al. (2009); Economix.

¹⁵ Wenzelmann et al. (2009).

¹⁶ BMAS (2008).

¹⁷ BMBF (2010c).

¹⁸ OECD (2010).

¹⁹ BMBF (2010a, 2010b), Economix.

B2. Characteristics of the intermediate vocational education and training system

B2.1 Economic and social background

Germany has around 82 million inhabitants and an area of 357 000 square kilometres. It is the biggest country by population and the fourth largest country by area in the European Union. Germany is a democratic and federal republic consisting of 16 *Bundesländer* (Federal States), which have their own constitution, parliament and government. The country is governed by the *Bundestag* (German Federal Parliament), the *Bundesrat* (German Federal Council as the representation of the Federal States), and the *Bundesregierung* (German Federal Government).

Economically, Germany is the world's fourth largest player in terms of GDP and the second biggest exporter behind China (World Bank, 2011). It has a share of six per cent in world gross domestic product. In 2010 the service sector contributes more than half of GDP (54 per cent), followed by manufacturing industries (28 per cent), trade (17 per cent) and agriculture (1 per cent) (Germany Trade & Invest, 2011). The German economy survived the global financial and economic crisis comparably well and has positive growth rates again since the first quarter of 2010 (Statistisches Bundesamt, 2011). The upswing was strongly export driven and supported by two stimulus packages introduced by the government.

The German labour market weathered the financial crisis well due to short-time working arrangements and flexible working time. At the peak of the crisis in May 2009 about 1.5 million people received short-time work allowances. In January 2011, 40.3 million people were in employment and the unemployment rate was eight per cent (Bundesagentur für Arbeit, 2011). Twenty years after the reunion, employment levels are still higher in the western part of Germany.

About 16 million people in Germany have a migration background (are either immigrants to Germany since 1950 or are the children of immigrants), which is equivalent to 19.6 per cent of the population (Statistisches Bundesamt, 2010a). Those with a migration background face a higher risk of being unemployed compared to those with German parentage: in 2007 their unemployment rate was twice as high as that of the total population (Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration, 2010).

The educational attainment of the German population is relatively high. Around 97 per cent hold at least a general education certificate (*allgemeiner Schulabschluss*) which corresponds to ISCED level 2 or higher. Around 25 per cent hold a graduation in a tertiary

institution (ISCED 5 and 6) and 60 per cent a graduation from the secondary II area or the post secondary non-tertiary area (ISCED 3 and 4). Nevertheless, around three per cent have no school leaving certificate (ISCED 0-1) and 11 per cent have only a graduation at secondary I level (ISCED 2) (Statistisches Bundesamt, 2010b).

Demographic change will challenge the German labour market. Currently, it is leading to skills shortages due to the shrinkage of youth cohorts. Moreover, it is expected to impact on the labour market more seriously in 2020 when the baby boom generation of the 1960s will be leaving the labour market.

B2.2 Historical evolution

Apprenticeship training has a long tradition in Germany. It already existed in the 14th century for crafts and commercial occupations. The crafts chambers were mainly responsible for the training regulations. In the course of industrialisation the state legally implemented vocational schools and started to modify training regulations at the end of the 19th century. Dual apprenticeship training was first introduced in the manufacturing sector.

The structure of dual apprenticeship training was again modified in 1968 with the Law for Education and Training, which regulates rights and duties of apprentices and employers and is still valid today. In 2005 it was modified to improve the educational opportunities of all young people, irrespective of their social background.

Until the 1980s a great number of young people with a general secondary school certificate or an intermediate certificate participated in vocational training. Up to 70 per cent of an age cohort was trained by (dual) apprenticeship training or in full-time vocational schools. Since then, however, dual apprenticeship training has lost some of its importance as a great number of manufacturing jobs have disappeared and the number of students in tertiary training has continued to grow (Büchtemann and Vogler-Ludwig, 1997; Baethge *et al.*, 2007).

The apprenticeship system has always been a core element of economic development and social integration in Germany. As Theodore Robinson, the vice-president of the Illinois Steel Company wrote in 1913:

There is perhaps no greater object lesson of the possibilities of vocational training than the phenomenal industrial advance of Germany during the last generation. This has been accomplished primarily because [...] German statesmen were sufficiently farsighted and progressive to inaugurate a comprehensive system of vocational education by which German youth acquire a better training than in any other nation (cited in Ostemann, 1990, p. 261).

This is a clear statement about the direct link between economic progress and vocational training, which has been confirmed by other prominent authors. Michael E. Porter writes in his famous *The Competitive Advantage of Nations*, that apart from a well-developed university system and an efficient research sector, 'another factor-creating mechanism in Germany whose importance is hard to overestimate is a well-developed and distinctive apprenticeship system' (Porter, 1990, p. 369). As a result, he writes:

German workers are not only better trained in specialized fields than workers in most countries, but have a better theoretical base from which to develop and enhance their skills. This supports the ability to produce goods of rising quality and sophistication (Porter, 1990, p. 369).

The effectiveness of this system, however, can only be assessed within the wider context of what is called the 'German model'. This term is often used to describe post-war Germany using industrial relations, vocational training, and close relationships between public services and industrial sectors to cultivate economic prosperity. Only within this balanced framework of burden and profit sharing among social groups can vocational training develop its positive impacts. The system would not work if the government, through the Board of BIBB, were not determined to organise vocational training, set the nationwide standards, and provide a major part of the financial resources. It would also not work if companies decided not to train young people as their future work force, a highly specialised but nevertheless broadly skilled workforce. Finally, it would not work if young people were not convinced that participating in vocational training will provide access to stable and better paid jobs, and will improve their social status.

This model is a very big contrast to the flexibility-oriented models which can be observed in the UK or the USA, and for a long time during the last 40 years, the German model was criticised as being inflexible and missing important new markets. The critics however, have tended to underestimate the internal flexibility of the system, which allowed companies to change product portfolios, production technologies, and even markets with the employed workforce. The investments in vocational training have not only been profitable with regard to the efficiency of current production, but also with regard to the adjustment capabilities of the workforce.

Proof of the high long-term return on training investments is given by the recent financial and economic crisis, which not only left the German labour market almost untouched, but allowed a rapid recovery from the serious decline of world markets. This was based on the substantial restructuring efforts undertaken by the German companies over the last decade, the governmental reform of labour markets (the 'Hartz reform'²⁰), and the capability of large parts of the workforce to adjust to changing skill needs.²¹ The social

²⁰ Hartz Commission (2002).

²¹ Note, that while the training system arguably demonstrates inflexibility in that it can be slow to adapt to changing patterns of employment and new skills needs, the intensive provision of generic and professional skills allows workers themselves to be relatively flexible.

consensus was reaffirmed by the broad use of short-time work during the crisis, which cost the workers parts of their income, the companies parts of their productivity, and the government a significant sum of money. This happened without a broad debate, as all stakeholders were convinced of the pivotal role of human resources. The preservation of skills and competences was a clear priority and a pre-condition for the rapid recovery. The strategy appears to have worked.

Training markets, however, have remained sensitive to cyclical fluctuations, and to the recent crisis. Youth unemployment increased during the crisis more than average unemployment, and the supply of apprenticeship training places declined. If the German training market is not worse off now, this is mainly due to demographic reasons.

B2.3 Principal structure of the education system

Intermediate vocational training is fully integrated into the German education and training system and provides certificates which are widely accepted in the labour market. Moreover, it allows various transits to higher educational levels. Figure B2.1 presents the structure of the educational system; intermediate vocational training is indicated by the yellow coloured boxes.

Education starts in primary school at the age of six and lasts for four years. Children then decide, depending on their school grades from primary school, between three types of school: secondary general school (*Hauptschule*), intermediate school (*Realschule*) and grammar school (*Gymnasium*). The completion of secondary general schools, which normally takes four years, offers the lowest qualification level (secondary school certificate). Alternatively, pupils can attain an intermediate school certificate, which takes one year longer. At this level certificate holders are entitled to enter intermediate vocational training or a technical secondary school. Grammar school, which takes eight years, provides students with an A-level certificate (*Abitur*), which enables them to continue their studies at a university or a university of applied sciences (*Fachhochschulen*) or to participate in all types of vocational training.

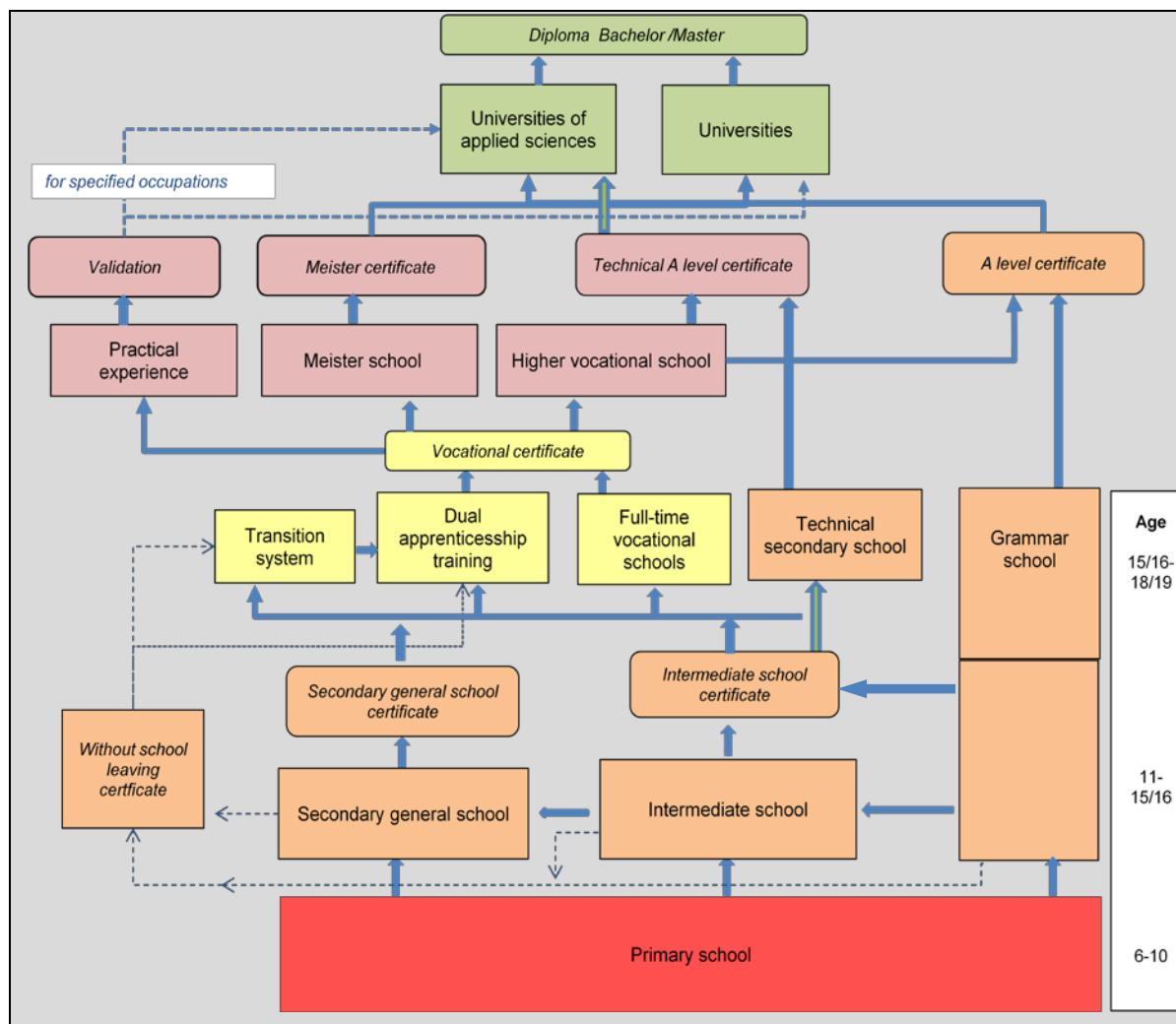
The majority of young people (53 per cent) between the ages of 15 and 20 held an intermediate school certificate in 2009. One third held a secondary school certificate, one tenth achieved A-levels and the remaining four per cent had no school leaving certificate (BMBF, 2010a).

Intermediate vocational training comprises three parts: dual apprenticeship training in companies and at vocational schools, full-time training at vocational schools and the transition system (*Übergangssystem*), which is the preparation of disadvantaged young people for vocational training. The definition of intermediate level training according to the

ISCED classification includes upper secondary education with ISCED levels 3A, 3B and 3C.

Dual apprenticeship training lasts between two and three and a half years. Full-time vocational schools take one to three years. After completing dual apprenticeship training or training at a full-time vocational school, participants receive a vocational certificate.

Figure B2.1 Education and training in Germany: basic structure



Source: Economix.

A great variety of measures are provided to early school-leavers or those who drop-out from apprenticeship training to compensate for their knowledge deficits and prepare them for vocational training. These measures are subsumed under the title 'transition system', where courses can take between six months and two years. Some of these measures lead to a secondary school certificate but most of them try to improve labour market and training orientation of young people in order to improve their chances for a regular apprenticeship. Normally these courses are not accredited as vocational training periods.

The majority of those with completed intermediate vocational training enter the labour market directly. However the system allows for continued training at higher levels. Traditionally, journeymen in craft occupations attended the *Meister* school in order to

acquire the *Meister* certificate which allowed them to run a craft business and train up apprentices. The *Meister* certificate also allows study at university.

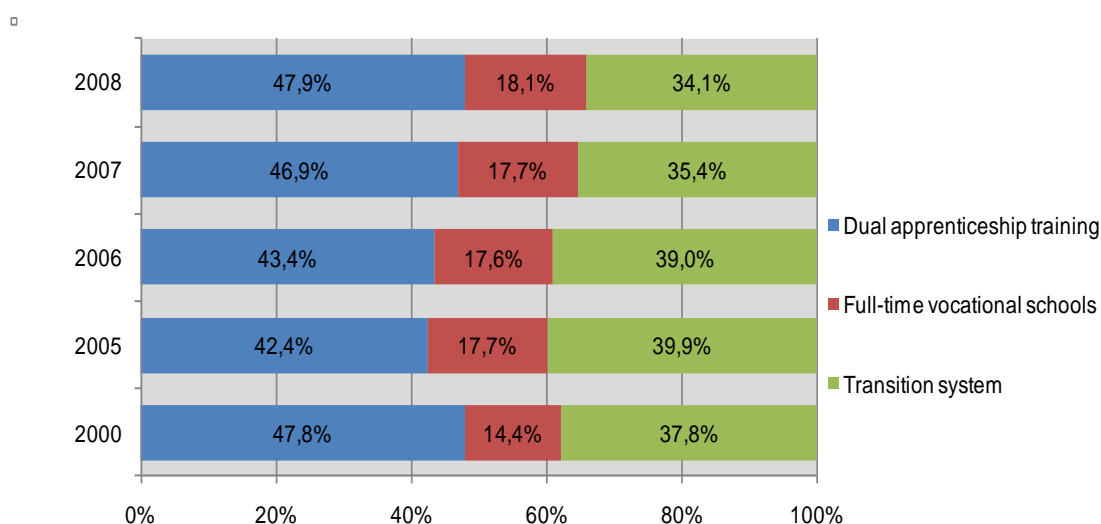
School-based alternatives are offered to receive the university entrance allowance: people with an intermediate school certificate can acquire the technical A-level certificate (*Fachhochschulreife*) at a technical secondary school (*Fachoberschule*). People with a vocational certificate can attain their A-levels (*Fachabitur*) at a higher vocational school (*Berufsoberschule*). Technical A-levels entitle the student to study at a university of applied sciences. Moreover, there is the possibility to receive the technical university entrance allowance for specific occupations (*fachgebundene Hochschulreife*) for dual apprentices who have completed their training and collected practical experience in their profession. The competence to study at a university has to be validated.

B2.3.1 Intermediate vocational training

Dual training comprises the largest share of entries into intermediate vocational training. In 2008, 48 per cent of new entrants chose dual training (Figure B2.2), 18 per cent entered a full-time vocational school and the remaining 34 per cent were picked up by the transition system (BMBF, 2010a).

The share of full-time vocational training increased from 14.4 per cent to 18.1 per cent within eight years, while apprenticeship training stagnated. It is also important to see that the decline of entrants in dual apprenticeship between 2000 and 2006 was largely compensated by the transition system rather than by full-time vocational schools. This is indicative of the role of the transition system as a buffer for bottlenecks in dual training markets (BMBF, 2010a).

Figure B2.2 New entrants in intermediate vocational training, 2000-2008



Source(s): BMBF 2010a; Economix.

B2.3.2 Dual apprenticeship training

Characteristics of dual training

Dual apprenticeship training is the combination of practical and theoretical learning. On-the-job training is mainly offered by companies in the private sector while vocational schools belong to public sector education.

The aim of dual training is to provide training programmes which qualify workers for a great variety of manufacturing, commercial and service occupations. The successful completion of the training entitles the apprentice to practise an occupation as a qualified skilled worker in one of the currently 345 recognised training occupations (BIBB, 2011). Dual training certificates play an important role in the German labour market as the access to intermediate jobs is almost exclusively restricted to graduates from vocational training.

In most cases dual training lasts for three years and it ends with a formal examination set by one of the Chambers (see Section B2.4). There are, however, some occupations that require three and a half years, such as mechatronics (*Mechatroniker*), which is a combination of mechanical and electronic engineering. For apprentices with A-levels it is possible to reduce the training period by one year. Apprentices who achieve good grades during their training period can also apply for their training period to be reduced.

Alternatively, 35 apprenticeship occupations only take two years. The creation of these shortened apprenticeships was particularly supported after the year 2000 with the aim of improving training opportunities for disadvantaged youth. These apprenticeships are in occupations with less demanding requirements (car service, courier services, warehouse workers, sales clerks etc.). Most of these apprenticeships can be extended to a comprehensive apprenticeship certificate (BMBF, 2008).

Companies sign contracts with apprentices under private law and train them in line with the binding provisions of the vocational training directives. This entitles the apprentice to receive occupational training in the company and to attend a vocational school. On average, apprenticeship remuneration equals about one third of the average net income of a skilled worker and rises for every year of training. Apprenticeship remuneration is widely regulated by collective agreements.

Employees responsible for training up apprentices in the companies need to be qualified for training. Accreditation as a trainer requires a *Meister* certificate in one of the trades or an equivalent university degree, and approval by one of the chambers. The costs of in-company training and remuneration of the apprentice are carried by the enterprises.

School-based training is provided in general subjects such as German language, mathematics, social studies, ethics, sports etc. Moreover, apprentices are trained in the principles of their profession.

Table B2.1 Typical apprenticeship occupations by sectors

Sector	Typical occupation
Trade and industry*	<ul style="list-style-type: none"> • Management assistant in retail business (<i>Kaufmann/frau im Einzelhandel</i>) • Automotive mechatronics engineer (<i>Kraftfahrzeugmechatroniker</i>) • Industrial clerk (<i>Industriekaufmann/frau</i>)
Crafts	<ul style="list-style-type: none"> • Plant mechanic for sanitary heating and air condition systems (<i>Anlagenmechaniker/in für Sanitär-, Heizung- und Klimatechnik</i>) • Hairdresser (<i>Friseur/in</i>) • Metal constructor (<i>Metallbauer/in</i>)
Agriculture	<ul style="list-style-type: none"> • Farmer (<i>Landwirt</i>) • Stablehand (<i>Pferdewirt/in</i>) • Animal husbandry (<i>Tierwirt</i>)
Public services	<ul style="list-style-type: none"> • Specialist in labour promotion (<i>Fachangestellte(r) für Arbeitsförderung</i>) • Sewage engineering technician (<i>Fachkraft für Abwassertechnik</i>) • Clerk of the court (<i>Justizfachangestellter</i>)
Liberal professions	<ul style="list-style-type: none"> • Medical assistant (<i>Medizinische(r) Fachangestellte(r)</i>) • Dental medical assistant (<i>Zahnmedizinische(r) Fachangestellte(r)</i>) • Pharmaceutical management assistant (<i>Pharmazeutischer-kaufmännische(r) Angestellte(r)</i>)
Housekeeping services	<ul style="list-style-type: none"> • Housekeeper (<i>Hauswirtschaftler/in</i>)
* Including banking and insurance, catering and hotel industry and transport industry	

Source(s): Statistisches Bundesamt (2009a); Economix.

Legal framework

The legal framework of dual apprenticeship training is nationally regulated in the Law for Vocational Education and Training (*Berufsbildungsgesetz*) and in the Crafts and Trades Regulation Code (*Handwerksordnung*). These constitute the basis for the apprenticeship training regulations (*Ausbildungsordnungen*). They define the targets, contents and examination requirements of company-based training. The school-based training at vocational schools is regulated in the curricula (*Rahmenlehrpläne*), which are defined by the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* (*Kultusministerkonferenz*). Company-based training takes place three or four days a week, while apprentices attend vocational schools on the other days.

Organisational framework

There is a principal distinction between the crafts sector and the sector of trade and industry. Different training regulations exist for the same occupation in the two sectors in order to adapt to training requirements, with craft related activities on the one hand and

highly automated production processes on the other. This also implies different training methods. In most cases master craftsmen (*Meister*) integrate their apprentices in regular work processes, whereas industrial companies maintain training workshops separate from production. The trade and industry sector offers exclusive training in 89 occupations, the crafts sector in 54 occupations and a further 181 occupations are trained in both sectors (Statistisches Bundesamt 2009a).

Example: plant mechanic for sanitary, heating and air conditioning systems

In general plant mechanics for sanitary, heating and air conditioning systems plan, install and maintain complex plants and systems in supply engineering. Moreover, they are responsible for technical services. They mainly work for installation firms or at heating and air conditioning constructors, and install energy-saving systems.

According to the training regulation, dual apprenticeship training lasts three and a half years. In the trade and industry sector the training is focused more directed on the use and operation of plants, whereas training in the crafts sector concentrates more heavily on manual working tasks and customer-relations (Bundesgesetzblatt, 2003a).

The final exam consists of both a practical and a written test. The practical part comprises a fictional customer order, while the written exam includes work planning, plant analysis and economic and social studies.

Table B2.2 Training contents for a plant mechanic for sanitary, heating and air conditioning (trade and industry sector)

Part of training	Company-based training	School-based occupational training
First part 1 st and 2 nd year	<ul style="list-style-type: none"> Operational, technical and customer-related communication Planning and regulation of working tasks, controlling and evaluating results Quality management Installation of electrical modules in facilities and systems Consideration of sustainable energy and water systems Conduct of measures for insulation and security Assembling measurement and control facilities and systems 	<ul style="list-style-type: none"> Production of structural elements Treatment of plant sections Customer orders Production of simple modules Maintenance of technical systems Installation of facilities for drinkable water Installation of drainage systems and heat distribution facilities
Second part 3 rd and 4 th year	<ul style="list-style-type: none"> Use and operation of plants and systems Customer-oriented order processing Consideration of construction regarding physical, ecological and economical conditions Function control and maintenance of plants and systems 	<ul style="list-style-type: none"> Installation of heat-generating plants Installation of plants for heating drinkable water Integration of resource-conserving plants in buildings and energy techniques Maintenance of plants and systems

Source(s): Bundesgesetzblatt (2003b); Kultusministerkonferenz (2003); Economix.

B2.3.3 *Meister* training

People with completed dual apprenticeship training can participate in further training to receive their *Meister* qualification. The *Meister* qualification entitles the learner to lead a crafts company and to train apprentices. *Meister* training is company-related and extends the skills which were acquired during apprenticeship training.

The *Meister* school can be attended either part-time or full-time, can take between several months and three years to complete and comprises four parts:

1. subject related practical professionalisation
2. subject related theoretical knowledge
3. economics and business law
4. qualification as a trainer

The exam for the *Meister* qualification can only be passed if the participant achieves at least a 'grade four' in all four parts.²² The approval of the *Meister* examination is executed by the responsible chambers.

Many skilled workers continue their training at a later date (i.e. not directly after completing their apprenticeship training). On completion of a *Meister* qualification, one also receives the matriculation standard at a university (*Hochschulreife*).

B2.3.4 Full-time vocational schools

The spectrum of learning opportunities in full-time vocational schools is very diverse. There are schools for commercial occupations, foreign languages, crafts, arts, health, social care, as well as housekeeping services. Full-time vocational schools also differ with regard to entrance requirements, duration and certificates.

According to recent statistics (Statistisches Bundesamt, 2009d) for the training year 2009/10:

- The majority of trainees in full-time vocational schools (88 per cent) attended courses in one of the 123 approved occupations, which lead to vocational education certificates not regulated by the Law for Vocational Education and Training or the Crafts Code. Training courses are determined by framework agreements of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* (Kultusministerkonferenz, 2011). The duration of courses was between two and three years. The majority of trainees in the school year 2009/2010 were female (68 per cent). The most popular occupations were as a nurse for the elderly, childcare worker, clerical assistant and technical assistant.
- The remaining 12 per cent of trainees attended a three year course resulting in a vocational certificate equivalent to an apprenticeship and regulated by the Law for Vocational Education and Training or the Crafts Code. Trainees are also entitled to sit an examination at the responsible chamber. From the 44 occupations provided in this part of full-time vocational schools, the most popular occupations were related to cosmetic care, housekeeping services and clerical activities.

Under certain conditions it is also possible for trainees to acquire the entrance entitlement to a university of applied sciences (*Fachhochschule*).

²² There exist six grades, with grade 1 as the highest and grade 6 the lowest.

B2.3.5 The transition system

Training standards have been raised in both dual training and vocational schools. As a consequence, the integration of disadvantaged young people and those with low levels of educational attainments has become a problem of rising importance. *Länder* governments and the Federal Labour Agency therefore developed the transition system, which consists of a number of integration programmes as a means of preparation for vocational training. The most common programmes of the transition system are:

- Pre-vocational measures (*berufsvorbereitende Bildungsmaßnahmen*) serve as preparation for apprenticeship training and last 10 months, or, on rare occasions, 18 months. An assessment of skills and competences and support for orientation and occupational choice is offered, and the skills and competences needed for successful entry into vocational training are promoted. Moreover, people who have left school without a school leaving certificate have the opportunity, within this programme, to catch up on the learning required to achieve this: in a pre-vocational training year (*Berufsvorbereitungsjahr*) the deficiencies of basic education are compensated for as much as possible, and the orientation towards a professional career is promoted. The majority of participants acquire their general secondary school certificate here.
- Full-time vocational schools (*Berufsfachschulen*) also provide courses for those without an apprenticeship training position. They last for one or two years and provide basic vocational knowledge and the opportunity to catch up on a general education certificate (*allgemeinbildender Abschluss*). It is not common to receive a vocational certificate in this type of course.
- In a vocational training year (*Berufsgrundbildungsjahr*), students receive basic education in a specific educational field. The successful completion of this programme can be accredited as the completion of the first year of vocational training.
- Students with limited prospects of finding a training position need to pass one year in-company training, which is known as an entry-level vocational qualification (*Einstiegsqualifizierungsjahr*). This lasts between six and 12 months and provides work experience in companies. The programme follows a training plan which is approved by the chambers. Jobs are remunerated by employers but subsidised by the Federal Government.
- Vocational schools (*Berufsschule*) offer special courses for people without an apprenticeship contract. Rather than professional competences, the training comprises theoretical knowledge, generic skills, communicative competences and the competence for self-governed learning.

The structure of the transition system has changed very little in recent years. The contents and responsibilities of the single measures vary considerably, however they all share the fact that none of them offer a vocational training certificate (*qualifizierter Ausbildungsabschluss*).

B2.3.6 Continuing vocational education and training

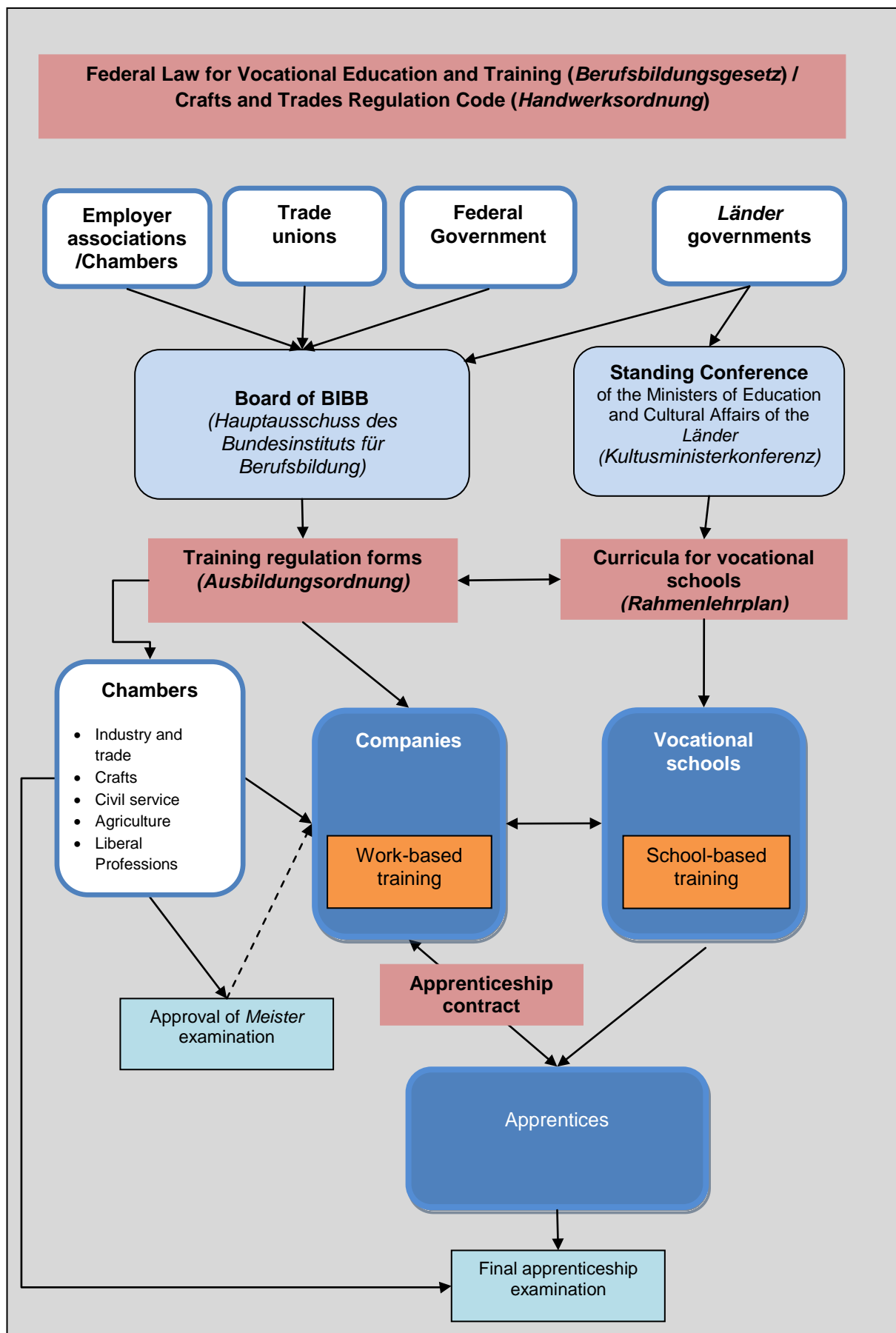
Extended vocational training serves to broaden, renew and add knowledge to existing skills and competences which were acquired during initial education and training (*Erstausbildung*). Continuing vocational education and training (CVET) mostly takes place during work time or is arranged by the employer (*betriebliche Weiterbildung*). In 2007, 26 per cent of 19 to 64 year olds participated in CVET, with participation rates higher for men (29 per cent) than for women (24 per cent). Traditionally, participation rates also differ regarding age groups. The participation rate of those older than 50 was only 19 per cent in 2007 (BMBF, 2010c). Moreover, participation is higher among those with higher educational attainments (BMBF, 2010c). While CVET, in theory, provides an opportunity for older learners to acquire or upgrade intermediate level skills, the main way these skills are acquired in Germany is during the initial vocational education and training (IVET).

B2.4 Institutional organisation and VET providers

The apprenticeship system has three major actors; the apprentices, the employers who train apprentices and the vocational schools. As mentioned above, their relationships are regulated by the Federal Law for Vocational Education and Training (*Berufsbildungsgesetz*) and the Crafts and Trades Regulation Code (*Handwerksordnung*) (Figure B2.3).

A central institution is the *Hauptausschuss des Bundesinstituts für Berufsbildung* (BIBB), the Main Board of the Federal Institute for Vocational Education and Training. This is the main consultative body of the Federal Law for Vocational Education and Training. The *Hauptausschuss* consists of representatives from the Federal Government, employer associations, trade unions and the *Länder* governments. Each party has equal influence in advising on training regulations. The Board gives advice to the Federal Government and comments on all training regulations (*Ausbildungsordnung*), which are valid in all German States and thus create nationwide standards for apprenticeship training.

Figure B2.3 Institutional structure of vocational training



Source: Economix.

The implementation of practical training contents in companies is controlled by the responsible chambers.²³ They monitor apprenticeship training, give advice to companies and apprentices, verify training personnel (those with a *Meister* or an equivalent university degree) and approve apprenticeship examinations. The responsible chambers also form vocational training commissions (*Berufsbildungsausschuss*), which are organised both locally and nationally. They consist of six representatives of employers, employees (trade unions) and six advisory teachers from vocational schools (Baron 2007). These are important channels through which practical experience with apprenticeship regulations is transferred.

The *Länder* governments are responsible for education at vocational schools. This is coordinated by the Standing Conference of Ministers of Cultural Education and Cultural Affairs of the *Länder*. The Standing Conference develops the curricula and puts it on a par with the training regulations.

B2.5 Funding

Total expenditure for intermediate vocational training is estimated at €27.4 bn (1.1 per cent of GDP) for 2010, of which the governments spent €21.7 bn (0.9 per cent of GDP) and companies €5.7 bn (Table B2.3). This amounts to 25 per cent of total education and training expenditure. The majority of this is spent on dual (apprenticeship) training (74 per cent). Full-time vocational schools receive €2.8 bn (10 per cent) and the transition system receives €4.3 bn (16 per cent) (BMBF, 2010a, 2010b).

Table B2.3 Expenditure for intermediate vocational training
Billion €

	Governments	Companies	Total
Apprenticeship training	14.6	5.7 ^{b)}	20.3
Full-time vocational schools	2.8	0	2.8
Transition system	4.3	0	4.3
Total expenditure	21.7	5.7	27.4
a) Estimates on the basis of available statistics			
b) Net costs considering production values contributed by apprentices			

Source: BMBF (2010a, 2010b), *Economix*.

The funding of dual apprenticeship training is shared according to the responsibilities for dual training. The companies pay for in-company training and the *Länder* pay for the vocational schools. The training costs of companies are calculated as net costs because companies get the productive contributions of apprentices during practical work. Recent figures show that these contributions recover 76 per cent of total dual training costs at the

²³ These include the Chambers of Trade and Commerce (IHK), the Chamber of Crafts, The Chamber of Civil Service, the Chamber of Agriculture and the Chambers of Liberal Occupations.

company level (Wenzelmann *et al.*, 2009). The remaining cost burden of employers thus amounts to €5.7 bn or 20 per cent of total costs of intermediate vocational training.

B3. Performance of intermediate vocational education and training

B3.1 Participation rates

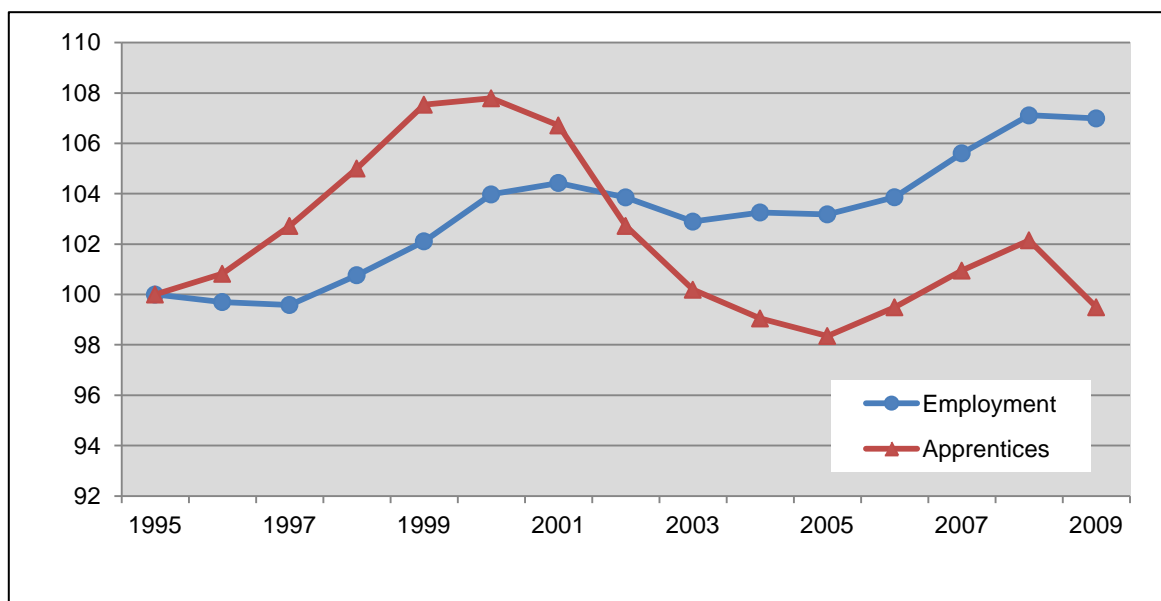
B3.1.1 Participation in dual apprenticeship training

Dual training is the largest field of education at higher secondary level. Almost two thirds of the population aged between 17 and 24 participates in this system: 64.6 per cent in 2008 (Gericke and Uhly, 2010).

The number of apprentices has fluctuated considerably during the last 15 years, both in absolute terms and in relation to employment (Figure B3.1). This indicates both a strong business cycle dependency and the impact of policy intervention. During the second half of the 1990s the number of apprentices increased considerably and the share in employment also expanded. The end of the New Economy Boom in 2000 drew a halt to this development, and led the dual system into a new crisis. Manufacturing companies in particular reduced their participation and the new service firms did not compensate for the losses. In 2004 the Federal Government initiated the National Pact on Vocational Education and Training to ensure the supply of skilled workers.²⁴ Since then many measures have been introduced to help offer more dual training positions and to improve the transition from school to training. As a result, the number of apprentices has started to increase again. In relation to employment, however, no substantial increase has been achieved. The financial crises finally undid great parts of the former achievements. These figures follow a trend which is characterised by the de-industrialisation of the German economy, a strong preference for higher training levels, and the weakening of the attainment level of the applicants for apprenticeships.

²⁴ The National Pact on Vocational Education and Training was first co-signed by the German Federal Government and employers' organisations in June 2004 as a means of committing German industry (on a voluntary basis) to creating 30,000 extra apprenticeship placements between 2004 and 2007. More information on the pact, which was renewed in 2007 and again in 2010 is available from the [Federal Employment Agency](http://www.bmas.de/EN/Topics/Vocational%20Education%20and%20Training/national_pact_on_vocational_education_and_training.html) (Bundesagentur für Arbeit) website.

Figure B3.1 Development of employment and apprentices (1995-2009)
1995=100



Source: Statistisches Bundesamt, (2009a, 2011); Economix.

In total, around 1.6 million apprentices were counted in 2009. The number decreased by 2.6 per cent between 2008 and 2009 (Statistisches Bundesamt, 2009a). Between the 1st October 2008 and 30th September 2009, 566,004 new apprenticeship training contracts were signed. This was 8.2 per cent fewer compared to the previous year (BMBF, 2010b). The decline of dual training contrasts with the number of students at tertiary level which increased to 2.1 million people in 2009 – a growth rate of 4.7 per cent (Statistisches Bundesamt, 2009b).

The development of apprenticeship training participation is also influenced by demographic change. The years 2008 and 2009 were the first years in which the number of vacant training places was higher than the number of applicants who did not receive a training place (Statistisches Bundesamt, 2009a). The demographic change will worsen the situation in the future. The size of young population cohorts will decrease continuously and the attractiveness of tertiary training will further limit the number of adequate applicants for apprenticeships.

Apprenticeship training is dominated by males with a share of 60 per cent. This is considerably more than in tertiary training where males have a share of 52 per cent. Around 42 per cent of entrants into dual training had an intermediate certificate (*Realschule*), around 33 per cent a secondary general school certificate (*Hauptschule*) and 20 per cent a higher education entrance qualification (A-level). Only 3.5 per cent did not have any type of school leaving certificate (Statistisches Bundesamt, 2009a). This means that it is extremely difficult to enter the dual training system without an adequate school education and that it is not directly accessible by those in the transition system.

The types of apprenticeship training undertaken by men and women differ: men more often take up technical subjects while women more often participate in training for service jobs. The five most common apprenticeship occupations for men and women are illustrated in Table B3.1. The table also reflects labour demand conditions as companies mainly provide training places in these occupations.

The variation in training occupations by gender corresponds to education at tertiary institutions, where women are more likely to study linguistic, cultural and social sciences and men more commonly study engineering, mathematics and natural sciences. Nevertheless, the traditional picture is changing gradually, with ever more women taking up mathematics and natural sciences, and men engaging in social sciences (Statistisches Bundesamt 2009b).

Table B3.1 Most common apprenticeship trainings by gender and percentage share of all apprenticeship trainings

	Men	%	Women	%
1	Automotive mechatronics engineer (<i>Kraftfahrzeugmechatroniker</i>)	6.8	Management assistant in retail business (<i>Kauffrau im Einzelhandel</i>)	6.8
2	Industrial mechanic (<i>Industriemechaniker</i>)	5.3	Office clerk (<i>Bürokauffrau</i>)	6.6
3	Electrician (<i>Elektriker</i>)	3.7	Medical assistant (<i>Medizinische Fachangestellte</i>)	6.5
4	Plant mechanic for sanitary, heating and air conditioning (<i>Anlagenmechaniker für Sanitär-, Heizungs- und Klimatechnik</i>)	3.5	Hairdresser (<i>Friseurin</i>)	5.5
5	Management assistant in retail business (<i>Kaufmann im Einzelhandel</i>)	3.5	Industrial clerk (<i>Industriekauffrau</i>)	5.3

Source: Statistisches Bundesamt (2009a)

According to the Federal Ministry of Education and Research (BMBF), around 50 per cent of new apprentices were between 17 and 19 years of age and 11 per cent were younger than 17 in 2009. The remaining 32 per cent were between 20 and 23 years of age and seven per cent were older than 24 years of age. Those who are older than 20 years of age have lower chances of finding an apprenticeship place (BMBF, 2010c). The average age of apprentices is around 19.5 compared to 25.8 for university students.

Company participation

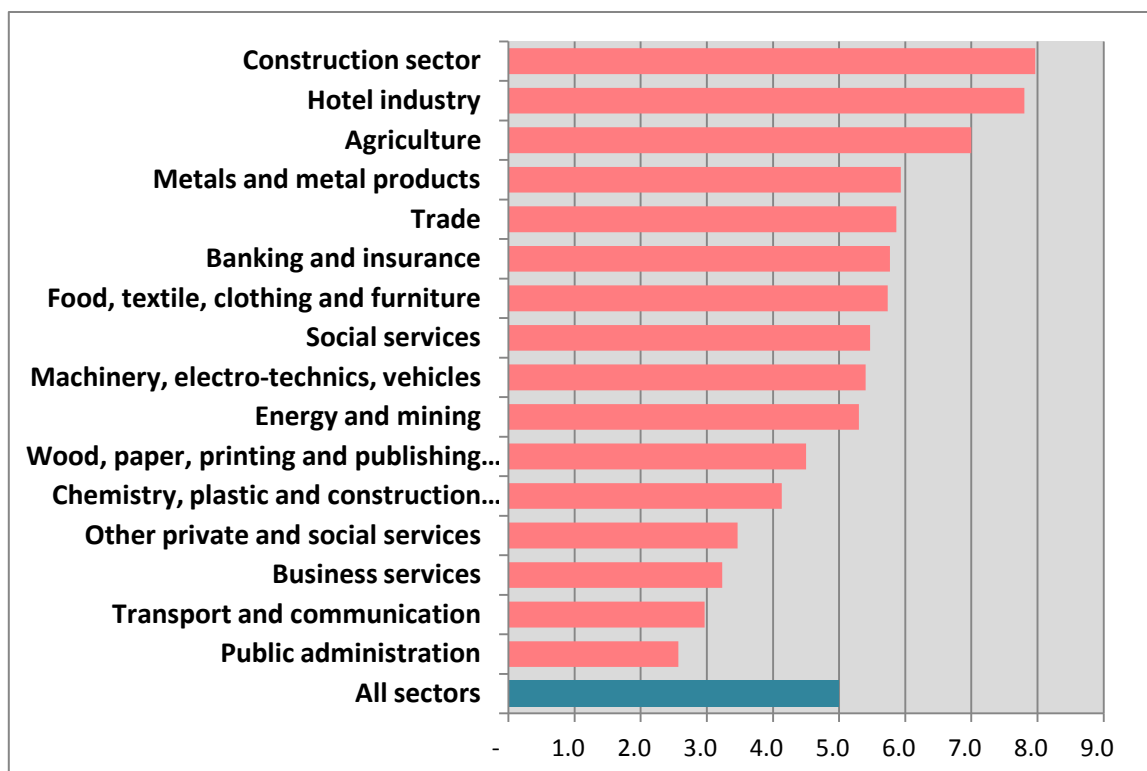
No more than a quarter of German employers were engaged in apprenticeship training in 2008 (24 per cent) and this proportion has hardly changed over the last decade (BIBB, 2010a).

Companies with a higher number of employees are more likely than small and medium sized companies (SMEs) to offer training. Among companies with more than 250 employees 87 per cent train apprentices. SMEs with 10 to 249 employees have a company training rate of 24 per cent, and small businesses with less than 10 employees only have 17 per cent training rate (BIBB, 2010a).

The willingness to provide training is positively correlated with profit levels and innovation activities of companies. The latter especially applies for SMEs. A remarkable result is that high export shares reduce the engagement of companies to invest in apprenticeship training, perhaps because internationally oriented companies have skill needs above the level provided by regular apprenticeship training (BMBF, 2010a).

The number of apprentices as a proportion of employees is five per cent (IAB, 2009). The highest shares can be observed in the construction sector, the hotel industry and agriculture. These are followed by trade, the banking and insurance sector and various manufacturing industries. Business services, transport and communication and public administration have the lowest shares among all sectors (see Figure B3.2).

Figure B3.2 Share of apprentices in employment by sector
Average % share 2007 to 2009



Source(s): IAB Erhebung des gesamtwirtschaftlichen Stellenangebots (IAB, 2009); Economix.

B3.1.2 Participation in full-time vocational schools

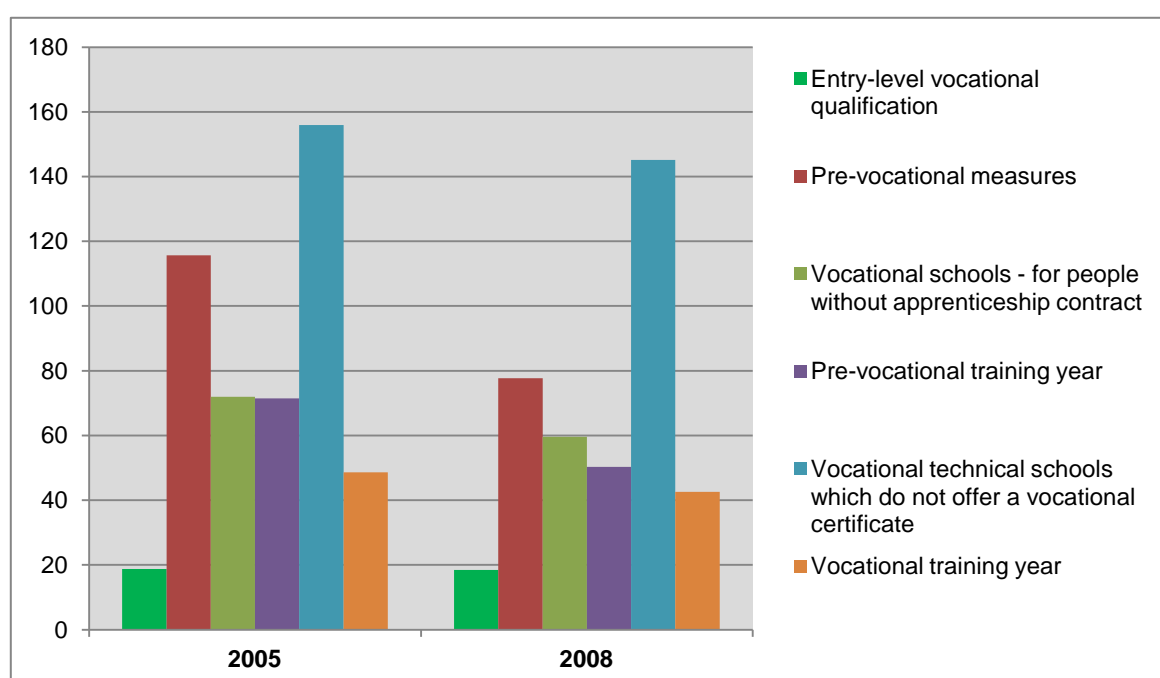
In the school year 2009/2010 a total of 2,523 full-time vocational schools existed with 256,000 trainees, and 94,000 graduates (Statistisches Bundesamt, 2009d). The majority of trainees (68 per cent) were between 16 and 19 years of age, while 18 per cent were between 20 and 22 years of age. The remaining 14 per cent were older. This age structure shows that while full-time vocational schools address a higher share of older learners than do dual apprenticeships, they are nevertheless largely oriented towards IVET.

The proportion of female trainees was 67 per cent in the training year 2009/2010. Young females tended to study person-related service occupations such as childcare, social care, nursing for the elderly, and housekeeping services (Statistisches Bundesamt, 2009d).

B3.1.3 Participation in the transition system

In 2008 around 400,000 young people entered the transition system for the first time (BMBF, 2010b). No more than five per cent were in a company-based entry level vocational qualification and no more than 10 per cent were in the vocational training year (which is accepted as part of regular training). Thus, 85 per cent of the participants were in courses outside companies or regular intermediate training (see Figure B3.3). The bridge to the labour market or apprenticeship training for these learners is therefore rather narrow.

Figure B3.3 New entrants to the transitions system (2005, 2008)
In thousands



Source(s): BMBF (2010b); Economix.

The transition system is mainly used by people who either have no school leaving certificate or who have a secondary general school certificate (*Hauptschulabschluss*): in 2008, 77 per cent of those without a school leaving certificate and 50 per cent of those with a secondary general school certificate were in the transition system. In comparison, only 20 per cent of people with a higher secondary education or three per cent of those with *Abitur* (*A-levels*) were participating in an aspect of the transition system (BMBF, 2010c).

The average duration of participation in the transition system is 18 months for those without a school leaving certificate or a secondary general school certificate, and 14 months for those with an intermediate certificate. Males are slightly overrepresented (56 per cent) (BMBF, 2010c).

Around half of the participants at vocational technical schools were able to obtain a higher school certificate while only every tenth of the participants of the pre-vocational training year, the pre-vocational measures and the vocational training year could upgrade their qualifications in terms of a higher school certificate.

B3.2 Transition rates

B3.2.1 Completion rates and drop-out rates

In 2009 around 470,000 apprentices (29.4 per cent of all apprentices) successfully completed their apprenticeship training. This is equivalent to a completion rate of 90.2 per cent of all apprentices who participated in the final examination. The number increased by 3.1 per cent between 2008 and 2009. Around 62 per cent of successfully completed training courses were in the trade and industry sector and 25 per cent in the crafts sector (Statistisches Bundesamt, 2009a).

However, 140,000 contracts were canceled in the course of dual apprenticeship training. This represents an overall termination rate (*Auflösungsquote*)²⁵ of 22.6 per cent (Statistisches Bundesamt, 2009a). The early exit rate was 20.7 per cent in trade and industry and 28.4 per cent in the crafts sector. Contracts are often cancelled during the first training year (54 per cent of cases in 2009) or the second training year (31 per cent). However, only a small proportion of apprentices dropped out in the fourth training year during 2009 (1 per cent).

Around 84,000 people received their *Meister* certificate in 2009, mainly in the trade and industry and in the crafts sector (Straw, 2009). These are 15 per cent of a regular entry cohort onto apprenticeship training.

²⁵ The number of cancelled contracts is differentiated into training year of cancellation and related to the number of new contracts from the previous year

B3.2.2 Upward mobility

In principle a great number of pathways exist between intermediate VET and higher education. They have been improved after a decision of the Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* (*Kultusministerkonferenz*) in 2009, which standardised university entrance requirements. Those with a *Meister* certificate have a general university entrance entitlement and vocational certificates allow the subject-related university entrance (when the person has at least three years working experience and passed an ability test of the university) (*Kultusministerkonferenz*, 2009).²⁶

However, in reality, upward mobility still has to be improved (according to expert interview). In 2007, around 3,030 students entered tertiary education due to a *Meister* certificate or a vocational certificate in combination with work experience (Straw, 2009). This is equivalent to only 0.8 per cent of entry-level students at universities. Out of the group of *Meisters*, only two per cent proceeded with university studies.

The expert interviews also revealed that mobility within the intermediate VET system should be enhanced: accreditation of courses in the transition system with dual apprenticeships should be improved and switching between training occupations should be facilitated. According to IG Metall (2010), the transition system in fact lowers the opportunities of receiving a training position instead of increasing them. Moreover, after completion participants do not receive a certificate which can be accredited for further education.

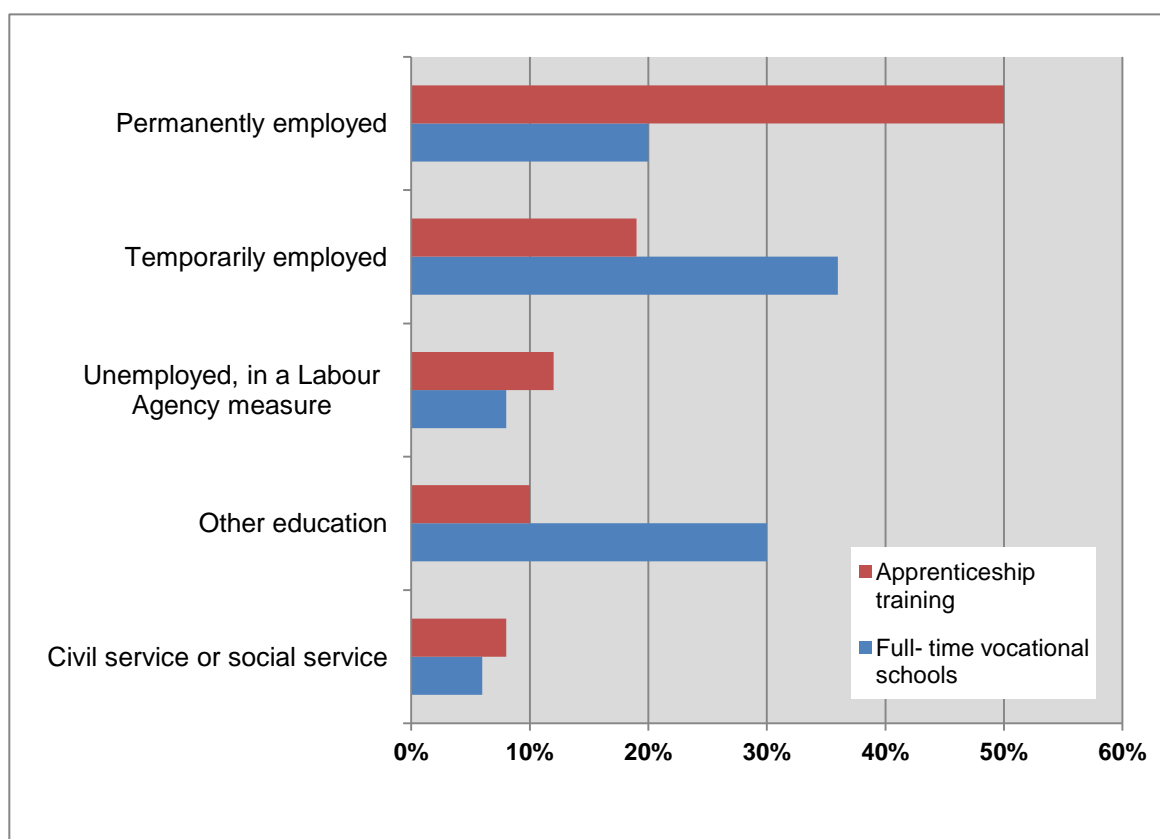
B3.2.3 Longitudinal perspective

After completing dual apprenticeship training, around 61 per cent were directly employed by the company which provided the training in 2008 (BMBF, 2010c). The employment rate was higher in larger companies than in small companies. Around 70 per cent of apprentices were taken on by companies with 500+ employees, whereas the share was only 47 per cent in small companies with up to nine employees (BMBF, 2010c).

Compared to full-time vocational training, apprenticeship training appears to have higher employment rates. As a survey of those who successfully completed their vocational training in or before the summer of 2005 (the of birth cohorts from 1982 to 1988) showed (Beicht and Ulrich, 2008), 50 per cent of the apprentices were in permanent employment 12 months after completing their training, and a further 19 per cent were employed temporarily. For graduates from full-time vocational schools this was the other way around: not more than 20 per cent were in permanent jobs and 35 per cent in temporary jobs (Figure B3.4).

²⁶ Before this *Kultusministerkonferenz* decision, different university entrance requirements for vocational qualified persons existed in the *Länder*.

Figure B3.4 Status of IVET graduates twelve months after completing their training



Source(s): Beicht and Ulrich 2008; Economix.

However, a substantially higher proportion of full-time vocational school graduates continued in education (30 per cent) than was the case for graduates of apprenticeship training (10 per cent). Among the former group 17 per cent went into new full-time education (including studying) and 13 per cent attended a technical secondary school (*Fachoberschule* or *Fachgymnasium*) or were part of a full-time extended training scheme. A relatively small group among both apprentices and full-time vocational school graduates was unemployed or within the measures of the Federal Labour Agency, whereas six per cent underwent civil service or a voluntary year of social services.

B3.3 Efficiency

B3.3.1 Economic challenges

In spite of, or perhaps because of, the long tradition, the German apprenticeship system faces a series of challenges which have been identified in the principal assessment of the German apprenticeship system by Büchtemann and Vogler-Ludwig (1997):

- In contrast to the strong trends towards service industries, the apprenticeship system still continues to be centred on production-related occupations in manufacturing and construction.

- Rapid technological change would require a rapid change of training curricula and the creation of new occupations. The long-term orientation of both apprenticeship training and individual trainees forces the economy into incremental rather than systemic innovation.
- In the face of an ageing population apprenticeship training still focuses on initial training rather than developing lifelong learning.
- For large parts of the German workforce, an apprenticeship is a way of entering the core segment of the labour market with stable jobs and a sufficient income. However, it is also a dead end for many workers as career opportunities tend to be linked to school-based training rather than dual apprenticeship training.

Production-centred training

The apprenticeship training statistics show that almost half of the training is done in production-related occupations, but only a quarter of the labour force works in manufacturing, construction, or agriculture (Table B3.2). In contrast, not more than 13 per cent are trained in service-oriented occupations even though these sectors account for 30 per cent of employment.

Table B3.2 Apprenticeships by occupation and employment by sector 2009/10
% share of total

	Apprenticeships	Employment
Production-related occupations/sectors	48.6	27.5
Commercial occupations/sectors	38.5	43.0
Service occupations/sectors	12.8	29.5
Total	100	100

Source(s): Statistisches Bundesamt 2009a, 2011 Economix.

On the one hand concentrating on industrial activities creates the excellent skills basis for German manufacturing. On the other hand it is a major inefficiency as it forces many apprentices to change their occupation during their life-time. Many of them switch to low-skilled jobs in other sectors as it is difficult to up-skill in a system with underdeveloped CVET.

Incremental innovation

It is not by accident that the German economy shows this strong focus on manufacturing. The perpetual investments into these types of skills create the innovative strength in these markets. However, it is an incremental type of innovation which is supported. As Porter writes:

As strong as Germany is [...] it cannot match the United States in inventiveness in new industries nor Japan in the rapid commercialization of new products. Germany is the undisputed leader in improving and upgrading technology in fields in which its industry is established, but there are weaknesses in newer fields such as electronics, biotechnology, and new materials. German firms have been forced to establish overseas subsidiaries and collaborate with foreign firms to obtain such technologies, with mixed success (Porter, 1990, p. 371).

Firms have used the innovative potential of their labour force to venture into new technology areas, such as green technologies, biotechnologies, new materials, and others. But these moves have been small and slow, and strongly related to the available skills basis. The German training system is therefore not a model for rapid transition.

Dominance of initial training

A vocational training system which is largely based on initial training will run into severe problems if the population is ageing. The evident solution would be the expansion and re-organisation of CVET. But this is difficult to achieve as continuing training has high opportunity costs and is thus expensive. Moreover, it raises institutional resistance as it can devalue initial training to a certain extent. Until now, these barriers have been strong enough to obstruct the creation of a broad lifelong learning system.

The focus on initial training also has the effect of a strong individual identification with occupational principles and values. This is reinforced by the status that is associated with different levels of vocational training in Germany. What appears to be a positive momentum for work orientation and motivation has a negative impact on occupational mobility. Moreover, what appears to be the basis of efficient production is a barrier to reorientation. Incremental innovation therefore is what German firms can achieve under the given circumstances in vocational training.

Segmentation of labour markets

Educational choices and labour market careers in Germany strongly depend on social background. This is the consistently repeated finding of the OECD studies on youth education (OECD, 2010). Young people from less educated families have a significantly lower chance of attending a grammar school (*Gymnasium*) and a university. Similarly, educational opportunities for migrants are lower compared with those who are German born and of German parentage. As a consequence, migrants do not participate in apprenticeship training proportionately to non-migrants and participation in tertiary education is also much lower (BMBF, 2010a). At the higher end of the socioeconomic hierarchy, research evidence suggests that almost all managers have a university degree, and top managers are mainly recruited from high-income groups of society (Hartmann and Kopp, 2001).

B3.3.2 Social integration

Vocational training is an efficient way to stabilise employment and lower youth unemployment. In countries with dual apprenticeship training (such as Germany, Austria and Switzerland) the unemployment rate is about half of the total OECD unemployment rate. Moreover, during the recent financial crisis, youth unemployment increased less in these countries than the OECD average (Werner, 2010).

The integrative power of the apprenticeship system, however, is weakened by the decrease in training opportunities offered by employers. The supply of training places has been extremely low in recent years and the situation has only eased due to demographic changes. Many applicants do not get an apprenticeship position and are 'parked' in a waiting-loop of the transition system. This bridging system, however, has not achieved any improvements. The share of young people without vocational training has remained at 15 per cent without any change over the last 10 years (BMBF 2010a).

Little progress can also be discerned with regard to those with a migration background²⁷ (BMBF, 2010b). In 2007, 39.4 per cent remained without a training position compared to 11.8 per cent of non-migrants²⁸. Even those with a migration background who have completed their vocational training have lower chances in the labour market compared with their non-migrant counterparts.

B3.3.3 Quality management

The actual responsiveness of the training system to rising skills needs or restructuring in the economy is reflected in the flexibility to modify existing training occupations or introduce new ones. Between 1996 and 2009 a total of 82 occupations were newly introduced and 219 occupations were modernised (BIBB 2009).

The creation of a new or the modernisation of an existing dual training regulation and its adjustment of the curricula (*Rahmenlehrplan*) of the Federal *Länder* is conducted in a multi-level process. The employers, trade unions, the Federal Government and the *Länder* are mainly integrated in the process. According to legislation (sections 4 and 5 of the Vocational Training Act) a skill need has to be identified by the economy for modernisation or for the establishment of a new training regulation.

In a request to the responsible ministry, the particular training modules are determined by a consensus between the associations of employers and employees and the Federal Ministry for Education and Research. This forms the basis for further developments of the training regulation by the Federal Institute for Vocational Education and Training and the

²⁷ Defined here as those who are not German born or whose parents are not German born.

²⁸ Defined here as those who are both German born and whose parents are German born.

Standing Conference of the Ministers of Education and Cultural Affairs of the *Länder* (BIBB, 2007).

B4. Economic and social impact

B4.1 Public net present value

Investments in intermediate vocational training have positive long-term economic effects in terms of improved competitiveness, restructuring and improved adaptability of the workforce to changes in work organisation and external product market environment (Bosworth *et al.*, 2011).

Germany also benefits from the broad level of people with intermediate skills, which is advantageous for innovation and for the quality of new products. We should keep in mind that workplaces are strongly interlinked and the productivity of employees with higher skills levels depends on the support of employees with intermediate skills.

According to OECD calculations (2010), the public net present value for an individual obtaining upper secondary or post-secondary non-tertiary (intermediate level) education as part of initial education in 2006 was US\$ 57,690 (€43,123) for males and US\$ 39,793 (€29,745) for females in Germany. These values exceed the OECD average by 61 per cent for males and by 37 per cent for females. The government most strongly benefits from reduced unemployment, the income tax effect and the social contribution effect.

B4.2 Challenges from demographic change and skills shortages

Recently, skills shortages have gained more importance in public debates. In particular employer associations see skills shortages as a severe problem. For example in mid 2009 the Confederation of German Employer Organisations (BDA) and the Federation of German Industry (BDI) (BDA and BDI, 2009) pointed to a shortage of more than 60,000 qualified personnel in the areas of mathematics, information technology, science and technology (MINT occupations). Due to improvements in the German economy, the BDA sees the risk of this gap widening (BDA, 2010c).

The process is driven from several sides:

- demographic change reduces the size of youth cohorts and increases the number of exits from the labour market;
- previous migration inflows now appear with low training participation of their youth cohort;
- skills needs increase continuously and require training investments for substantial parts of the labour force.

Migration policies and the creation of a lifelong learning system therefore are necessary to meet future labour market demands.

Forecasts of the BIBB and IAB, however, do not enforce the employers' warnings (BMBF, 2010a). This forecast does not expect dramatic shortages in labour supply, even though there could be shortages of skills at particular education levels or in certain occupational areas.

In 2025, those with a dual apprenticeship qualification or an education in a full-time vocational school will remain the largest part of the German labour market (53.3 per cent of labour demand in 2010 and 53.8 per cent in 2025) (BMBF, 2010a). Accordingly, the quality of employer-based and school-based training institutions at the intermediate level will continue to be very important.

A study by the Institute for the Study of Labour (Bonin *et al.*, 2007) confirmed the dominance of intermediate level skills in the German labour market. It nevertheless came to the conclusion that the number of people with a vocational qualification will decline by 3.2 percentage points. Tertiary education will expand by 5.3 percentage points between 2003 and 2020.

Due to demographic change, cohorts of school-leavers between 16 and 19 years of age will decline and the potential demand for apprenticeship places will be reduced by 200,000 people between 2009 and 2025. The entry cohorts to apprenticeships will therefore shrink by one third. The transition system will largely disappear due to the shrinking number of new applicants. In addition, a shift from the dual system to full-time vocational schools can be expected as a result of the expanding need for skilled staff in health and social care occupations (BMBF, 2010a).

B4.3 Economic restructuring and competitiveness

Over the last few decades the German economy has become a service economy with a strong focus on knowledge-based services. Of course, many of the service activities are linked to manufacturing. But manufacturing has changed as well. Activities have increasingly been dominated by value chain management, research and development, sales and marketing, and financial and administrative management (Vogler-Ludwig, 1983, 1987, 1991, 1995, 1996, 2003, Bosworth *et al.* 2011, forthcoming).

These developments have put strong pressures on dual apprenticeship training: the number of apprentices substantially declined in the manufacturing sector, but there was also a moderate decrease in the service sector. This has weakened vocational training as, in parallel, the participation of employers has also declined. All in all 440,000 apprenticeship positions have been lost (BMBF 2010a).

Germany's competitiveness is nevertheless strongly dependant on the apprenticeship system which increasingly becomes the basis of its social consensus rather than its major

source of skills. According to a study by the European Business Review (Weihreich, 1999), Germany's competitiveness mainly depends on its internal strengths of social, economic and political factors. The particular social factors have strengthened German industries over time.

The social consensus and the resulting regulatory framework have prompted German companies to base competitiveness on high quality products, which in turn require a highly skilled workforce. In this sense, it is a self-enforcing process, in which the apprenticeship system plays an important role.

Some of the expert interviewees also see the relevance of intermediate training for Germany's competitiveness. For German companies the mix of skilled employees and engineers is an important factor of success in manufacturing. In some sectors outsourcing activities to other countries has halted, as production to the same quality level has not been possible.

Numerous studies in the UK have been carried out which analyse the performance differences between British and German companies.²⁹ For example, Mason and Wagner conclude in their comparison of automotive supply chains (2005) that:

Higher levels of craft apprentice training in German establishments give them an advantage over their British counterparts in responding flexibly to changes in markets, technologies and supply chains. Furthermore, the engineering and commercial graduates produced by German *Fachhochschulen* [Universities of Applied Sciences] help German suppliers to improve design skills relatively quickly and to manage long-term relationships with local supply chain partners (Mason and Wagner, 2005, p. 387).

According to a study by Roper and Hofmann (1993), differences in labour costs, physical capital, vintage of production or location did not sufficiently explain the performance gap. It was the better skills basis that allowed German firms to produce higher quality products, operate in smaller batches, differentiate products, and achieve higher market prices. Less than physical productivity, it was this quality and diversity of products which has made companies profitable and allowed higher wages.

A macro-based comparison undertaken by Peter Hart and Kurt Vogler-Ludwig in 1991 came to the conclusion that there is a trade-off between flexible labour markets and sustainable productivity increase. German companies made the decision to follow the sustainable productivity path with long-term labour contracts and fixed wage relations. This appeared to be strongly related to competitiveness. German companies retreated from mass-production markets and pursued an efficiency-oriented approach based on a skilled workforce (Hart and Vogler-Ludwig, 1991).

²⁹ The National Institute of Economic and Social Research (NIESR) has a long tradition in this type of matched company comparison. One of the more recent studies was undertaken by Geoff Mason and Karin Wagner (2005).

B4.4 Adjustment needs from the public stakeholder's perspective

B4.4.1 Priorities of the government

The promotion of education in principle and vocational training in particular are part of policy making. Within the qualification initiative *Promotion through Education (Aufstieg durch Bildung)* from October 2008 the chancellor and the heads of government of the *Länder* agreed to increase the spending for education and research to 10 per cent of GDP (BMBF, 2009). Accordingly, the Federal Government decided in the coalition treaty of 2009 to raise spending for education by €12 bn until 2013 (BMBF, 2010b).

Government officials assess vocational training and dual apprenticeship training in particular as a pillar of Germany's economic strength that needs to be preserved and expanded upon by the planned reforms. These reforms include the preservation of a skilled workforce, increasing the attractiveness of training, and the modernisation of the training system (BMBF, 2010b):

- Education chains will ease the transition from school and the transition system to vocational training. Moreover, the individual promotion of 'at risk' pupils from the seventh grade until graduation will be improved.
- Education initiatives for young people with a migration background support their better integration into vocational training and the labour market.
- Validation of certificates which were acquired in foreign countries will simplify entry into German education and the labour market.

B4.4.2 View of social partners

The German Federation of Trades Unions (*Deutscher Gewerkschaftsbund, DGB*) appreciates the actions of the government regarding vocational training. It assesses the education chains to be adequate to improve the opportunities of young people with fewer chances to start apprenticeship training (DGB, 2010a). Moreover, it agrees with the validation of foreign certificates. On the other hand, the DGB negatively assesses apprenticeship training which lasts two years (DGB, 2010b). Disagreements between the trade unions and the employers' associations about two year apprenticeship training and youth protection have precluded further participation of trade unions in the National Training Pact.

The Industrial Union of Metalworkers (IG Metall) furthermore criticises the transition system, as many participants appear to have lower educational opportunities after they leave the system. Thus, IG Metall wants the system to be abolished and would instead prefer a vocational preparation system like that which exists in Hamburg: young people who have not received an apprenticeship position may attend a school-based vocational

preparation course which orientates them on the technical contents of different apprenticeship trainings. When participants of these courses finally receive an apprenticeship position, time spent in the vocational preparation courses will be accredited (IG Metall, 2010).

The Confederation of German Employer Organisations (*Bundesverband Deutscher Arbeitgeber, BDA*) appreciates the existing educational policy and supports reforms for the improvement of the educational system. From BDA's point of view, employers are aware of their responsibility for education and some of them contribute by providing training. Employers also act as cooperative partners for schools and universities (BDA, 2010a). The BDA nevertheless argues that many companies do not find adequate applicants for vacant apprenticeship positions and that the quality of schools and the transition system need to be improved in order to guarantee the supply of skilled young workers. The BDA also supports a further modernisation of apprenticeship training (BDA, 2010b).

The expert interviews revealed different views regarding the flexibility of the apprenticeship system:

The German apprenticeship system is flexible regarding skills changes or restructuring of the economy. To a maximum it takes two years to modify an existing training occupation or to introduce a new one. This time frame is reasonable, as training curricula should not be adapted to short-time needs of companies. They have to be suitable for a broad number of companies and they should be long-lasting. Thus, short-time flexibility is met by company initiatives. As training curricula determine the minimum of apprenticeship training, companies can add company-specific components if needed.

From the perspective of other expert interviewees, however, the adaptation of the training system to changes is still too slow, and an adaption period of not more than six months would be preferable.

B5. Responsiveness of employers

B5.1 Motivation for training and not training

A quarter of the German companies provide apprenticeship training. The question therefore arises: why do the minority of German businesses provide training when the majority do not?

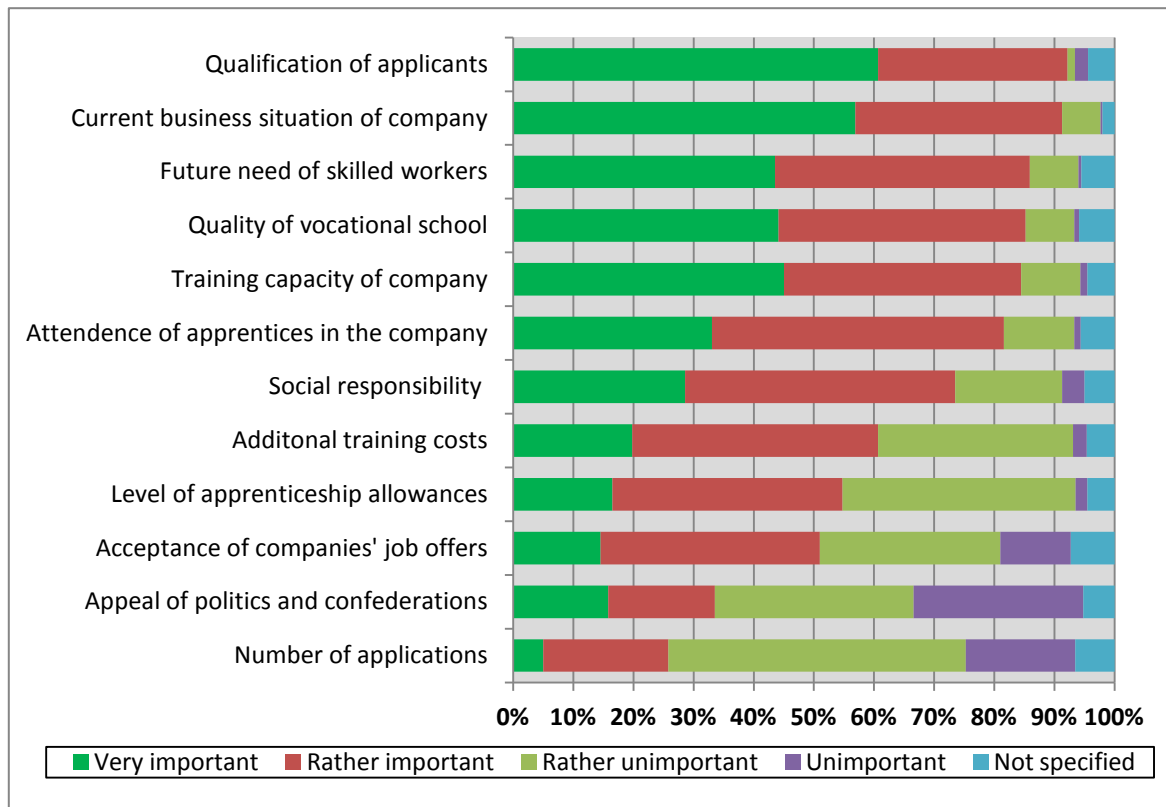
Following Bosworth *et al.* (2011), there are four principal motives for providing training:

- the need to meet long-term skills requirements;
- the successful integration of apprentices into the company;
- the reputation as an attractive employer;
- the social responsibility of the company towards young people.

These motives are strongly related to a long-term business strategy that has an idea about the future labour and skill requirements, which expects the apprentices to become fully productive workers, which intends to develop an image as an attractive employer, and which understands the company as being part of the local community. This typically applies to small-sized crafts businesses, but large companies have also developed such strategies.

A survey of the *Institut der Deutschen Wirtschaft* (IW, 2003) among companies engaged in apprenticeship training revealed the determinants of the decision to offer apprenticeship training (see Figure B5.1): the decision is mainly influenced by the availability of qualified applicants. This is far more important than the costs of training, and points to the relevance of good quality teaching at the lower secondary level and the importance of the transition system to compensate for knowledge deficits.

**Figure B5.1 Factors influencing the supply of apprenticeship positions
as a percentage of companies providing apprenticeship training**



Source: Institut der Deutschen Wirtschaft (2003).

Summarising the results, companies ranked their own needs regarding the current business situation and the future need for skilled workers in second place. This confirms the previous finding that the amount of apprenticeship training is strongly related to both the current economic situation and the skills prospects (Section B3.1.1). Organisational issues such as the quality of vocational schools, the attendance of apprentices in the company, and the availability of training capacities were ranked in third place. Social responsibility was listed in fourth place but was given a higher relevance than training costs and apprenticeship allowance. The probability of apprentices accepting a future job offer ranked among the least important factors as did public appeals or the overall number of applicants (IW, 2003).

From a more theoretical point of view the explanation of why companies engage in apprenticeship training is a combination of factors (Timmermann, 2006):

- (i) training companies benefit from returns during the training period;
- (ii) information asymmetries exist in the labour market regarding the quality of acquired knowledge during the training;
- (iii) training companies reduce recruitment costs by improving their image on the labour market and raising their attractiveness;

- (iv) human capital differs from company to company, becoming more firm-specific and thus less transferable;
- (v) companies with more employees can build up internal labour markets based on the rising importance of firm-specific human capital.

These arguments, however, are only shared by a small fraction of German businesses and the major stakeholders of the apprenticeship system.

The view is completely different among employers that do not provide apprenticeship training (who are in the majority). A survey of these companies by BIBB revealed that training costs are assessed as being too high (49 per cent of respondents) and time restrictions are too serious to allow the provision of training (48 per cent). A third reason was the high complexity of training with too many regulations to be considered (42 per cent). Difficulties finding adequate applicants for training were cited by 38 per cent of the respondents (Wenzelmann *et al.*, 2009).

Obviously, there are several equally important reasons not to engage in apprenticeship training which apply to more or less three quarters of German businesses. It follows that these companies meet their skill needs by recruiting apprentices trained by other firms, employing workers who have either a higher or lower level of vocational training, endure but do not deal with their skills/recruitment needs, or that they simply have no recruitment needs. It remains to be explained how the system can work on the basis of such an uneven distribution of training activities and recruitment strategies.

B5.2 Costs of training

Empirical studies have investigated the individual cost-benefit calculations of employers with regard to apprenticeship training (Wolter *et al.*, 2006). The gross costs of training are composed of the cost of training facilities and trainers, training materials, supervision during practical work, and apprenticeship allowances. They are reduced to net costs of training by the productive contributions of apprentices during work and by government subsidies.

A representative survey of the BIBB in 2007 (Wenzelmann *et al.*, 2009) looked at 2,986 enterprises which provided in-house vocational training in one of the 51 most frequently chosen apprenticeships. It came to the following conclusions:

Employers benefit from productive work contribution of apprentices which cover on average 76 per cent of companies' gross costs of training (Wenzelmann *et al.*, 2009). The average net costs to employers amount to €3,596 per apprentice and year. These result from gross costs of €15,228 and the return from productive work of €11,692. These gains

also included saved recruitment costs for external employees, wage differences and increased attractiveness for the employer due to training (see Table B5.1).

Table B5.1 Gross costs, gains and net costs per apprentice and per year
by region, company size, training sector, and duration of training
 In Euros

	Gross costs	Gains	Net costs
Total	15,288	11,692	3,596
Region:			
Eastern states	12,133	9,576	2,557
Western states	16,149	12,269	3,880
Company size:			
1-9 employees	13,199	10,732	2,468
10-49 employees	13,989	11,019	2,969
50-499 employees	15,414	12,615	2,799
More than 500 employees	19,035	11,870	7,165
Training workshops:			
No training workshop	14,564	12,419	2,145
Training workshop	20,063	6,890	13,174
Training sector:			
Trade and industry	16,739	12,133	4,607
Crafts business	13,334	10,820	2,513
Agriculture	12,100	11,138	962
Liberal professions	12,958	12,691	268
Civil service	17,297	10,063	7,234
Length of training programme:			
Three and a half years	16,026	8,112	7,914
Three years	15,014	13,018	1,995

Source: Wenzelmann *et al.* (2009).

The gross costs are split up into 61 per cent for personnel costs for apprentices, 22 per cent personnel costs for instructors, five per cent equipment and material expenses and 12 per cent miscellaneous costs such as chamber fees³⁰ or costs of instruction materials (Wenzelmann *et al.*, 2009).

Apprenticeship training generates very low net costs in liberal professions and agriculture. They are also below average in crafts businesses, and in general in small and medium sized companies. The most expensive type of apprenticeship training is provided by big companies which usually use training workshops, special premises where apprentices learn practical workflows. For this type of training external trainers need to be

³⁰ Yearly chamber fees per apprentice were €176. The amount is an average spread over all years of training. Generally the fees are higher in the last training year due to examination costs.

hired to provide special instructions. This is also the reason why civil services have high net costs (Wenzelmann *et al.*, 2009).

Training programmes for occupations that last three and a half years (such as chemical technicians, dental technicians and motor vehicle mechatronic technicians) are the most costly training programmes. They require more complex training content, training workshops and they provide lower productive gains during training (Wenzelmann *et al.*, 2009).

Estimations by Pfeifer *et al.*, (2009b) have shown a positive significant relationship between net training costs and the acceptance rate of apprentices. This means that a company that bears higher training costs will be interested in taking on apprentices after completing training, as recouping costs seems to take longer than the training period.

A comparison of apprenticeship training in Germany and Switzerland revealed differences regarding costs and benefits in the two countries (Dionisius *et al.*, 2008). For the analysis, firm-level data and a matching method was used. It focused on three year apprenticeship programmes only. The study showed that German firms endured substantially higher net costs of training compared to their Swiss counterparts. The major reason for the cost differentials was the way firms allocated tasks to apprentices. In Switzerland apprentices spend 469 days at the workplace of which they spend 83 per cent on productive tasks, while German apprentices spend a total of 415 days at the workplace and spend 57 per cent of their time with productive tasks. Swiss companies adopted a production-oriented training strategy, while German firms more often implemented an investment-oriented training strategy.

The different findings of employers' costs of training show that the exact assessment of training costs in Germany is complex and the risk of overestimation of costs is high (Vogler-Ludwig *et al.*, 2003). There is no doubt costs vary for training different occupations. However, the fact that a quarter of German companies do still provide apprenticeship training points to the fact that employers can amortise training investments.

B5.3 Direct and indirect returns

The dominant economic rationale behind employers' decisions to provide vocational training is the need to cover future skills needs. The planning horizon depends on the occupational level, with the effect that training in high skills occupations requires longer planning periods. The skills level of training professions thus affects the time horizons over which employers notionally discounted their investments.

This is also confirmed by studies which analysed the risk of poaching. The analysis by Mohrenweiser *et al.* (2010) looked at a small number of training companies which lost their apprentice after graduation even if they wanted to keep them. The main reason why these apprentices were poached was that the companies could not offer long-term career prospects. When career prospects were credibly offered, firms could reduce or prevent the risk of poaching. This means that the risk of poaching depends on the firm itself rather than external labour market conditions.

The CEDEFOP analysis of wider benefits of vocational education and training (which also included several German employer case studies) revealed that employers benefit from apprenticeship training in areas beyond the direct economic returns (Bosworth *et al.*, 2011). Human capital investments provide a number of wider benefits which relate to corporate identity and social integration:

- company values are more readily inculcated in apprentices compared with skilled workers recruited from the external labour market;
- people who train with a company are more likely to stay with the company, other things being equal, because of the close correspondence between company values and those held by the individual employee;
- training apprentices facilitates a relatively cordial or harmonious working environment because of the successful social integration;
- training provides a pool of committed, loyal employees from which future supervisors and managers can be selected.

Pfeifer *et al.* (2009a) came to similar conclusions and added that the risk of miscasts is reduced when an apprentice is taken on. This reduces the fluctuation of labour. In addition, labour shortages can be avoided as can be both time and money costs used in the search for external employees.

Aside from these returns, a number of employers receive incentive payments (*Ausbildungsbonus*) when they provide an additional training position to disadvantaged young people. These are defined as those who have been searching for a training position for a long time, have no qualifications or have a low-level school-leaving certificate. The bonus ranges between €4,000 and €6,000. In 2008, €10.5 million were spent on this promotion measure (BMAS, 2008).

B5.4 Adjustment needs from the employers' perspective

A survey of 1,362 employers conducted by the BMBF (2010c) investigated the success factors for apprenticeship training from the employers' perspective. The main findings were:

- The competence of training supervisors and their motivation to teach young people is crucially important. The results also revealed that employers would appreciate specific pedagogical vocational education for supervisors, beyond *Meister* qualifications, but in practice this is the exception.
- With regard to the learning process employers expect apprentices to take on self-responsibility during the training and gather information autonomously. In order to control the training process, learning development needs to be controlled and reflected upon. The agreement of concrete monthly learning targets with apprentices was the attribute with less importance and which was less implemented in practice.
- Based on didactic methods employers think it is most important to compliment apprentices on their effort. In reality this is less often the case. It is also seen as important to involve apprentices in 'real' jobs. Practical instructions are better rated than tutorials or the imitation of work sequences.
- In the field of cooperation with vocational schools and other companies the largest deficits became visible. Matching training curricula in companies and vocational schools appears to be a difficult task. Joint working groups of instructors and teachers, or internships of vocational school teachers are very rarely used in practice. Less important was the existence of a training cooperation with an employer abroad.

Another survey of IW in the metal and electrical industry (Werner, 2010) showed that employers would like a more flexible and more attractive vocational education. More than 90 per cent of respondents would appreciate the introduction of modules, in order to react individually to differing performance levels of apprentices. Additionally, better coordination between vocational preparation courses and better upward mobility in vocational training were evaluated as being important.

B6. Responsiveness of participants

B6.1 Participants' motivation

The attractiveness of apprenticeships among young people is high and demand for apprenticeships has always been in excess of the supply of training places. The advantages are mainly seen in the close connection to the labour market and high transition rates into employment. Higher wages, safer jobs and better working conditions compared to those without a completed vocational training are important arguments in favour of engaging in intermediate level vocational training. This is also the reason why 20 per cent of new apprentices hold a qualification above secondary level. The certificates of vocational training are important in Germany, as they provide clear and interpretable signals to employers about the potential performance of an applicant for a new job. They have a key function in the selection process. Moreover, access to some occupations (e.g. electricians) is restricted to persons with vocational certificates.

B6.2 Costs of training

Trainees' direct training costs are usually low as most vocational schools are financed by the public, without tuition fees. Few private vocational schools are not free of charge.

The indirect costs of training are therefore the important cost element in Germany. The opportunity costs are defined as expected wages in an unskilled alternative job minus actual apprenticeship allowances or wages. However, future returns will exceed these costs. Other costs which occur during training are travel costs and costs associated with training which are not borne by the employer, for example tools, textbooks or safety equipment.

B6.3 Direct and indirect returns

B6.3.1 Training allowances

During training, apprentices receive direct returns in the form of a training allowance paid by the employer, which increases over the course of the training. Often the payment is determined by collective bargaining. In 2009 the average apprentice earned €664 per month (€679 in western Germany and €595 in eastern Germany). Table B6.1 shows that training allowances increase by 14 per cent on average from training year to training year. The highest pay levels have been agreed for some occupations in the construction industry (such as bricklayer), mechatronic fitters and insurance and financial service brokers. Lower levels were paid to painters and varnishers, hairdressers, florists and bakers (BIBB, 2010b).

Table B6.1 Training allowances for selected training occupations
€per month

Training profession	Duration in months	Western Germany					Eastern Germany				
		1 year	2 year	3 year	4 year	Total	1 year	2 year	3 year	4 year	Total
Apperal tailor	36	588	644	733		655					
Baker	36	385	470	580		478	345	375	450		390
Bank clerk	36	754	812	870		812	738	795	850		794
Bricklayer		600	922	1164		895	518	711	898		709
Cook	36	517	589	660		589	375	466	543		462
Gardener	36	498	581	654		578	383	467	531		460
Hairdresser	36	359	446	542		449	214	253	341		269
Hotel & restaurant specialist	24	523	593			558	388	476			432
Insurance & financial service broker	36	766	831	895		831	766	831	895		831
Industrial clerk	36	753	802	868		808	689	739	796		741
Office clerk (Trade and Industry)	36	705	767	845		773	629	692	772		698
Office clerk (Crafts)	36	499	574	675		583	414	490	597		500
Mechatronic fitter	42	774	819	884	942	842	755	805	861	905	821
Painter and vanisher	36	362	393	508		421	333	362	468		388
Plumber	42	392	424	488	564	453					
Sales assistant	24	620	694			657	547	612			580

Source: BIBB 2010b.

A survey by the German Federation of Trade Unions (DBG, 2010d) showed that female apprentices earn on average 23 per cent less than male apprentices. This appears to result from gender-specific occupational choices rather than wage discrimination. For example, sales people in food stores or haircutters are occupations that are dominated by females while system mechanics and electricians are those dominated by males.

According to a BIBB survey among 5,400 apprentices (Beicht and Krewerth, 2010), 67 per cent of the apprentices thought that their pay was too low and only nine per cent thought it was very good. The satisfaction increased with the corresponding company size. In companies with up to nine employees, 82 per cent stated the pay was too low, while only 31 per cent of the apprentices in companies with more than 500 employees gave this statement.

B6.3.2 Life-time benefits of training

Apprentices are interested in acquiring an education which enables them to enter the labour market and which will result in adequate wages in the future. These learner ambitions were formulated in the early human capital theory by Mincer (1962) and Becker (1962): individuals invest in their human capital in response to the signals they receive about expected future financial returns of education and training. As human capital can be seen as a means of production, additional investment yields additional output. In Germany a person with an intermediate level (upper secondary and post-secondary non-tertiary education) earns, on average, 10 per cent more than a worker with a qualification below upper secondary level (OECD, 2010). However, holding tertiary education increases average earnings by 67 per cent compared to intermediate level education.

Vocational training has a huge impact on individual unemployment risks. In 2008 the unemployment rate was 16.5 per cent for those with below upper secondary education but only 7.2 per cent for those with intermediate level education. The same difference is visible in employment rates, which were 55.3 per cent for those with a below upper secondary education and 75.3 per cent for intermediate level education. Again, those holding tertiary education have even better labour market outcomes with an employment rate of 85.8 per cent and an unemployment rate of just 3.3 per cent (OECD, 2010).

BIBB estimates the chance of being employed within the first six years after completing dual apprenticeship training is 60.8 per cent, on average. The chance further increases with a higher school leaving certificate (Table B6.2). Additionally, the chance of being in precarious employment (having a fixed-term contract or earnings below two thirds of the average wage of graduates in the same year) decreases with a higher school leaving certificate. Employment chances differed with regards to the occupational field: for bank and insurance specialists, industrial mechanics, electricians and health occupations, 'regular' employment rates were above the average of 60.8 per cent. For occupations in agriculture, construction, personal care and restaurants, the unemployment rate was always higher than the average of 13 per cent (Meier and Dorau, 2010).

Table B6.2 **Employment status six years after completion of dual apprenticeship, Germany**

	Employment	Precarious employment*	Unemployed
Total	60.8	26.2	13.0
Thereof with:			
Secondary school certificate	55.1	26.4	18.5
Intermediate school certificate	60.9	26.8	12.3
A level s	68.2	24.3	7.5
*Precarious employment: fixed-term contract or earnings below two thirds of the average wage of graduates in the same year			

Source: Micro-census 2005-2007 extrapolated data (Meier and Dorau, 2010).

The OECD (2010) has calculated the net present value of investing in upper secondary education or post-secondary non tertiary (intermediate level) vocational training from a life-time perspective (Table B6.3). Life-time costs and benefits are discounted back to the start of the investment. Graduates benefit from gross earnings and unemployment effects, while social contribution, income taxes and transfer effects reduce the net present value. In Germany the private net present value was US\$ 43,325 (€32,385) for men and US\$ 28,342 (€21,185) for women in 2006 (Table B6.3). Thus, both net present values are below OECD averages, which was US\$ 67,902 (€50,756) for males and US\$ 47,064 (€35,179) for females.

Table B6.3 Private net present value for an individual obtaining upper secondary or post-secondary non-tertiary education in Germany (2006)

US\$	Male	Female
Direct costs	-3,380	-3,380
Forgone earnings	-32,250	-32,528
Total costs	-35,629	-35,908
Gross earnings benefits	87,966	86,107
Income tax effects	-37,839	-28,130
Social contribution effect	-36,486	-29,288
Transfers effect	-13,532	-12,609
Unemployment effect	78,846	48,169
Total net benefits	78,955	64,249
Net present value	43,325	28,342

Source: OECD (2010).

B6.3.3 Occupational flexibility

Results of a representative survey of the BIBB in 2006 revealed high flexibility of employees as regards the changes between professions (Aßmann and Hall, 2008; Hall, 2007). The survey showed that no more than 27 per cent of employees over the age of 15 who had completed vocational training worked in their studied occupation, although a further 33 per cent worked in an occupation similar to the occupation they studied in. The proportion of people who work in an occupation that is different from their training occupation, however, was 40 per cent. This indicates that a high degree of general knowledge is acquired during apprenticeship training, such as creativity or problem solving competences. However, only 29 per cent of people, who switched to a different occupation, said that they could adequately apply the competences learned from their apprenticeship training. For this reason, working outside the learned profession implicates a higher risk of having a less skilled and lower paid job.

B6.4 Adjustment needs from apprentices' perspective

A survey by the Federation of German Trades Unions (DGB, 2010d) of 7,317 apprentices in the 25 most frequently chosen training occupations revealed that most of the apprentices were satisfied with their training. More than two thirds of survey participants evaluated the professional quality in training companies as being 'good' or 'very good'. The satisfaction increased with the size of the company. One reason for the higher attractiveness of larger training companies is that apprentices perform fewer tasks that are unrelated to their training profession. The professional quality of vocational schools regarding lessons and technical equipment was evaluated as being 'good' or 'very good' by 60.3 per cent of surveyed persons, whereas 13.1 per cent were not satisfied.

More than half of those surveyed pointed out that they wanted to work within their training occupation after finishing their vocational training. However, only 20.5 per cent already knew for sure that they would work in their apprenticeship company after they finished their apprenticeship. About two thirds (66.9 per cent) did not know whether the apprenticeship company would employ them on a permanent basis, while 12.6 per cent already knew that they wouldn't stay in the apprenticeship company (DGB, 2010d).

Industrial mechanics, bank clerks and industrial clerks were the most satisfied with their training. In contrast, salespersons in the food industry as well as hotel and restaurant specialists were the most dissatisfied with their education. In particular, apprentices in the hotel and restaurant industry disliked the hard work, frequent overtime, an uncomfortable atmosphere due to the aggressive tone used in the company and had the impression they were being exploited for cheap labour (DGB, 2010d).

Another survey of 6,000 apprentices in their second training year conducted by the BMBF (2010c) revealed similar results. Apprentices primarily associated high training quality with qualified instructors who can explain things adequately and who showed respect for their colleagues. Apprentices were satisfied that they were working on 'real' projects and not only performing single work steps. Apprentices were less satisfied with the given feedback in training companies. In particular, meetings for discussing work results in detail or giving positive feedback for successfully performed tasks occurred rather seldom in practice. Apprentices were satisfied with the quality of training and technical equipment in companies rather than in vocational schools. However, the biggest adjustment needs were identified in the quality of cooperation between the training sites. Thus, both apprentices and employers pointed out the need for more cooperation and matching between vocational schools and in-company training.

Bibliography (Germany)

- Aßmann, A. and Hall, A. (2008) *Verwertung beruflicher Qualifikationen bei ausgebildeten Fachkräften*. Bundesinstitut für Berufsbildung (BIBB), Bonn. Available: <http://www.bibb.de/veroeffentlichungen/de/publication/show/id/1353>.
- Baron, S. C. (2007) *Das duale System der Berufsausbildung unter dem Einfluss der europäischen Berufsbildungspolitik*. Entwicklungsprozesse und Herausforderungen. Universität Duisburg-Essen. Available: http://duepublico.uni-duisburg-essen.de/servlets/DerivateServlet/Derivate-18575/Dissertation_Sonja_C_Baron_final.pdf.
- Bathge, M., Solga, H. and Wieck, M. (2007) *Berufsbildung im Umbruch – Signale eines überfälligen Aufbruchs*, Friedrich Ebert Stiftung, Berlin. Available: <http://library.fes.de/pdf-files/stabsabteilung/04258/studie.pdf>.
- BDA (2010a) *Bildung*. Bundesverband Deutscher Arbeitgeber, Berlin. Available: http://www.bda-online.de/www/arbeitgeber.nsf/id/DE_Bildung. [Accessed November 2010].
- BDA (2010b) *Bessere Rahmenbedingungen für die Fachkräftesicherung*. Bundesverband Deutscher Arbeitgeber, Berlin. Available: http://www.bda-online.de/www/arbeitgeber.nsf/id/DE_Ausbildung. [Accessed November 2010].
- BDA (2010c) *Arbeitgeberpräsident Dr. Dieter Hundt: Brauchen schlüssiges Gesamtkonzept zur Fachkräftesicherung*. Presse-Information Nr. 043/2010. Bundesverband Deutscher Arbeitgeber, Berlin. Available: [http://www.bda-online.de/www/arbeitgeber.nsf/res/PI04310.pdf/\\$file/PI04310.pdf](http://www.bda-online.de/www/arbeitgeber.nsf/res/PI04310.pdf/$file/PI04310.pdf).
- BDA and BDI (2009) *Trotz Krise fehlen mehr als 60.000 Fachkräfte im Bereich Mathematik, Informatik, Naturwissenschaften und Technik*. Gemeinsame Presse-Information mit dem Bundesverband der Deutschen Industrie. Available: [http://www.bda-online.de/www/arbeitgeber.nsf/res/PI04809-Gem.pdf/\\$file/PI04809-Gem.pdf](http://www.bda-online.de/www/arbeitgeber.nsf/res/PI04809-Gem.pdf/$file/PI04809-Gem.pdf).
- Becker, G. S. (1962) 'Investment in Human Capital: A Theoretical Analysis', *The Journal of Political Economy*, Vol. 70, No. 5, pp. 9-49.
- Beicht, U. and Krewerth, A. (2010) *Geld spielt eine Rolle*, BIBB Report 14/10, Bundesinstitut für Berufsbildung (BIBB). Available: http://www.bibb.de/dokumente/pdf/a12_bibbreport_2010_14.pdf.

Beicht, U. and Ulrich, J.G. (2008) 'Ausbildungsverlauf und Übergang in Beschäftigung – Teilnehmer/-innen and betrieblicher und schulischer Berufsausbildung im Vergleich', in *Berufsbildung in Wissenschaft und Praxis : BWP*, Vol. 37, No. 3, pp.19-23.

Berufenet (2010) *Verkäufer/in Ausbildungsaufbau*. Available:

http://berufenet.arbeitsagentur.de/berufe/berufld.do?_pgnt_pn=0&_pgnt_act=goToAnyPage&_pgnt_id=resultShort&status=A07.

BIBB (2011) *Liste der staatlich anerkannten Ausbildungsberufe, Stand 01.08.2011*.

Bundesinstitut für Berufsbildung, Bonn. Available:

<http://www2.bibb.de/tools/aab/aabberufeliste.php>.

BIBB (2010a) *Ausbildungsbetriebsquote*. Bundesinstitut für Berufsbildung, Bonn.

Available:

http://www.bibb.de/dokumente/pdf/ausbildungsbetriebsquote_d_1999_2008.pdf.

BIBB (2010b) *Training allowances based on collective wage agreements 2009: largest increase for 14 years*. Press release 01/2010. Bundesinstitut für Berufsausbildung, Bonn. Available

<http://www.bibb.de/en/53122.htm>. [Accessed November 2010].

BIBB (2009) *Neue und modernisierte Berufe*, Stand 23.07.2009. Bundesinstitut für Berufsbildung, Bonn.

BIBB (2007) *Wie entsteht eine Berufsordnung?* Bundesinstitut für Berufsbildung, Bonn.

Available: <http://www.bibb.de/de/4963.htm>.

BIBB (2006) *Organisation*. Bundesinstitut für Berufsbildung, Bonn. Available:

<http://www.bibb.de/de/1415.htm>. [Accessed November 2010].

BMAS (2008) *Mehr Chancen am Arbeitsmarkt*. Bundesministerium für Arbeit und Soziales, Berlin. Available:

http://www.bmas.de/portal/37780/2009_09_15_ausgaben_ausbildungsfoerderung_2008.html. [Accessed November 2010].

BMBF (2010a) *Bildung in Deutschland 2010*. Bundesministerium für Bildung und

Forschung, Bonn. Available: http://www.bildungsbericht.de/daten2010/bb_2010.pdf.

BMBF (2010b) *Berufsbildungsbericht 2010*. Bundesministerium für Bildung und

Forschung, Bonn. Available: http://www.bmbf.de/pub/bbb_2010.pdf.

BMBF (2010c) *Datenreport zum Berufsbildungsbericht 2010*. Bundesministerium für Bildung und Forschung, Bonn. Available:

http://datenreport.bibb.de/a12voe_datenreport_bbb_2010.pdf.

- BMBF (2009) *Aufstieg durch Bildung: die Qualifizierungsinitiative der Bundesregierung*. Bundesministerium für Bildung und Forschung, Bonn. Available: http://www.bmbf.de/pub/qualifizierungsinitiative_breg.pdf
- BMBF (2008) *Berufsbildungsbericht 2008*. Bundesministerium für Bildung und Forschung, Bonn. Available: http://www.bmbf.de/pub/bbb_08.pdf.
- Bonin, H., Schneider, M., Quinke, H. and Arens, T. (2007) *Zukunft von Bildung und Arbeit Perspektiven von Arbeitskräftebedarf und -angebot bis 2020*. I Z A Research Report No. 9. Bundesministerium für Bildung und Forschung (BMBF), Bonn. Available: http://www.iza.org/en/webcontent/publications/reports/report_pdfs/iza_report_09.pdf
- Bosworth, D., Gambyn, L., Giernalczyk, H., Hogarth, T., Vogler-Ludwig, K. *et al.* (forthcoming) *Wider benefits of VET at the sectoral level: sectoral perspectives*. CEDEFOP, Thessaloniki.
- Bosworth, D., Giernalczyk, H., Hogarth, T. and Vogler-Ludwig, K. (2011) *The anatomy of the wider benefits of VET in the workplace*. CEDEFOP, Thessaloniki. Available: <http://www.cedefop.europa.eu/EN/publications/17947.aspx>.
- Büchtemann, C. F. and Vogler-Ludwig, K. (1997) 'Das deutsche Ausbildungsmodell unter Anpassungszwang: Thesen zur Humankapitalbildung in Deutschland', in *Ifo-Schnelldienst*, Vol. 50 (17/18), pp. 15-20.
- Bundesagentur für Arbeit (2011) *Der Arbeits- und Ausbildungsmarkt in Deutschland, Februar 2011*. Bundesagentur für Arbeit, Nürnberg. Available: <http://statistik.arbeitsagentur.de/Navigation/Statistik/Arbeitsmarktberichte/Monatsbericht-Arbeits-Ausbildungsmarkt-Deutschland/Monatsberichte-Nav.html>.
- Bundesgesetzblatt (2003a) 'Verordnung über die Berufsausbildung zum Anlagenmechaniker für Sanitär- Heizungs- und Klimatechnik/ zur Anlagenmechanikerin für Sanitär- Heizungs- und Klimatechnik', in *Bundesgesetzblatt*, Vol. 1, No. 29, pp. 1015-1026. Available: <http://www.berufsinfo.org/Berufe/anlagenmechaniker-sanitaer-heizungs-klimatechnik.html/ao.pdf>.
- Bundesgesetzblatt (2003b) *Verordnung über die Berufsausbildung zum Anlagenmechaniker für Sanitär- Heizungs- und Klimatechnik/ zur Anlagenmechanikerin für Sanitär- Heizungs- und Klimatechnik* (BGBl. S. 1012, 1439). Available: <http://bundesrecht.juris.de/bundesrecht/shkanlmechausbv/gesamt.pdf>.

- Cedefop (2010) *Skills for green jobs Country report - Germany*. CEDEFOP, Thessaloniki.
Available: http://www.ilo.org/skills/what/inst/lang--en/WCMS_144268/index.htm.
- DGB (2010a) *DGB-Ausbildungsreport 2010: Ausbildung im Hotel- und Gaststättengewerbe unbefriedigend*. Deutscher Gewerkschaftsbund, Berlin.
Available: <http://www.dgb.de/themen/++co++1f1d78ac-b59e-11df-6fd9-00188b4dc422>.
- DGB (2010b) *Zweijährige Ausbildungen leisten nicht, was sie versprechen*. Deutscher Gewerkschaftsbund, Berlin. Available: <http://www.dgb.de/themen/++co++d40d3fdc-9bda-11df-6658-00188b4dc422/@@index.html?tab=Artikel&k:list=Bildung&k:list=Berufliche%20Bildung>.
- DGB (2010c) *Ausbildungspakt: Arbeitgeber halten ihr Wort nicht*. Deutscher Gewerkschaftsbund, Berlin. Available: http://www.dgb.de/themen/++co++6ee438c8-e34b-11df-431e-00188b4dc422/@@index.html?tab=Artikel&display_page=1&k:list=Bildung.
- DGB (2010d) *DGB fordert Programm zum Abbau von Ausbildungslosigkeit*. Deutscher Gewerkschaftsbund, Berlin. Available: <http://www.dgb.de/presse/++co++d76cd08e-7948-11df-6571-00188b4dc422/@@index.html?tab=Artikel&k:list=Bildung&k:list=Berufliche%20Bildung>.
- Die Beauftragte der Bundesregierung für Migration, Flüchtlinge und Integration (2010) *Bericht der Beauftragten der Bundesregierung für Migration, Flüchtlinge und Integration über die Lage der Ausländerinnen und Ausländer in Deutschland*. Die Presse- und Informationsamt der Bundesregierung, Berlin. Available: http://www.bundesregierung.de/Content/DE/_Anlagen/2010/2010-07-07-langfassung-lagebericht-ib.property=publicationFile.pdf.
- Dionisius, R., Muehleemann, S., Pfeifer, S., Walden, G., Wenzelmann, F. and Wolter, S., (2008) *Cost and Benefit of Apprenticeship Training: A Comparison of Germany and Switzerland*, IZA Discussion Paper No. 3465. Institute for the Study of Labour (IZA), Bonn. Available http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1294552.
- Ebner, C. (2009) *Neue Wege für die duale Berufsausbildung – ein Blick auf Österreich, die Schweiz und Dänemark*, WZB Brief Arbeit, November 2009, Berlin. Available: http://bibliothek.wzb.eu/wzbbrief-arbeit/WZBbriefArbeit042009_ebner.pdf.

- Gericke, N. and Uhly, A. (2010) *Trotz steigender Ausbildungsbeteiligung ausländische Jugendliche nach wie vor unterrepräsentiert*, BIBB, BWP 03 /2010, Bonn. Available <http://www.bibb.de/bwp/ausbildungsbeteiligung>.
- Germany Trade & Invest (2011) *Investitionsstandort Deutschland*. Germany Trade & Invest, Berlin. Available: <http://www.gtai.com/startseite/investitionsstandort-deutschland/kurzer-ueberblick/>.
- Hall, A. (2007) *Beruflichkeit: Fundament oder Hindernis für Flexibilität? Berufswechsel von dual ausgebildeten Fachkräften*, BWP 4/2007, Bundesinstitut für Berufsbildung (BIBB), Bonn. Available: <http://www.bibb.de/veroeffentlichungen/de/publication/download/id/1248>.
- Hartmann, M. and Kopp, J. (2001) 'Elitenselektion durch Bildung oder durch Herkunft?', in *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, Vol. 53, pp. 407-435.
- Hartz Commission (2002) *Moderne Dienstleistungen am Arbeitsmarkt*. German Federal Government, Berlin. Available: http://www.arbeitnehmerkammer.de/sozialpolitik/doku/02_politik/hartz_kommission/berichte/2002_08_16_gesamt.pdf.
- Helmrich, R. and Zika, G. (2010) *Beruf und Qualifikation in der Zukunft. BIBB-IAB-Modellrechnungen zu den Entwicklungen in Berufsfeldern und Qualifikationen bis 2025*, Berichte zur beruflichen Bildung. Bundesinstitut für Berufsbildung (BIBB), Bonn.
- Hippach-Schneider, U., Krause, M. and Woll, C. (2007) *Vocational education and training in Germany – short description*. Cedefop Panorama series, 138. CEDEFOP, Luxembourg. Available http://www.cedefop.europa.eu/etv/Upload/Information_resources/Bookshop/465/5173_en.pdf.
- Hollmann, C., Schmidt, J. and Werner, D. (2010) *Verdrängt der Bachelor duale Aus- und Fortbildungsberufe? Ergebnisse aktueller Studien*, BWP Berufsbildung in Wissenschaft und Praxis 2/2010, Zeitschrift des Bundesinstituts für Berufsbildung. Bundesinstitut für Berufsbildung (BIBB), Bonn.
- IAB (2009) *IAB-Erhebung des gesamtwirtschaftlichen Stellenangebots (IAB Job Vacancy Survey)*. Institut für Arbeitsmarkt- und Berufsforschung (IAB), Nuremberg. Available: http://fdz.iab.de/de/FDZ_Establishment_Data/IAB_Job_Vacancy_Survey.aspx.

- IG Metall (2010) *Das Übergangssystem komplett abschaffen*. Available:
<http://www.igmetall-wap.de/node/4432>. [Accessed November 2010].
- ILO (2010) *Global Employment Trend for Youth*, special issue on the impact of the global economic crisis on youth, August 2010, Geneva. Available:
http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_elm/---trends/documents/publication/wcms_143349.pdf
- IW (2003) *Angebotsrückgang am Ausbildungsmarkt: Ursachen und Maßnahmen*. IW-trend 2/2003. Institut der deutschen Wirtschaft, Cologne. Available:
http://www.iwkoeln.de/Portals/0/pdf/trends02_03_6.pdf.
- Kultusministerkonferenz (2011) *Berufliche Bildung, Berufsfachschule*. Available:
<http://www.kmk.org/bildung-schule/berufliche-bildung/berufsfachschule.html>.
- Kultusministerkonferenz (2009): *Hochschulzugang für beruflich qualifizierte Bewerber ohne schulische Hochschulzugangsberechtigung*. Beschluss vom 06.03.2009. Available:
http://www.kmk.org/fileadmin/veroeffentlichungen_beschluesse/2009/2009_03_06-Hochschulzugang-erful-qualifizierte-Bewerber.pdf.
- Kultusministerkonferenz (2003) *Rahmenlehrplan für den Ausbildungsberuf Anlagenmechaniker für Sanitär-, Heizungs- und Klimatechnik/ Anlagenmechanikerin für Sanitär-, Heizungs- und Klimatechnik*, 16.05.2003. Available:
<http://www.kmk.org/fileadmin/pdf/Bildung/BeruflicheBildung/rlp/AnlagenmechSaniHeizKlima.pdf>.
- Maier, T. and Dorau, R. (2010) *Chances of fully fledged employment after a dual-system apprenticeship*. Bundesinstitut für Berufsausbildung (BIBB), Bonn. Available:
<http://www.bibb.de/en/54865.htm>.
- Mason, G. and Wagner, K. (2005) 'Restructuring of automotive supply-chains: the role of workforce skills in Germany and Britain', in *International Journal of Automotive Technology and Management*, Vol. 5, No. 4. pp. 387-410.
- Mincer, J. (1962) 'On-the-Job Training: Costs, Returns, and Some Implications', in *The Journal of Political Economy*, Vol. 70, No. 5, pp. 50-79.
- Mohrenweiser, J., Backes-Gellner, U. and Zwick, T. (2010) *Poaching and firm sponsored training – first clean evidence*, presented on the XI. Symposium zur Ökonomischen Analyse der Unternehmung 2010, Goethe-Universität Frankfurt. Available:
<http://whu.edu/geaba/Symposium/2010/B1-Mohrenweiser&Backes&Zwick.pdf>.

- Mohrenweiser, J. and Zwick, T. (2008) *Why do firms train apprentices? The Net Cost Puzzle Reconsidered*. ZEW (Centre for European Economic Research) discussion paper no. 08-019. Zentrum für Europäische Wirtschaftsforschung, Mannheim.
- Niederalt, M., Schnabel, C. and Kaiser, C. (2001) *Betriebliches Ausbildungsverhalten zwischen Kosten Nutzen-Kalkül und gesellschaftlicher Verantwortung – Einflussfaktoren der Ausbildungsintensität von deutschen Betrieben*. Diskussionspapier No. 7. Friedrich-Alexander-Universität, Erlangen-Nürnberg.
- OECD (2010) *Education at a Glance 2010*, Organisation for Economic Cooperation and Development, Paris.
- Pfeifer, H., Dionisius, R., Schönfeld, G., Walden, G. and Wenzelmann, F. (2009a) *Kosten und Nutzen der betrieblichen Berufsausbildung, Abschlussbericht*. Bundesinstitut für Berufsbildung (BIBB), Bonn. Available: http://www2.bibb.de/tools/fodb/pdf/eb_21203.pdf.
- Pfeifer, H., Schönfeld, G. and Wenzelmann, F. (2009b) *Kosten und Nutzen der betrieblichen Berufsausbildung, Eine Analyse nach Ausbildungsberufen*, Presentation at the BIBB/DJI-Fachtagung 'Neue Jugend? Neue Ausbildung?', Bundesinstitut für Berufsbildung (BIBB), Bonn. Available: http://www.bibb.de/dokumente/pdf/Tagung_Neue_Jugend_ohne_Animation.pdf.
- Porter, M. E. (1990) *The Competitive Advantage of Nations*. Free Press, London.
- Rauner, F. and Maclean, R (2009) *Handbook of Technical and Vocational Education and Training Research*. Springer, Berlin.
- Statistisches Bundesamt (2011) *Volkswirtschaftliche Gesamtrechnung, Inlandsproduktberechnung Detaillierte Jahresergebnisse*. Stand: Februar 2011. Fachserie 18/Reihe 1.4.
- Statistisches Bundesamt (2010a) *Erstmals mehr als 16 Millionen Menschen mit Migrationshintergrund in Deutschland*, Pressemitteilung Nr.248 vom 14.07.2010, Available: http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/DE/Presse/pm/2010/07/PD10_248_122,templateId=renderPrint.psml.
- Statistisches Bundesamt (2010b) *Internationale Bildungsindikatoren im Ländervergleich, August 2010*, Wiesbaden. Available: <https://www-ec.destatis.de/csp/shop/sfg/bpm.html.cms.cBroker.cls?cmspath=struktur.vollanzeig.e.csp&ID=1026127>.

- Statistisches Bundesamt (2009a) *Berufliche Bildung 2009*. Fachserie 11, Reihe 3, Wiesbaden. Available: [https://www-ec.destatis.de/csp/shop/sfg/bpm.html.cms.cBroker.cls?CSPCHD=0050000100004d novkKM000000GBYhOac\\$QK0i_89Uum7IUA--&cmspath=struktur,vollanzeige.csp&ID=1026158](https://www-ec.destatis.de/csp/shop/sfg/bpm.html.cms.cBroker.cls?CSPCHD=0050000100004d novkKM000000GBYhOac$QK0i_89Uum7IUA--&cmspath=struktur,vollanzeige.csp&ID=1026158).
- Statistisches Bundesamt (2009b) *Studierende an Hochschulen Wintersemester 2009/2010*, Fachserie 11, Reihe 4.1, Wiesbaden. Available: [https://www-ec.destatis.de/csp/shop/sfg/bpm.html.cms.cBroker.cls?CSPCHD=0050000100004d us7d1u0000006sG\\$E5UUeZa0s7fEs4pYfg--&cmspath=struktur,sfgsuchergebnis.csp&action=newsearch&op_EVASNr=startswit h&search_EVASNr=2131](https://www-ec.destatis.de/csp/shop/sfg/bpm.html.cms.cBroker.cls?CSPCHD=0050000100004d us7d1u0000006sG$E5UUeZa0s7fEs4pYfg--&cmspath=struktur,sfgsuchergebnis.csp&action=newsearch&op_EVASNr=startswit h&search_EVASNr=2131).
- Statistisches Bundesamt (2009c) *Bevölkerung Deutschlands bis 2060 - Ergebnisse der 12. koordinierten Bevölkerungsvorausberechnung*. Statistisches Bundesamt, Wiesbaden.
- Statistisches Bundesamt (2009d) *Bildung und Kultur, Berufliche Schulen*, Schuljahr 2009/2010, Fachserie 11, Reihe 2. Statistisches Bundesamt, Wiesbaden.
- Straw, A. (2009) *Neue Wege zum Studium*. STATmagazin. Statistisches Bundesamt, Wiesbaden. Available: http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Available/DE/Content/Publikationen/STATmagazin/BildungKultur/Hochschulen/2009_03/2009_03Hochschule,templateld=renderPrint.psm1.
- Süddeutsche Zeitung (2010) *Bildung lohnt sich*, 08.10.2010.
- Timmermann, A. (2006) *Betriebliche Personalpolitik und die Erwerbstätigkeit qualifizierter Frauen*. Innovative Beschäftigungspolitik in Forschung und Praxis, Band 2. Kovac, J., Hamburg.
- TNS Infratest (2008) *Weiterbildungsbeteiligung in Deutschland – Eckdaten zum BSW-AES 2007*. TNS Infratest, München. Available: http://www.bmbf.de/pub/weiterbildungsbeteiligung_in_deutschland.pdf.
- Uhly, A and Erbe, J. (2007) *Auszubildende mit Hauptschulabschluss: vom Normalfall zur Randgruppe?*. BWP 04 2007. Bundesinstitut für Berufsbildung (BIBB), Bonn.
- Vogler-Ludwig K. (1996) 'Strukturwandel des Arbeitsmarkte', in Hummel, M. et al. (eds) *Stärken und Schwächen Deutschlands im internationalen Wettbewerb um Einkommen und Arbeitsplätze*. Duncker & Humblot, Berlin.

- Vogler-Ludwig, K. (1995) *Medium-term employment forecasts by EU regions and sectors of industry 1991-97*. Office for Official Publications of the European Communities, Luxembourg.
- Vogler-Ludwig, K. (1991) *Qualifikationsengpässe auf dem westdeutschen Arbeitsmarkt*, Ifo-Studien zur Arbeitsmarktforschung, Volume 8. Ifo Institute, Munich.
- Vogler-Ludwig, K. (1987) *Dynamik der Dienstleistungsproduktion in der Bundesrepublik Deutschland*, Ifo Schnelldienst 14/15.
- Vogler-Ludwig, K. (1983) *Auswirkungen des Strukturwandels auf den Arbeitsmarkt*, Ifo Studien zur Arbeitsmarktforschung, Band 1.
- Vogler-Ludwig, K., Düll, N., Leitzke, S. and Letzner, V. (2003) *Ausbildung für einfache Berufe – Identifizierung von Tätigkeitsfeldern mit weniger komplexen Anforderungen als Basis zur Schaffung neuer anerkannter Ausbildungsberufe mit abgesenktem Anforderungsniveau*. BMWA- Forschungsvorhaben 13/02, Gutachten für das Bundesministerium für Wirtschaft und Arbeit Berlin. Economix Research & Consulting, München. Available: <http://www.economix.org/Einfach.htm>.
- Walden, G. (2007) *Duale Berufsausbildung in der Dienstleistungsgesellschaft*. BWP 06 2008. Bundesinstitut für Berufsbildung (BIBB), Bonn.
- Wenzelmann, F., Schöfeld, G., Pfeifer, H. and Dionisius, R. (2009) *Betriebliche Berufsausbildung: Eine lohnende Investition für die Betriebe, Ergebnisse der BIBB-Kosten- und Nutzenerhebung 2007*. Bundesinstitut für Berufsbildung (BIBB), Bonn. Available: <http://www.bibb.de/en/51130.htm>.
- Werner, D. (2010) *Duale Berufsausbildung - Ein System mit vielen Möglichkeiten*. Institut der deutschen Wirtschaft, Köln. Available: <http://www.iwkoeln.de/Publikationen/iwd/Archiv/tabid/122/articleid/30215/Default.aspx>.
- Wirtschaftswoche (2010) *Das Ende der Massenarbeitslosigkeit*. Available: <http://www.wiwo.de/politik-weltwirtschaft/das-ende-der-massenarbeitslosigkeit-439032/>.
- Wolter, S., Mühlemann, S. and Schweri, J. (2006) 'Why Some Firms Train Apprentices and Many Others Do Not', in *German Economic Review*, Vol. 7, Issue 3, pp. 249-264.
- World Bank (2011) *World dataBank*. World Bank, Washington D.C. Available: <http://databank.worldbank.org/ddp/home.do?Step=1&id=4>. [Accessed April 2011].

Case Study C: Netherlands

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C1. Summary and key findings

The intermediate level vocational education and training system (VET) in the Netherlands is characterised by a combination of school-based training at full-time vocational schools and work-based apprenticeship training at companies. The school track is the more dominant one, however, both alternatives are used in an efficient way to serve the heterogeneous preferences of learners and employers. It is a highly flexible system which allows various transitions between the different training tracks and opens pathways to tertiary education. It is inclusive to those who failed at lower secondary levels. With these features, the Netherlands has succeeded in achieving the lowest level of youth unemployment among the OECD countries, more than a good reason to look at this approach in detail.

The Dutch intermediate training system is structured into four levels (MBO 1 to MBO 4) which correspond with ISCED levels 2 to 4. Training professions range from assistants to managers and specialists, and the courses last between six months and four years. All levels can be attained by either school-based training (BOL) or company-based training (BBL).

Children are required to make a decision between a grammar-school track and a vocational training track at the relatively early age of 12. However, the flexibility of the system allows various transitions which, at least partly, balance the risk of an incorrect decision being made. The flexibility is achieved by a range of systemic features:

- (i) School-based and work-based training are conducted largely in parallel. This allows the same MBO levels to be achieved on both tracks, and provides training opportunities at schools if the supply of in-company training is weak.
- (ii) Training curricula are competence-based. The national qualification framework distinguishes 237 qualification profiles which combine these competences to occupations. The breakdown by competences opens the system up to a modular training approach and improves transitions between different training tracks.
- (iii) This is further improved by the recent development of validation procedures. Strong efforts have been undertaken to improve the accreditation of prior learning, an issue of particular relevance with regard to the ageing population, which will signal the rising importance of continuing training and lifelong learning.

- (iv) It is a consensus model which includes social partners, regions, and training providers. Under the lead of the Ministry of Education Culture and Science, the stakeholders have a strong role in defining qualification profiles and implementing training at the regional level. Sector Skills Councils (as employer representatives) play a particularly important role.

Although the school based track and work based track are formally equivalent, they serve different groups and play different roles: the majority of students in apprenticeship training are in MBO levels 2 and 3 while the majority of students in school-based training are in MBO level 4. Many of the students in apprenticeship training choose engineering and technology as their major subject, while students in vocational schools tend to focus on economics, health and social care. Moreover, most of the students in vocational schools are below the age of 20, while apprenticeships attract older age groups. A quarter of apprentices are over the age of 35. Apprenticeships therefore are an important component of adult training in the Netherlands.

Completion rates of MBO training in general are high (93 per cent) and the risk of becoming unemployed after this type of training is low, at least for those with higher MBO degrees. Apprentices can expect a particularly rapid transition to the labour market, while graduates from vocational schools often continue training at higher levels (which promise lower unemployment risks in general). About 14 per cent of MBO graduates continued with tertiary education.

Intermediate level vocational training used to be a high priority in Dutch politics. The former government passed a 'Strategic Agenda for Vocational Training and Adult Education' in 2008, setting the focus on reducing skills mismatch, improving the quality of training, reducing drop-out rates and improving the integrative strengths of the system. For trade unions intermediate vocational training is important to proceed to a knowledge-based society and respond to an ageing population.

Employers engage in intermediate vocational training, apprenticeship training in particular, because they want to reduce the skills mismatch in the labour market. As research evidence confirms, the recruitment of skilled workers is the most important reason for companies to be involved in vocational training. In addition, work-based training provides a high share of company-specific knowledge and guarantees knowledge transfer between older and younger workers. Employers indicate that training their own personnel maintains the quality of work, supports the management of knowledge, and gives them an impact on training contents. Nevertheless, no more than 25 per cent of the Dutch companies are registered to deliver intermediate level vocational training.

The cost issue for apprenticeship training remains rather unclear. There are official calculations which result in annual net costs of €9,361 per apprentice and €773 for internships of vocational school students. Other sources come to even higher estimates of costs. Nevertheless, there is an indication that training costs amortise during the training period or immediately afterwards. The risk of poaching is reduced in two ways: (i) by means of long-term recruitment plans in the companies, which motivates the trainees to stay in the company for longer; and (ii) by means of a sufficient level of skills supply on the labour market, either staffed by the intermediate vocational schools or by apprenticeship training in a sufficient number of companies. There is no indication, that poaching is a relevant factor in curbing employer engagement.

Apprentices and trainees gain from intermediate vocational training through life-time benefits in terms of higher wages and better employment prospects. These two incentives alone, however, are not strong enough to explain the high participation rates of Dutch people in the intermediate vocational training system. Nor is there any evidence that job satisfaction or social status explains participation rates. Rather, it seems that the early selection of children into vocational and theoretical learning pathways within the Dutch education system pushes the majority of pupils into the vocational learning pathway as the theoretical pathways are considered rather advanced. The Dutch intermediate training system seems to provide adequate types of training for a wide range of learners: those who do not want to invest a great deal of time into training, those who seek practical types of learning, and those with lower learning abilities. Consequently, the integrative power of the system is impressive.

The economy benefits from this system in the form of higher tax returns, stronger GDP growth and improved competitiveness on an international level. Even if skills mismatches persist, intermediate level vocational training substantially helps to meet the skills needs of employers both in manufacturing and service sectors. Even if the adjustment speed of the training system is assessed to be slow, the flexibility of the system is a strong asset for responding to changes in labour demand.

In the last few decades the Dutch economy has changed into a knowledge oriented and service oriented economy where technologies and innovation rapidly change the skills needs of the workforce. As the majority of Dutch people have a diploma from the intermediate level vocational training system, the system has to adapt quickly to changes. The new national qualification framework, implemented in 2010, improves the flexibility of the training system and aims to better match supply and demand within the labour market.

The new national qualification framework was developed by the Centres of Expertise and is a consistent, coherent and well-organised framework to determine competences within

the qualification guidelines. The model has 25 competences, and the contents of each competence are broken down into the skills, knowledge and behaviour required for a particular occupation. This is not only important in defining the standards for each occupation, it also improves the permeability and flexibility of the system, which is needed for economic transition and lifelong learning.

Table C1.1 Costs and benefits of intermediate level skills in the Netherlands

Employer costs	Employer benefits
<p><i>Direct costs</i></p> <ul style="list-style-type: none"> • Training costs: In total €9,261 per BBL and €773 per BOL student per year³¹ • Apprenticeship allowance equal to the minimum wage (€5,128-17,093/year)³². Productivity contributions of apprentices refinance them • Allowances for trainees during internship are refinanced by productivity of trainees during work placements • Reimbursement (books, clothes, examination fees) • Training support costs (€7,652 for BBL, €6,215 for BOL per year)³³ <p><i>Indirect costs</i></p> <ul style="list-style-type: none"> • Loss of productive hours worked of employees who are involved in training • Loss of training investment in case of poaching or earlier drop-out 	<ul style="list-style-type: none"> • Main incentive of training is the recruitment of skilled workers³⁴ • Productive contribution of apprentices and trainees (66% and 50% of working time)³³ • Tax deductibility (€2,500 per apprentice per year) • Employers offer training because of corporate social responsibility • Higher productivity and quality of work (of existing employees) • Management of knowledge and skills within the company • Higher esteem (higher social status, subsidies by state and support of industries) • Impact on training contents and organisation <p><i>If an apprentice is taken on:</i></p> <ul style="list-style-type: none"> • Competence-based trained employees • Selection of future employees during training period (75% of apprentices are taken on by their training company)³⁵ • Reduced recruitment costs • Integrated workers
Apprentice/Trainees costs	Apprentice/Trainees benefits
<ul style="list-style-type: none"> • High foregone earnings (€33,055 for men and €31,559 for women per training period)³⁶ • Tuition fees for BOL trainees: (€993/school year)³⁷ • Course fees for BBL apprentices (€205-499/school year)³⁷ • 	<ul style="list-style-type: none"> • Apprenticeship allowance/Internship allowance (see employers costs) • Lower unemployment rates (-1.3 pp compared to unskilled workers)³⁶ • Higher employment rates (+17.8 pp compared to unskilled workers)³⁶ • Higher wages (+ 15% compared to unskilled workers)³⁸ • Financial support by the state and scholarships (€6,456-8172/year)³⁸ • Low positive net present value of training (€13,479 for men and €16,784 for women/lifetime investment) because of high foregone earnings³⁶
Governmental costs	Governmental benefits
<ul style="list-style-type: none"> • Total costs: €3.4 bn for MBO in 2009³⁹ • €9,100 per BBL and €4,900 for BOL students per year • Costs for vocational schools • Funding for Centres of Expertise (in 2008: €104 m)³⁹ • Tax deductibility • Financial support of MBO students • Scholarships • 	<ul style="list-style-type: none"> • Reduced unemployment costs • Cushion negative effect of economic downturns due to mixed structure • Competence-oriented skills base (offers a flexible work force and business competitiveness) • Reduction of skills shortages • Positive net present value per trained MBO student (€26,941 for males and €38,024 for females)³⁶

Source(s): see footnotes.

³¹ According to unpublished CBS data

³² Ministry of Social Affairs and Employment (2011).

³³ Detmar and de Vries (2009)

³⁴ Gelderblom and Collewet (2009)

³⁵ Colo (2010d)

³⁶ OECD (2010b)

³⁷ Eurydice (2009).

³⁸ Hövels and Roelofs (2007).

³⁹ OCW (2010)

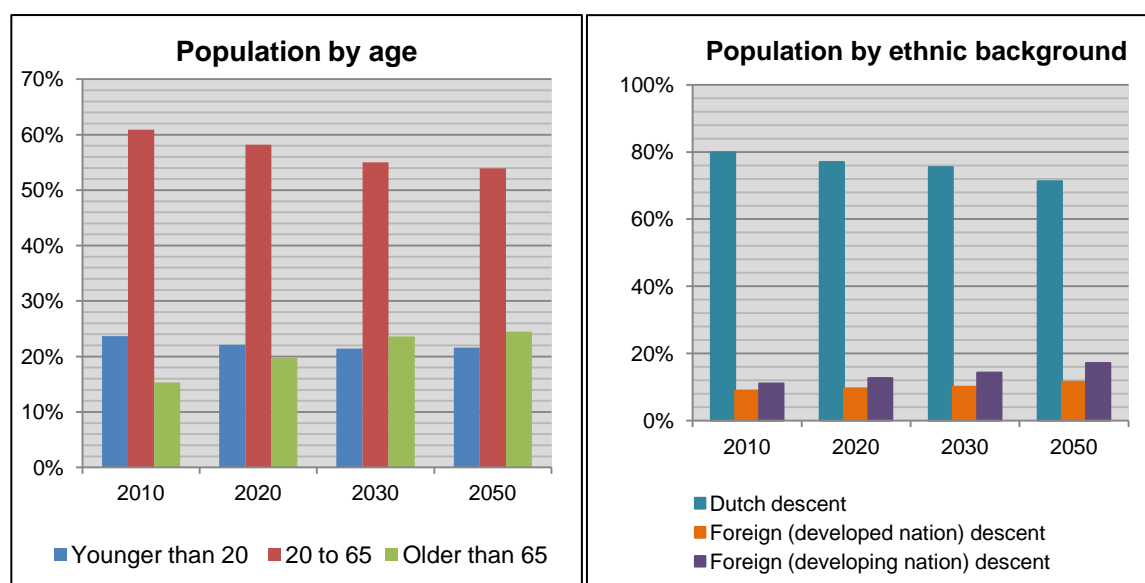
C2. Characteristics of intermediate vocational education and training

C2.1 Economic and social background

The Netherlands is a constitutional monarchy and has a parliamentary system consisting of two chambers. The country area comprises of 41,526 square kilometres and the population totals to around 16.5 million (Visser, 2009).

In the future the Netherlands will face demographic change. The share of the population aged over 65 is predicted to increase from 15.3 per cent in 2010 to 19.7 per cent in 2020 and 23.6 per cent in 2030. Correspondingly, the share of the population aged between 20 and 65 will shrink from 60.1 per cent in 2010 to 55 per cent in 2030 (Visser, 2009). Moreover, the composition of the population in terms of ethnic background will also change as the share of those with foreign (developed and developing nation) descent⁴⁰ will rise by 20 per cent by 2030 (Figure C2.1).

Figure C2.1 Predicted population change by age and country of origin



Source(s): Visser, 2009, *Economix*.

The Dutch are highly educated people (OECD, 2010b):

- around 93 per cent have at least a certificate from lower secondary education (ISCED ≥ 2)
- almost one third (32 per cent) have graduated from a tertiary institution (ISCED 5 and 6)

⁴⁰ People of foreign descent are defined as those who have at least one parent who was born abroad. Foreign descendents from developing nations includes those with parentage from Turkey, Africa, Latin America or Asia (with the exception of Indonesia and Japan). Foreign descendents from developed countries are those with parentage from Europe, North America, Oceania, Indonesia and Japan. People of Dutch descent are those of whom both parents were born in the Netherlands, irrespective of their own country of birth (OCW, 2010).

- around 41 per cent have a certificate from upper secondary education or post secondary non-tertiary (intermediate level) education (ISCED 3 and 4)
- one fifth (20 per cent) only has a certificate in lower secondary education (ISCED 2) and 7 per cent have no school leaving certificate (ISCED 0-1)

The Dutch labour market is known for its large share of part-time employees. According to the [Eurostat](#) website (Eurostat, 2011), 48.3 per cent of employees were employed part-time in 2009. This is the highest share of part-time workers in Europe. The majority of part-time workers (75 per cent) are women (Eurofound, 2009). Three quarters of employees work in the services sector (Bundesagentur für Arbeit, 2008).

The Dutch economy is recovering from the economic crisis. According to CBS ([Statistics Netherlands](#), 2011a), real GDP increased by 2.3 per cent in the fourth quarter and by 1.8 per cent in the third quarter of 2010. All in all, GDP grew by 1.7 per cent in 2010 which was impacted by a strong growth of exports.

The unemployment rate increased from its lowest rate in August 2008 of 3.4 per cent to 6.1 per cent in February 2010. Since then, unemployment has started to decrease and was 5.0 per cent in October 2010. The gross labour participation was 71.4 per cent in the third quarter of 2010, 0.2 percentage points lower than in the third quarter of the previous year. The number of average hours worked remained stable on a year-on year comparison (CBS, 2010a). The youth unemployment rate was 7.3 per cent in 2009 (OECD, 2010a), which was low compared to the OECD average of 16.7 per cent. There was, however, an increase of 1.7 percentage points in the youth unemployment rate between 2008 and 2009.

C2.2 Historical evolution

The intermediate VET system in Netherlands is characterised by predominantly school-based vocational training. In parallel a worked-based form of vocational training (apprenticeship training) exists.

The school-based vocational training system goes back to the abolishment of guilds in the 18th and 19th century. At this time some industrial schools and evening drawing schools existed and apprenticeships were only offered in a few areas of study. After 1860, due to skills shortages, vocational full-time schools (*ambachtscholen*) were privately established on a local scale. These offered three years of full-time training for craft occupations in the areas of wood and metal processing. By 1890, 18 vocational full-time schools had been opened, which were subsequently funded by the state and thus became part of the national education system. Apprenticeship training was only an additional option compared to the vocational schools (Reinisch and Frommberger, 2004).

After World War I the Dutch state, which regulated both school-based and company-based training, introduced the *Nijverheidsonderwijswet* (The Industrial Education Act). The law differentiated between elementary lessons designed to prepare workers for easy, manual tasks and middle lessons which aimed to prepare foremen or supervisors for supervisory tasks. The state took an increasingly interventionist role in vocational training as the number of participants and the amount of state-funded grants strongly increased.

After World War II a rapid industrialisation began, which led to a high demand for skilled workers. The number of schools and participants again rose. In 1963 a new law was adopted (*Mammoetwet*) which created a consistent framework for general and vocational schools in the secondary education area. Apprenticeship training was regulated by another law in 1966 which incorporated the crafts schools into the education system. The majority of participants in vocational training, however, still opted for school-based training.

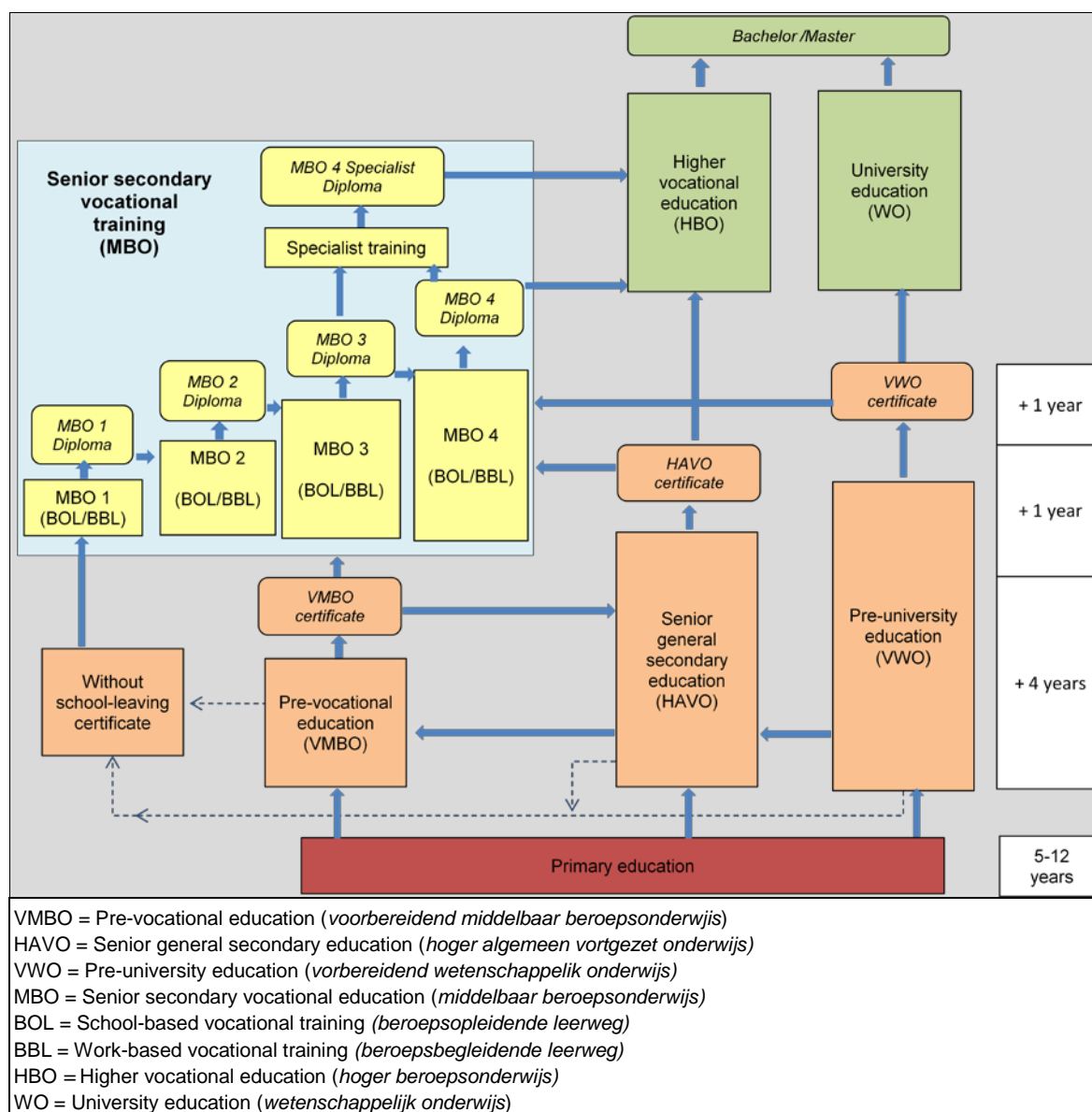
In the 1980s high youth unemployment raised the discussion to improve apprenticeship training and to organise it in dual form (i.e. to include a school-based component). Before that, apprenticeship training was only organised in companies and there was no structured additional theoretical learning at vocational schools. Moreover, vocational schools were seen to inadequately prepare trainees for the labour market. The Waasenaar Accord of 1982 strengthened the labour market orientation of vocational training and laid the basis for wage agreements and a rising number of apprenticeships.

Vocational training was substantially reformed in 1996 by the new Vocational Training Act (*Wet educatie en beroepsonderwijs; WEB*), which formally equated both the school-based and the employer-based vocational training pathways. Thereby a large number of vocational schools were joined by large regional training centres (ROCs), (Visser and Cox, 2008). The WEB additionally integrated the social partners in the formation of training and introduced the four different levels of intermediate level training (MBO) (Anderson and Hassel, 2008).

C2.3 Principal structure of the education system

The Dutch education and training system comprises six elements: primary education; special education; secondary education; senior secondary vocational education and general education for adults; vocational courses and training for adults; and tertiary or higher education (Visser, 2009). Education is compulsory for pupils between the ages of 5 and 18 or until they achieve basic qualifications. The prolongation of compulsory education from 16 to 18 years of age came into effect in August 2007.

Figure C2.2 The Dutch education and training system



In the Netherlands children start primary education at the age of five. It lasts for eight years until the age of 12. After primary education pupils enter secondary education. The parents and children decide, based on the children's results in the general test and the advice from their primary school teachers, whether to enter pre-vocational education (VMBO), senior general secondary education (HAVO) or pre-university education (VWO). The decision made here influences the subsequent learning, school career and the final educational level. The decision to opt for the vocational training option is mostly made on the basis of recommendations by teachers, as the more theoretical training options are often too advanced for the majority of pupils. Therefore the vocational training option is the most popular: more than half of 12 year olds (53 per cent in 2007) chose the vocational training option (Visser, 2009).

The VMBO takes four years (until the age of 16) and serves as preparation for senior secondary vocational education (MBO). HAVO takes five years (until the age of 17) and

serves as preparation for higher vocational education (HBO) and VWO takes six years (until the age of 18) and serves as preparation for university education (WO). VMBO and MBO correspond to a vocational training pathway while the others (HAVO/HBO and VWO/WO) are more theoretical and end in higher education at tertiary level.

The first two years of primary vocational training (VMBO) consist of general basic education, in which general subjects are imparted. In the third and fourth year the pupils become more specialised. They have to choose between four pathways which determine the sectoral specification of training (agriculture, technology, economics and welfare) and four learning paths which differ in their share of theoretical and practical content (theoretical pathway, mixed pathway, pre-vocational pathways at high/low level). The different learning pathways also have an impact on which level of senior secondary vocational training (MBO) the students can enter in the upper level of vocational training:

- The theoretical learning pathway comprises general content and serves as preparation for MBO 3 and 4. Graduates from this programme can also continue their education in the fourth year of HAVO.
- The combined learning pathway comprises general content and 10-15 per cent of it is pre-vocational orientation. It serves as preparation for MBO 3 and 4 and transition to HAVO is also possible.
- The pre-vocational learning pathway at a higher level also serves as preparation for MBO 3 and 4.
- The pre-vocational learning pathway at a lower level serves as preparation for MBO 2.

C2.3.1 Senior secondary vocational education

Vocational training continues at the upper level with senior secondary vocational training (MBO) and it is this, principally, that is meant by intermediate level VET in the Dutch context. Pupils can enter MBO at the age of 16. The training offers intermediate level vocational qualifications and is divided into four levels (MBO 1 - MBO 4). The different levels distinguish themselves in terms of duration, access requirements, qualification level and vocational skills (see Table C2.1).

Table C2.1 Characteristics of different MBO levels

MBO level	Duration	Access requirements	Qualification level	ISCED level	Vocational skills
MBO 1	6-12 months	No restrictions	Assistant training	2	Prepares participants to carry out simple executive tasks; Progression to MBO 2
MBO 2	2-3 years	Basic pre-vocational education diploma, MBO 1	Basic vocational education	3C short	'Official' minimum requirement for the labour market; Progression to MBO 3
MBO 3	3-4 years	VMBO, 3 years in VWO/HAVO	Professional education	3C long	Prepares people to carry out tasks independently; Progression to MBO 4
MBO 4	4 years	As for MBO 3	Middle management VET	3A	Prepares people to carry out tasks independently and with more responsibility; Progression to HBO
	1-2 years	Completed MBO 3 and MBO 4	Specialist	4	Progression to HBO, especially the dual or part-time pathways

Source(s): Visser, 2009; Economix.

MBO training lasts between six months and four years. Access to the different levels depends on the pre-educational level of students: MBO level 1 has no access requirements and can be entered by early school-leavers without any school-leaving certificate. Those who have only the access requirements for a lower level of MBO can continue at higher levels of MBO after first graduating in the lower levels. After completing MBO level 2, graduates hold the 'official' minimum requirements for the labour market which means that they hold basic skills to work and succeed in the labour market. Graduates from MBO level 4 can continue education at higher vocational education (HBO).

In the Dutch education system, MBO training broadly equates with intermediate level vocational training in an international comparison. The educational levels of graduates from this system correspond to the ISCED levels 3 and 4. MBO level 1 only provides its graduates with ISCED level 2 skills. It can be seen as a transition system for young people who do not have a school-leaving certificate.

MBO participants at all levels can choose between two learning pathways: i) a school-based vocational pathway (BOL), either full-time or part-time at vocational schools, which includes practical elements/internships at companies, or ii) a work-based vocational pathway (BBL) which is equivalent to dual apprenticeship training with a focus on work-based training in companies. Both vocational pathways result in the same certificates. The curricula of both learning tracks mainly differ in the extent and quality of practical learning elements.

In BOL, the practical periods in companies comprise between 20 and 59 per cent of study time. The practical elements are imparted during internships of between three and six months. In BBL the company-based training comprises at least 60 per cent of study time (Eurydice, 2009). Apprentices continuously spend three to four days a week with the employer who offers training and one to two days at vocational schools. They have an official work contract and receive a training salary. BOL participants have a work placement contract and receive a small remuneration for the time they are at their work placement.

Trainees in BOL or BBL have the opportunity to switch between the different learning pathways and it is also possible to combine both pathways. This flexibility supports the attractiveness of vocational training. In 1999, however, only 45 per cent of vocational training courses existed for both pathways. There are different reasons for this: sometimes training is not possible in both pathways. Some of the training on levels 3 and 4 often only exist on the BOL (school-based) track while other training on levels 1 and 2 only exist on the BBL (work-based) track. MBO institutions can also decide not to provide all levels if the number of trainees is very low (Hövels and Roelofs, 2007).

The Netherlands have a competency-based national qualification framework for the intermediate level training system, which defines the competencies required for MBO graduates: this implies that all jobs and work tasks are summarised in so-called occupational profiles, which in the second step form the basis for qualification profiles. These describe the skills, competencies and knowledge a person needs to fulfil a job or a work task.

The national qualification framework comprises 237 qualification profiles with different exit differentiations (627 in February 2010). This means that occupations that include common activities are often combined into one qualification profile. This applies, for example, to the qualification profile for Media Technology which describes the requirements for the occupations Web Master, Cross Media Publishing, Workflow Manager and Game Developer (Colo, 2010b). The contents of the qualification profiles are described in so-called Process Competency Matrices (an example Matrix for Combustion Engine Technicians is presented in Figure C2.3). In this, the required competences for each work process are indicated. For all qualification profiles a single format is laid down with a fixed set of 25 competencies. Thus, all qualification profiles have the same structure and layout, which improves the comparability between the different occupations.

Figure C2.3 Example Process Competency Matrix, qualification profile for a Combustion Engine Technician

Core task 1: Repairs defects in combustion engines	Competencies																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
Work processes	Deciding and initiating action	Leading	Coaching	Caring and understanding	Cooperating and consulting	Adhering to principles and values	Relating and networking	Persuading and influencing	Presenting and communicating	Writing and reporting	Applying expertise	Applying technology	Analysing	Investigating and exploring	Creating and innovating	Learning	Planning and organising	Meeting customer expectations	Delivering results	Following instructions
1.1 Prepares the task				X					X		X		X							X
1.2 Diagnoses problem with combustion engine							X	X											X	
1.3 Repairs the defect in the combustion engine	X			X					X	X	X					X		X		X
1.4 Supports and instructs apprentices and colleagues														X						
1.5 Checks his work and completes the task			X	X						X										
1.6 Gives technical explanation to client									X			X							X	

Source: Colo, 2010b.

During MBO training, participants are awarded leaving certificates for the partial examinations they have passed. After they have passed all tests for the course and achieved the accompanying certificates, the certificates are replaced by a diploma. This formally allows learners to achieve partial qualifications as well as complete ones and gives vocational schools the opportunity to organise educational processes in a modular way (Hövels and Roelofs, 2007).

The qualifications obtained from MBO training relate to four different sectors (agriculture, technology and engineering, economics, health and social care). In each sector various branches of industry and business are included (Visser, 2009).

Vocational schools are responsible for assessing the results. It is stipulated by law that the employer who trains the students must be involved in the examination process. The qualification standards serve as a benchmark for the assessment and quality assurance of the examination process, which is overseen by the Education Inspectorate (Visser, 2009).

Two example training occupations are illustrated in the following section: the Service Mechanic Installation Technician (*servicemonteur installatietechniek*) and the Sales Specialist (*verkoopsspecialist detailhandel*) which are both provided at BOL and BBL level.

Example 1: Service mechanic installation technician

Service mechanic installation technicians work in the technology sector and for fault-clearing services or for the maintenance department of production, installation, service, and retail businesses.

The MBO training to become a service mechanic installation technician is provided at level 3 in both options: the school-based (BOL) and the work-based (BBL) tracks. The average duration of the training leading to a certificate comprises four years (4,800 study hours) and depends on previous educational attainment. The minimum entry requirement is the completion of the VMBO (advanced combined, theoretical or combined programme) or a comparable level (i.e. MBO level 2). Career opportunities for service mechanic installation technicians are as project coordinators or managers within a service and maintenance department (neither of which require further training). Moreover, they can be promoted to become a Service Technician (fitting techniques, gas/heating).

The most important duties of a service technician in refrigeration techniques are summarised below (Europass, 2010a):

- Inspection of equipment/installations:
 - Preparing inspections;
 - Holding visual inspections;
 - Taking precautions;
 - Taking measurements and carrying out tests;
 - Reporting inspection;
 - Teaching and supervising less experienced colleagues.
- Optimising equipment/installations and repairing faults:
 - Preparing work;
 - Taking precautions;
 - Localisation and analysing (cause of) failure;
 - Determining (nature and proportions) of work that has to be done;
 - Repairing, removing and mounting components;
 - Testing performed work;
 - Teaching and supervising less experienced colleagues.
- Making equipment/installations ready for use:
 - Setting and checking equipment/installations;
 - Reporting work;
 - Handing over to the client;
 - Teaching and supervising less experienced colleagues.

Example 2: Sales specialist

Sales specialists work in the retail and wholesale trade in both small and medium sized enterprises and in chain stores in both the food and the non-food sectors.

As for the training for service mechanic installation technicians, the MBO training to become a sales specialist is provided at level 3 in both options (BOL and the BBL), the average duration of the training leading to a certificate comprises three years (4,800 study hours), the duration depends on previous educational attainment and the minimum entry requirement is the completion of the VMBO (advanced combined, theoretical or combined programme) or a comparable level. Career opportunities in the sales specialist retail sector are as trade managers (e.g. departmental manager) or entrepreneurs in the retail trade, both on level 4.

The most important duties of a sales specialist in the retail sector are summarised below (Europass, 2010b):

- Responsible for the receipt and processing of goods:
 - Supervising colleagues on receipt of and in processing goods;
 - Responsible for the receipt of goods;
 - Responsible for storing away goods;
 - Building up and taking care of article presentations;
 - Inspecting the stock and orders (or suggestions of what to order);
 - Taking care of the sales area and/or storage area.
- Selling, giving advice and providing good service:
 - Supervising colleagues in their sales activities;
 - Receiving and addressing clients;
 - Carrying out sales and advisory consultations;
 - Supplying made-to-measure work specific to the sector;
 - Placing orders on behalf of a client;
 - Taking complaints and/or dealing with complaints.
- Conducting and/or completing sales transactions:
 - Making the payment system ready for use;
 - Providing the client with information about the completion of sale;
 - Running the payment system;
 - Closing up the payment system and taking care of its administration.
- Optimising sales and assortment:

- Suggesting improvements concerning the assortment;
- Suggesting improvements concerning the presentations;
- Analysing the sales figures and making suggestions for improvements;
- Participating in work meetings.

C2.3.2 Apprenticeship training

Apprenticeship training within the Dutch education system is represented by the work-based MBO training pathway (BBL) as part of intermediate level VET (MBO). As with the school-based track, apprenticeships are also differentiated in the four levels of MBO training. In addition to the formal entrance requirements for MBO, applicants for BBL training need a contract with a company for an apprenticeship position to start training.

As stated earlier, apprenticeships are organised in a dual form, where work-based elements of training comprise at least 60 per cent of the training time. Around one third of MBO students choose the apprenticeship training pathway (CBS, 2011b).

The WEB law from 1996 (see Section C2.2) equated the BOL and BBL tracks and standardised both. All training occupations should therefore, in theory, be achievable on both tracks. Despite the legal basis, in practice two subsystems exist. While the BOL tracks prepares its participants for jobs in middle management or higher education, the BBL tracks trains its participants as skilled workers at an executive level. This comes from the historical background of both systems but is also partly influenced by the fact that on the BOL (school-based) track more level 4 occupations are provided than within the BBL (work-based) track. The BBL 4 level training is often specialist training (Hövels and Roelofs, 2007).

C2.4 Institutional organisation and VET providers

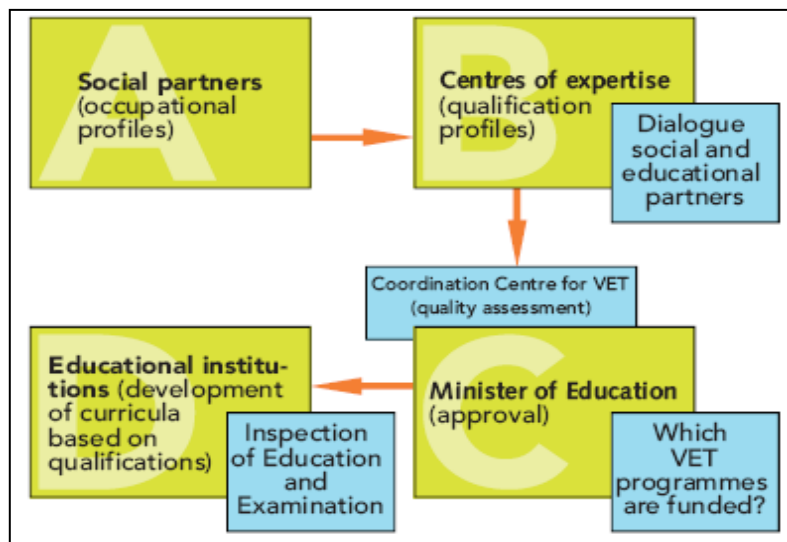
The Dutch education system is relatively decentralised: the Ministry of Education, Culture and Science (OCW) only determines the basic rules whereas vocational schools and Centres of Expertise (Sector Skills Councils) operate autonomously. This makes the work of vocational schools and their training supply more flexible. It also means that the State cannot determine the supply of training courses, which can lead to skills mismatches because vocational schools often adapt their training supply to the short-term preferences of students rather than to the long-term needs of the economy.

Both pathways, BOL and BBL, are involved in the national qualification framework which is regulated by the Ministry of Education, Culture and Science: it determines which competences MBO graduates need for the labour market and defines the national standards for examinations. The national qualification framework comprises the occupational profiles which describe all work tasks and functions of vocational

occupations and the qualification profiles, in which learning outcomes (knowledge, skills and competences) are described. The occupational profiles thereby serve as a basis for the provision of training.

The development process of a qualification profile is presented in Figure C2.4. The occupational profile is constructed by the social partners (A). From these, the Centres of Expertise (comparable to Sector Skills Councils) develop the qualification profiles (B). For the description of qualifications the Centres of Expertise provide a discussion platform for social and educational partners. The qualification profiles are then assessed by the Coordination Centre of VET which is an independent body of the Ministry of Education (C). After the files have been checked by the Coordination Centre and approved by the Ministry, they are published in the Dutch Government Gazette (D).

Figure C2.4 Development process of a qualification profile



Source: Colo (2010b).

The Centres of Expertise, each organised around one sector or branch of industry, are responsible for the development and the maintenance of the national qualification framework. Moreover, the Centres of Expertise are responsible for accrediting work placements and monitoring the quality of training provided at the companies (Colo, 2010b). The employers' and employees' organisations from different sectors form the governing boards of the Centres of Expertise. In a number of cases the vocational education bodies relevant to the sector also participate in the governing board. At regional, national and international levels, the 17 Centres of Expertise are represented by Colo (Association of National Centres of Expertise on Vocational Education, Training and the Labour Market), which acts as their umbrella organisation.

The educational institutions are responsible for delivering qualifications. Courses in intermediate level vocational education are run by 43 Regional Training Centres (*regionale opleidingscentra*; ROCs), which provide vocational training in three sectors

(engineering and technology, economics, and health and social care). Agricultural Training Centres, other vocational schools and labour organisations also provide courses for MBO training (Cinop, 2008).

As far as pre-qualification levels are concerned, entrance to vocational training is not restricted. Vocational institutions have to provide all their trainees with the opportunity to achieve a vocational certificate. Moreover, they have to offer the practical-based training elements to the legally prescribed extent. The number of apprenticeship training positions within BBL is dependent on the willingness of companies to provide training.

Sector Skills Councils/Centres of Expertise publish labour market reports about job opportunities and work placements for MBO students and graduates for their responsible sector. After these reports have been published, the educational institutions adapt their training supply on a national and regional level. For this to happen, a close coordination with employers is needed. Sometimes the educational institutions also do their own market research to get an overview of the qualifications required of skilled workers at a regional level (Cedefop, 2004). Social partners and educational institutions can both take the initiative to implement new training occupations or renew existing occupations (Visser, 2009).

The curricula of a vocational occupation are developed by the educational institutions in cooperation with training companies on the basis of the qualification profiles. The educational institutions are also mainly responsible for the modernisation of their curricula. The government, however, can stimulate those developments and innovations that have consequences for the modernisation of curricula. Before a new training occupation can be implemented, the Centres of Expertise must specify why this specific occupation with this specific qualification is needed. This is to prevent the development of occupations and qualifications that are not needed by the economy and the labour market.

C2.5 Funding

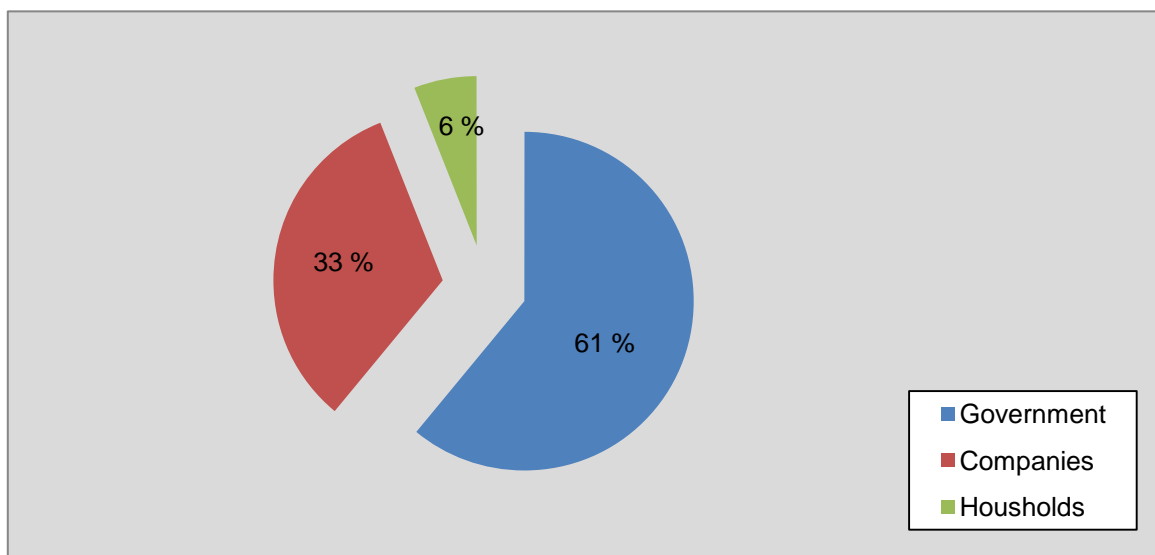
The Dutch intermediate VET system is mainly funded by the government and the companies that train apprentices and trainees. Training participants also contribute to costs. In 2009 funding had the following structure: the government spent €3.4 bn, companies €1.9 bn and individuals €0.3 bn. In total this equalled one per cent of GDP. Slightly more than half of the total sum (54 per cent) was spent on school-based vocational training (BOL) and the other half on work-based training (BBL). This equals €9,000 per BOL student and €14,600 per BBL student and year. Over the whole training period around €32,700 were spent in total per BOL student and €38,600 per BBL student (OCW, 2010).

The Centres of Expertise are also funded by the Ministry of Education. They are financed on the basis of the number of qualifications they have developed and maintained within the development of qualification profiles (see Section C2.4), the number of companies certified for work placements and the number of apprenticeship positions occupied (OCW, 2010). The total amount received by the Centres of Expertise in 2008 was €104 million.

Both the school-based (BOL) and work-based (BBL) pathway within intermediate VET are mainly financed by companies and the state. The Ministry of Education funds the school-based training and the government is also involved in the funding of company-based training by means of tax incentives: companies that offer apprenticeship positions receive a tax deductible sum of €2,500 per occupied position. Companies pay an allowance/wage to their apprentices and are also involved in the costs for BOL students in terms of internship allowances. For students of both tracks, employers also have supervision costs. In 2009, employers spent €1.6 bn in total on BBL students and €0.3 bn on BOL students. On a yearly average the costs were €773 for a BOL student and €9,261 for a BBL student in 2009 (CBS, 2011c).

Although students receive a grant from the state, they also bear a share of costs themselves. The financial share of trainees or their parents comprise tuition fees and course fees. All in all, households spent €0.3 bn for MBO training in 2009, of which €83 million was on BBL and €253 million on BOL training (Eurydice, 2009).

Figure C2.5 Distribution of funding costs for MBO training (2009)



Source(s): CBS unpublished data (CBS, 2011c), Economix.

All in all, the total amount of money involved (from the government, state and households) in obtaining an MBO diploma was on average €32,700 for BOL students and €38,600 for BBL students in 2009 (CBS, 2011c).

C3. Performance of intermediate vocational education and training

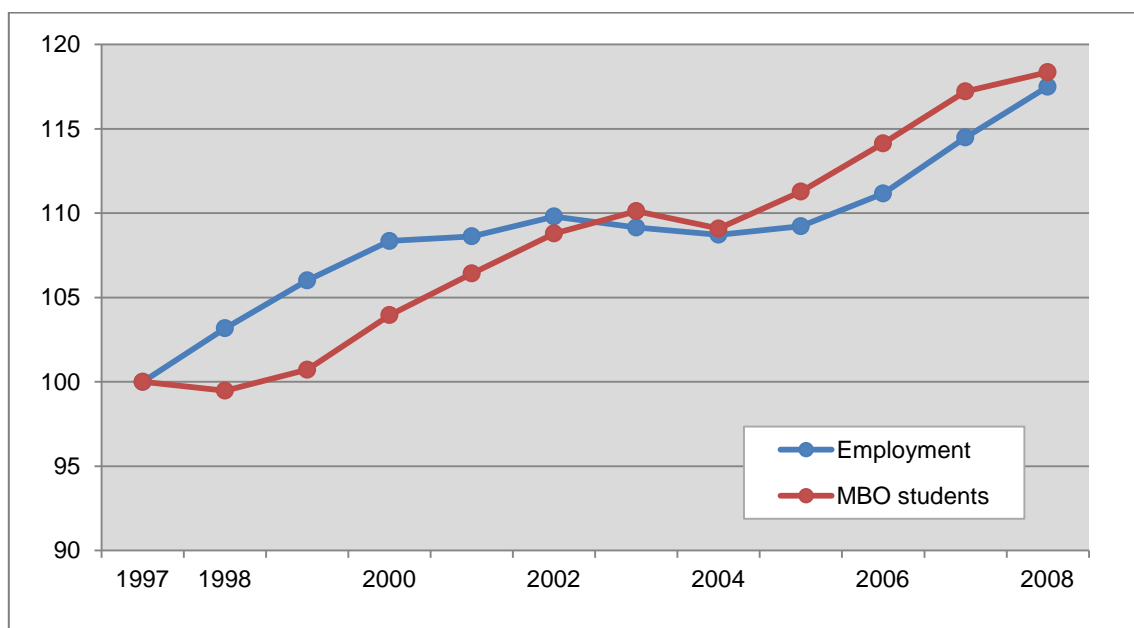
C3.1 Participation rates

MBO training is chosen a large proportion of pupils in higher secondary education (OCW, 2010). This is influenced by the early decision of the majority of the 12 years olds for pre-vocational training (VMBO), many of whom in the second step continue vocational training at the intermediate level *via* MBO.

According to data about recent participation rates in the Dutch education system (CBS, 2011b), 524,000 people participated in MBO training in the 2009/10 school year, of which 172,000 (33 per cent) were in BBL (work-based) and 352,000 (67 per cent) in BOL (school-based) training. The overall number of MBO participants increased, by 10.5 per cent, between 2004/5 and 2009/10.

The number of MBO students has developed in close relationship to levels of employment over the last 15 years (see Figure C3.1). Between the second half of the 1990s and the beginning of the new millennium employment increased almost parallel to MBO participation. After a halt in relative growth at the beginning of the 21st century, both employment and the number of students again rose in absolute and relative terms (CBS, 2010a).

Figure C3.1 Development of employment and MBO students (1997-2008)
1997=100



Source(s): CBS (2010a); Economix.

Participation in the different learning tracks differs by level of learning (Visser, 2009). In school-based BOL a large share of students entered MBO level 3 or MBO level 4 (78 per cent in 2007). In contrast, in apprenticeship BBL training 41 per cent of participants entered MBO level 2 and 49 per cent entered MBO level 3 or level 4 (Table C3.1). Especially in BOL, the number of students in higher levels has increased while the number of participants in levels 1 decreased in recent years: in 2002, 44 per cent of BOL students were in level 4 (compared with 56 per cent in 2007) and five per cent in level 1 (compared with 3 per cent in 2007 (Visser, 2009). The differences for BOL and BBL levels partly arise because more courses within BOL are offered at the higher levels whereas within BBL more courses are offered at the lower levels.

Table C3.1 Participation at different levels of MBO in % (2007)

%	BOL	BBL
Level 1 – assistant level	3	7
Level 2 – basic vocational education	19	41
Level 3 – professional level	23	33
Level 4 – middle management	55	16
Level 4 – specialist	1	3
Total	100	100

Source(s): Visser (2009); Economix.

In the school year 2007/2008, 47 per cent of BOL participants were male and 53 per cent were female. The BBL track is more common for males (66 per cent of participants) (CBS 2009). In higher education (HBO and WO) the share of female participants is larger (52 per cent and 54 per cent, respectively) than the share of male participants.

Compared to school-based training, apprenticeship training is more popular for those aged 20 and over (Visser, 2009): in BOL the majority of students are young people between 16 and 25 years of age (97 per cent) while a large part of those in BBL (67 per cent) are young adults aged 20 or older (see Table C3.2). This can partly be explained by the fact that more than half of the students who enter BBL come from outside the education system. Many of them had a job in the previous year or lived on benefits. In 2008/2009 two thirds of these returners were aged 30 or older (NFIS Singapore, 2010). People also more often participate in BBL to upgrade their qualifications. This shows the potential importance of BBL for lifelong learning.

Table C3.2 Age structure of MBO students by learning pathway, (2007)

%	BOL	BBL
16-20 years old	72	33
20-25 years old	24	28
25-30 years old	2	10
30-35 years old	1	6
35 years old and older	1	23
Total	100	100

Source(s): Visser (2009); Economix.

Regarding the four programme orientations, the decision of BOL and BBL students differs: in 2008 most of the BOL students chose economics and health and social care, while the majority of BBL students chose engineering and technology (CBS, 2009). In both tracks, agriculture is the least chosen orientation (Table C3.3). In tertiary education HBO students tend to study courses in social sciences, business and law (31 per cent in 2008), health and welfare and in education (20 per cent and 19 per cent). The majority of university (WO) students also choose to study social sciences, business and law (54 per cent) (CBS, 2009).

Table C3.3 Participation in MBO orientations in 2008 (in %)

%	BOL	BBL
Agriculture	5	6
Engineering and Technology	22	45
Health and Social Care	36	23
Economics	37	26
Total	100	100

Source(s): CBS (2009); Economix.

Participation in MBO training also differs between ethnic groups (OCW, 2010). Pupils of foreign descent⁴¹ (developing nations) are more often enrolled in lower levels of MBO than those of Dutch descent⁴² or foreign (developed nation) descent⁴³ (Table C3.4). They rarely combine working and learning as it is offered by the BBL (apprenticeship) pathway.

⁴¹ See Section C2.1: foreign descendents are those who have at least one parent who was born abroad. Developing nations includes Turkey, Africa, Latin America or Asia (with the exception of Indonesia and Japan) (OCW, 2010).

⁴² Persons of whom both parents were born in the Netherlands, irrespective of their own country of birth.

⁴³ Those with parents born in Europe, North America, Oceania, Indonesia or Japan.

Table C3.4 MBO participation by ethnic background in 2007/2008 (in %)

%	BOL	BBL	MBO 1	MBO 2	MBO 3	MBO 4
Dutch descent	65	35	3	24	27	46
Foreign (developed nation) descent	68	32	6	26	25	43
Foreign (developing nation) descent	82	18	8	32	23	36

Source(s): OCW (2010): *Economix*.

The participation opportunities for internships (BOL) and apprentices (BBL) differ with sector. All in all, there were 216,541 accredited employers (25 per cent of all employers in the Netherlands) which offered training in December 2010. To become accredited to offer training a company has to fulfil the following requirements (Colo 2010d):

- Providing adequate training opportunities, which can be linked with one or more MBO courses;
- Availability of an experienced in-house trainer;
- Cooperation with vocational schools: the in-house trainers needs to have regular contact with the schools;
- Registration on the website www.stagemarkt.nl or at the Centres of Expertise.

The outlook for most of the sectors was favourable in terms of opportunities to receive practice placements or training positions. On a national average, the plant culture sector and cleaning and window cleaning sector had the best training opportunities compared with the number of students. Only two sectors (transport and logistics, and animal care) had a shortfall in the supply of practice placements (Colo, 2010c). The overall outlook for all sectors is presented in Table C3.5.

Table C3.5 Opportunities for internships and apprenticeship positions by sector

Sector	National average
Plant Culture	1
Cleaning and Window cleaning	1
Care	2
Sport	2
Green Spaces	2
Food and Beverage Industry	2
Livestock and Horse Breeders	2
Healthcare Technology	2
Creative and Workmanship Technology	2
Process Engineering	2
Laboratory Technology	2
Hospitality	2
Bakery	2
Facility Services	2
Flower and Garden Centres	3
Foot Care	3
Travel	3
Fresh Food Sector: Retail, Wholesale and Industrial	3
Economic Administrative	4
ICT	4
Security	4
Utilities, Electrical/Electronic/Mechanical Engineering	4
Hairdresser	4
Carpentry and Furniture	4
Painting and Maintenance, Plastering and Fishing	4
Visual Merchandising	4
Photonics	4
(Inner) Navigation	4
Automotive	4
Recreation	4
Welfare	5
Publishing, Graphic Design and Printing Industry	5
Doctor/Pharmacist/Dentist	6
Wholesale Food/Non Food	6
Textile Industry	6
Fashion Industry	6
Beauty Therapist	6
Construction	6
Audiovisual Media, Multimedia and Gaming	6
Performing Arts, Entertainment and Events	6
Bodywork Industry	6
Animal Care	7
Transport and Logistics	7

1= Supply of practice placements and on-the-job training more than enough compared to demand
2= Supply of practice placements and on-the-job training more than enough compared to demand; some courses are balanced
3= Supply of practice placements and on-the-job training is balanced compared to demand; some courses have a higher supply than demand
4= Supply of practice placements and on-the-job training is balanced compared to demand
5= Supply of practice placements and on-the-job training more than enough compared to demand; in some courses is a shortfall
6= Supply of practice placements and on-the-job training is balanced compared to demand; in some courses is a shortfall
7= There is a shortfall in practice placements and training on the j on-the-job training ob; some courses are balanced
8= There is a shortfall in practice placements and on-the-job training

Source(s): Colo (2010c); Economix.

C3.2 Transition rates

C3.2.1 Upward mobility

After completing vocational training, graduates can either start working immediately or they can continue on to higher education. Direct access to higher vocational training (HBO) is possible for those who complete the MBO level 4. In 2007 around 14 per cent of MBO graduates continued with HBO (OCW, 2010).

Within MBO training it is possible to move to higher MBO levels by completing the lower levels. Those without a school leaving certificate can enter MBO 1 and on completion can then continue with MBO 2 (Table C3.6). It is more common for BOL graduates to move on to higher levels of MBO training than for BBL graduates (see Table C3.6; OCW, 2010). BBL graduates more often start working directly on completion of training (see Section C3.2.3).

Table C3.6 Upward mobility within MBO (2007, in %)

	From MBO 1 to MBO 2 or higher	From MBO 2 to MBO 3 or higher	From MBO 3 to MBO 4
BOL	61	59	46
BBL	34	38	16

Source(s): OCW, 2010, *Economix*.

C3.2.2 Completion rates and drop-out rates

In 2007, 164,500 MBO students left education. Of these, 139,700 had achieved a certificate in MBO levels 2-4 and 13,400 had achieved an MBO level 1 certificate. This is equivalent to a completion rate of 93 per cent (including MBO 1) (OCW, 2010).

In 2005/2006, 10 per cent of first-year MBO students left vocational training without a diploma after one year. Drop-out rates were particularly high in the lowest level of MBO, level 1 (21 per cent), while in MBO level 4 drop-out rates were considerably lower (8 per cent) (CBS, 2010b). The proportion of students that end BOL courses prematurely is also especially high. According an expert interview, the higher drop-out rates for BOL trainees may be because they are more likely to enter into training without fully reflecting on individual goals, particularly as BOL trainees are often very young. BBL apprentices, in comparison, are required to go through an application process which forces them to make a well-founded decision and thus lowers the number of drop-outs.

In 2006 the former government introduced a programme to tackle the number of students that dropped out of vocational education and training. This comprised measures that aimed to facilitate transfer and mobility within the vocational education sector. The present government has modified and extended these measures with programmes, for

example, aimed at improving guidance and coaching, the attractiveness of MBO training and easier transition from VMBO (pre-vocational education) to MBO.

C3.2.3 Longitudinal perspective

A study on school-leavers by the Research Centre for Education and the Labour Market (ROA, 2008) observed MBO certificate holders one and a half years after they left school. According to the study, 42 per cent of BOL students continued studying versus 15 per cent of BBL students. Around 70 per cent of those who continued in education chose a subsequent study programme in a related subject. This was most common in health care programmes and least common in agricultural programmes.

The unemployment rates of MBO school-leavers one and a half years after completion were low in 2007, especially for the MBO levels 3 and 4 (Table C3.7) (OCW, 2010). The unemployment rates of those who graduated from BOL 3 and 4 were 4 per cent and 3 per cent, respectively. The unemployment rate of BBL 3 and 4 graduates lay at 0 per cent and 2 per cent, respectively. The average time it takes to find a job (from initial unemployment) was 0.8 months for BOL graduates and 0.3 months for BBL graduates in 2007. Level 1 BOL graduates had a relatively high unemployment rate of 10 per cent and the average initial period of unemployment for BOL 1 graduates was 1.9 months in 2007 (OCW, 2010).

Table C3.7 Labour market positions of BOL graduates, 1.5 years after completing training, 2007

	BOL 1	BOL 2	BOL 3	BOL 4
Initial unemployment (in months)	1.9	1.2	0.6	0.4
Unemployment rate (in %)	10	8	4	3
Flexible employment (in %)	72	46	44	40
Subsequent study programme (in %)	23	32	27	55
Same/related study programme (in %)	37	50	73	76

Source(s): OCW (2010); Economix.

Graduates entering employment from intermediate vocational training do so differently for both learning pathways (Hövels and Roelof, 2007). A relatively high 83 per cent of BBL (work-based) graduates, but only 42 per cent of BOL (school-based) graduates, were employed six months after completing training (Table C3.8). It needs to be kept in mind that BBL students already hold a work position during their training and thus may find employment earlier on completion than BOL graduates. BBL graduates often start working at the company which provided their training (75 per cent of apprentices are taken on by their training company: Colo 2010d). BOL graduates often continue with higher vocational education. Around half of the BOL level 4 graduates continued with HBO in 2007 (Hövels and Roelof, 2007).

Table C3.8 Destination of MBO graduates six months after completing training

%	Employed	Employed and in education	In education	Unemployed	Other
BOL	42	23	29	5	1
BBL	83	11	1	3	1
Total	56	19	20	4	1

Source(s): Hövels and Roelof (2007); *Economix*.

As mentioned previously, it is possible to switch between the BOL and BBL track (see Section C2.3). In the school year 1998/99 (systematic data for later years are not available) around 8,800 students switched within MBO training (2 per cent of all MBO students). The majority of trainees switched from BOL to BBL (90 per cent). In this context, income plays a crucial role. Apprentices who receive remuneration (i.e. BBL learners) will not easily give this up for BOL training. Moreover, for most apprentices it is not easy to return to school-based full-time learning as they are not longer used to learning in classrooms (Hövels and Roelofs, 2007).

C3.3 Efficiency

C3.3.1 Economic benefits and labour market flexibility

The existence of both school-based and work-based learning pathways secures the supply of an adequate number of training positions. The mixed structure of intermediate VET can cushion the effects of economic cycles. While during upswings the supply of apprenticeship positions increases, it decreases during downturns. The supply of school-based training is, however, independent of economic developments and can thus absorb those students who do not receive an apprenticeship position (Hövels and Roelof, 2007).

The school-based track is able to better integrate people who have low level qualifications or are socially or educationally disadvantaged due to easier access: it can provide training for trainees of levels 1 and 2 and for those who generally have difficulties in receiving an apprentice position. Moreover, BOL optimises the upward mobility from MBO to HBO. The work-based track offers good opportunities for those who finish their school-based training prematurely to complete their training at a later point in time.

Employers and students also gain from the mixed structure of MBO training. Students can participate in vocational training according to their preferences for work-based or school-based learning. Employers can recruit their workforce according to their preferences for employees with a higher share of work experience or with a higher share of theoretical knowledge.

C3.3.2 Social integration

The labour market performance of Dutch young people is among the best in the OECD. This is mirrored by the performance of MBO graduates: six months after completion of training around 56 per cent of MBO graduates were employed (see Section C3.2). Moreover, the unemployment rates from MBO 3 and 4 graduates lay between 0 per cent and 4 per cent in 2007, one and a half years after completing training (Hövels and Roelof, 2007)). The MBO levels 1 and 2 have lower chances in the labour market, in part because MBO level 1 does not correspond to the basic requirements of the labour market. Job opportunities, job security and remuneration increases with the level of MBO completed (OCW, 2010).

In the Netherlands a person with a senior secondary or post-secondary non-tertiary vocational education earns on average 15 per cent more than a person with a qualification below this level (see Section C6.3) (OECD, 2010b). Those with BBL qualifications earn higher wages than those with BOL qualifications, which can be partly explained by the fact that BBL graduates have more work experience. According to expert interviews, the difference is in the range of 25 to 35 per cent higher wages. However, experts indicate that BOL graduates from levels 3 and 4 can catch up their arrears over the course of their working careers (Hövels and Roelofs, 2007).

Compared to early school-leavers, MBO 2 graduates earn on average 15 per cent more per working hour (OECD, 2010b). The percentage of MBO 2 graduates with a permanent working contract is also significantly higher than for early school-leavers (OCW, 2010). Compared to graduates from tertiary education, graduates from vocational training have lower incomes: university graduates earn on average 54 per cent more than graduates from vocational training (OECD, 2010b).

People of foreign (developing nation) descent more often enter lower levels of MBO and are more likely to embark on the BOL pathway than apprenticeship training (BBL). Consequently, their job opportunities and wages are lower than for people of Dutch descent (Expert interview).

C4. Economic and social impact

C4.1 Public net present value of training

From the government's perspective investment in intermediate vocational training has positive long-term economic benefits, as a flexible competence-oriented work force is created that supports business competitiveness and addresses skills shortages. A well working intermediate level VET system leads to lower unemployment rates which reduce unemployment costs for the government.

The benefits to the government for its investment in intermediate level VET arise in the form of income tax effects and social contribution effects. According to the OECD (2010b), the public present value for an individual obtaining upper secondary or post-secondary non-tertiary education as part of their initial education in 2006 was US\$ 36,043 (€26,941) for males and US\$ 50,869 (€38,024) for females. The value for males lay at around the OECD average while the value for females exceeded the OECD average by 75 per cent.

C4.2 Challenges from demographic change and skills shortages

C4.2.1 Skills shortages and forecasts

Since the middle of 2006, manufacturers from the metal industry, electrical engineering industry and transportation industry have reported labour shortages. Order books were full, but companies could not supply the demand as there was a lack of adequately skilled personnel (Bundesagentur für Arbeit, 2008). In 2007 around every tenth manufacturer indicated that skills shortages hampered production growth. In the booming construction sector the general supply of workers and skilled workers as construction engineers was also limited (Bundesagentur für Arbeit, 2008). In 2008 skills shortages were also reported in the healthcare and technical sectors (Visser and Cox, 2008).

The Research Centre for Education and the Labour Market (ROA) conducts labour market forecasts and skills projections. Every other year, the organisation publishes a report, *The labour market by education and occupation in 20xx*, which offers an analysis of labour market developments. According to the recent report from May 2009 (ROA, 2009), which analyses the labour market between 2009 and 2013, the total number of workers in the Netherlands will decrease by 0.6 per cent between 2009 and 2013.

In the ROA forecast the development of employment based on educational attainment is investigated (ROA, 2009). The forecast expects increasing demand for workers with an MBO qualification in the sectors of health and social care and the engineering sectors,

including process engineering and food technology (Table C4.1). A drop in the demand for MBO workers will be in the MBO economy sector (especially for tourism and recreation). The demand for MBO socio-cultural qualifications is positively impacted by the rising demand for care qualifications and is negatively impacted by a lower demand for catering qualifications.

Table C4.1 Development of employment by training attainment:
Change for 2008, forecast for 2009-2013 on an annual average

Training category	Number (2008)	Total (%) (2008)	Forecast (%) (2009-2013)
MBO economy	-35,600	-4	-0.9
MBO green	-6,700	-5	-1.0
MBO engineering	3,200	0	0.1
MBO socio-cultural	8,000	1	0.3
MBO health care	7,100	4	0.7

Source(s): ROA (2009); Economix.

Regarding the match of the demand and supply of workers, labour prospects are also being investigated by ROA (2009). If the value is lower or equal to 1.00 the outlook for graduates to find work are good, as the supply of workers is less than the demand for them. If the value is above 1.00, graduates will need more time to find a job in the medium term. MBO graduates from different sectors generally have good employment prospects, with only the outlook for graduates from the economic learning pathways looking unfavourable (Table C4.2). The generally favourable prospects for MBO graduates are influenced by an above average replacement demand for workers in the next few years and a below average inflow of graduates. For MBO, skills shortages will probably arise in the engineering sector as the number of MBO graduates in this sector is quite low (ROA, 2009).

Table C4.2 Labour market prospects for MBO graduates until 2014

Training category	Value
MBO green	0.97
MBO health care	0.98
MBO engineering	1.02
MBO socio-cultural	1.05
MBO economy	1.10

Source(s): ROA (2009); Economix.

C4.2.2 The importance of validation for future flexibility

Lifelong learning becomes more and more important against the background of demographic change and skills shortages. Based on existing quality assurance methods and the *Common European Principles for the Identification and Validation of Non-formal and Informal Learning* (European Commission, 2004)⁴⁴, a so called Accreditation of Prior Learning (APL) code has been developed, which allows all Dutch people to upgrade previously acquired skills to higher qualification levels. Further improvements regarding transparency and comparability will be needed to make the APL more consistent (Kenniscentrum EVC, 2009). Moreover, a cultural shift in many ways is required according to the Dutch Knowledge Centre for APL:

- 'from thinking in terms of one education and training programme for all to thinking in tailor-made training programmes on demand for individuals;
- from institutional perspective to individual perspective on learning throughout life;
- from focus on the content of learning programmes as truth in itself, to putting the focus on professional performance and competences;
- from thinking in terms of examination in formal settings to thinking in valuing learning in different contexts' (Kenniscentrum EVC, 2009).

According to the Lisbon Strategy 2000 (European Commission, 2000) lifelong learning indicator, 16.6 per cent of the Dutch population between 25 and 64 participated in continuing education in 2007 (OCW, 2009). This is low compared to other EU countries (EU 27 average was 30 per cent in 2005).

A higher flexibility of the intermediate training system and intermediate skills supply has been targeted by the implementation of the new national qualification framework (see Section C2.4), which is based on competencies. More exchange and co-operation has been sought between (vocational) education and industry to improve the match between educational outcomes and the needs of the labour market. Therefore, competence-based qualification profiles have been developed. The introduction of the national qualification framework targeted the following aspects:

- improved transparency of national qualification framework;
- improved flexibility within the national qualification framework;
- continuous adaption of the national qualification framework to innovations and changes in the labour market and society;
- strengthening the partnership between national Centres of Expertise and educational institutions;

⁴⁴ These common principles have since been updated in the form of *European guidelines on validating non-formal and informal learning* (Cedefop, 2009).

- intensified dialogue between social partners and educational institutions within the Centres of Expertise.

No research evaluation is available as yet. According to several expert interviews, the new national qualification framework offers a large comparability of occupational competences, which are acquired during training. The framework of the national qualification framework is the same for all occupations and the qualifications and competences required differ for the occupations. This makes it easier to switch between sectors as a person from the health sector may also have gained parts of qualifications needed to work in another sector. This can easily be checked by the national qualification framework which shows which qualifications a person holds.

C4.3 Economic restructuring and competitiveness

C4.3.1 Economic restructuring

After World War II, vocational education and training was strongly influenced by industrialisation. The main part of vocational education comprised technical education. These days, the economic structure is characterised by a more knowledge oriented and service oriented economy with higher female participation. This has changed the knowledge and skills required for the employability of the workforce and led to an increase in qualification requirements for all professions. This puts pressure on young people at lower qualification levels of vocational education, as the demand for low skilled workers will shrink in the coming years (Karsten, 2006).

C4.3.2 Competitiveness

According to a study by Nieuwenhuis (2006), innovation will be vital for the competitiveness of Western economies in general and for the Dutch economy in particular. The latter is expected to increasingly develop towards a global market, in which information technology is an important driver for the rapid exchange of knowledge and where services and products are globally traded and exchanged. Work processes will become more knowledge intensive and the required knowledge will change quickly. Innovation and technological development will increasingly determine the nature of work in the various levels of Dutch society.

The demand for qualified professionals in the labour market will change as the economic structure moves towards knowledge-intensive work processes. As the majority of an age cohort graduates from intermediate vocational training, MBO training will have to manage the demand for new graduates and competencies. MBO training needs to offer a national qualification framework which can flexibly adapt to new skills needs and workers need to adapt to new qualification requirements. In this context, lifelong learning becomes

increasingly important for the further qualification of employees. The success of both the flexibility of intermediate level vocational training and lifelong learning is crucial for the employability of the workforce and the competitiveness of the Dutch economy. Dutch educational policy addresses lifelong learning (see Section C4.4) and the intermediate training system has been made more flexible by implementation of the new competence-based national qualification framework (see Section C4.2).

C4.4 Adjustment needs from the public stakeholders' perspective

C4.4.1 Priorities of the government

The government aims to improve the quality of vocational education and adapt to developments in the labour market. Thus, the *Strategic Agenda for Vocational Training and Adult Education 2008-2011* (OCW, 2008) was published in 2008, which addresses the following priorities (Eurydice, 2009):

- A better match (qualitative and quantitative) between vocational education and the labour market;
- Better quality of training by new-style qualification guidelines by August 2010;
- A higher cohesion between vocational education (VMBO, MBO) and professional education (HBO) to reduce drop-out rates and to increase the number of skilled workers; and
- A higher participation of the young, elderly, and disabled in vocational education to improve their competences and job opportunities in the labour market.

The government also wants to tackle the number of drop-outs from vocational education with the aim of reducing the number of drop-outs by 50 per cent, from 71,000 in 2002 to 35,000 by 2012. This is being pursued by several programmes that facilitate transfer and mobility within the vocational education sector and keep pupils at school by making education more attractive by incorporating sports and culture (Eurydice, 2009).

C4.4.2 View of social partners

According to the Federation of Dutch Trade Unions (*Federatie Nederlandse Vakbeweging*, FNV), the intermediate vocational training system is important to form a high quality knowledge society. Moreover, vocational training is crucial for lifelong learning so that adults can upgrade their skills, retrain for another job or to re-enter the labour market. The FNV calls for a reduction in school drop outs by improving the connection between VMBO, MBO and HBO. The match between MBO and the labour market is essential, for which the Centres of Expertise play an important role. They support the improvement of the connection between education and the labour market, the

recruitment of apprentices and the quality of training. Finally, the FNV mentions that the practical elements of MBO training are important and need to be supervised by qualified staff (FNV, 2010).

According to the Netherlands Confederation of Industry and Employers, the involvement of sectors in intermediate vocational training is important to improve the match between supply and demand and for the implementation of a competence-based vocational education. Moreover, it is indicated that costs for companies regarding BBL and BOL have increased. The tax deductible sum is only valid for companies who train BBL-apprentices. For those who take on BOL trainees for internships, the costs of training have also strongly increased in the last five years due to competence-based learning which has increased the percentage of learning within companies. Thus, it is argued that the tax deductible sum should apply to all companies who offer training (Renique, 2010).

C4.4.3 Future challenges for the quality of training

Quality assurance is a central priority of educational policy in the Netherlands, as the vocational institutions work with a high degree of autonomy. Every year the Dutch Inspectorate of Education determines if schools from the education system meet the standards for basic educational quality. According to the assessment for the years 2008/2009, around 11,000 courses were offered in secondary vocational training. Of these 44 were evaluated as being unsatisfactory and 411 as being weak. Almost one fifth (18 per cent) of the school boards provided weak or unsatisfactory courses (Dutch Inspectorate of Education, 2010).

In 2009, around 69 per cent of students in secondary vocational training obtained a diploma. This was an increase of nine percentage points compared to 2003. There is, however, still a need to increase the number of students who graduate successfully. Moreover, there is an urgent need for qualified teachers at all levels of education. In secondary vocational training, one tenth of lessons are taught by a teaching assistant and five per cent of the staff are not qualified pedagogically or didactically. In the future many teachers will retire. Thus, qualified teachers are needed to guarantee good teaching of qualified personnel (Inspectorate of Education, 2010).

According to a study by Cedefop, there is still need for further modernisation of vocational education. The spearheads for intermediate vocational training are summarised in the following (Visser, 2009):

- turning towards competence-based learning in multiple forms;
- more active forms of work, which implies a higher level of independence and self-regulation amongst participants in vocational training;

- a greater variety in practical learning and practical applicability of knowledge;
- development of vertical learning pathways that transcend the existing types of vocational training;
- different forms of support for participants (coaching, mentoring, career guidance);
- introducing various instruments for assessment.

According to an expert interview, the well-structured procedures in the Dutch system also slow down the adaptation of training curricula. It often takes too much time for the adaptation as the training centres are often too large and not specialised enough. Moreover, the coordination of all stakeholders can be time-consuming. This leads to an adaptation which lags behind innovations and new technologies.

The quality of the work-based learning track (BBL) regarding contents, guidance and assessment of work-based training during apprenticeship training is, according to research, not guaranteed. Moreover, the coordination of training at the company and at vocational schools is not working well. In this context learning outcomes are often badly integrated. The quality of apprenticeship training could be improved by establishing quality criteria for work-based learning, enriching learning in the workplace and implementing curricula which connect learning with work experiences. Vocational institutions have to communicate better with companies and apprentices about the contents of training and the qualifications required (Onstenk and Blokhuis, 2008).

C5. Responsiveness of employers

C5.1 Incentives to employers

Participants in the work-based track (BBL) of the Dutch vocational training system have a working contract with a company and are based at the company for approximately four days a week and at vocational schools for one day a week. Practical contents of BOL are implemented at companies during internships. Only in special cases is a practical simulation provided by the training centres.

According to an evaluation from the year 2001, employers often prefer graduates from the BBL track as they are seen to be better skilled workers, who can solve new and unexpected problems faster, are more flexible and incorporate themselves in the company much quicker. The majority of companies also train BBL apprentices for their future needs for skilled workers. Moreover, companies already appoint apprentices in the production processes. This mainly applies to hotels and restaurants as well as to car repair shops, but applies less to company-based services. To a large extent, employers indicate that apprentices outweigh the training costs with productive working time in the company (Hövels and Roelofs, 2007).

These findings differ from the result of a small company survey with 20 training companies. When these companies were asked which different characteristics of BOL and BBL graduates they prefer, they mostly evaluated both tracks relatively similarly. BBL graduates are more often better evaluated regarding skills to adapt, motivation to perform, reliability, and team work. BOL graduates, in comparison, are perceived as having a higher willingness to learn and to develop further, a sense of responsibility, the willingness to travel and to handle problems, and generally having better communication skills (Hövels and Roelofs, 2007).

Formally, in terms of qualification targets (*eindtermen*), BOL and BBL training are equivalent. The decision to employ BBL or BOL graduates depends therefore also on the employers' preference of graduates with more work experience (BBL) or with a higher share of theoretical knowledge (BOL) and this also varies by sector. For example in the service sector, BOL graduates are preferred. Nevertheless, the selected MBO track is not the most important recruitment factor: other factors such as personality, age, work experience, grades and hobbies play a more important role in the employers' decisions (Hövels and Roelofs, 2007).

According to a survey of firms, the motivation of applicants is the most important factor in the employers' recruitment decision. Also important for recruitment are factors such as the occupational area of training, the match of the applicant in the existing team of

employers, the training certificate, the MBO level, and social competences (Hövels and Roelofs, 2007).

Different studies which looked at the costs and benefits of training showed that the net value is negative in the short run. However, it has to be taken into account that in the long run companies gain from employees which match their needs. According to Gelderblom and Collewet (2009), the recruitment of skilled workers is the most important reason for companies to train apprentices. During the work placements, students and companies have many opportunities to find out if they are right for each other. In addition, students can take on professional knowledge from experienced employees and they can be initiated in the company's corporate culture (Colo, 2010d).

Corporate social responsibility is also an important reason for employers becoming a work placement company. They become official partners of the vocational schools and thus part of the Dutch educational infrastructure and help the schools to keep education current and relevant. Employers indicate that training their own personnel maintains the quality of work, supports the management of knowledge and skills within the company and gives them an impact on training contents (Colo, 2010d).

Those companies which do not train often mention that they have not thought about the possibility of providing training or find that they have no adequate work for an apprentice. Costs incurred in taking on an apprentice or financial resources are not mentioned very frequently as reasons for not providing training (Gelderblom and Collewet, 2009). Small companies more often have problems in providing apprenticeship training: apprentices are obliged to a prescribed learning programme and small companies do not always have the resources to offer all elements of the programme.

C5.2 Costs of training

The net employer costs of MBO training can be estimated to be €1.9 bn in 2009. According to unpublished CBS data (CBS, 2011c), the net costs per student amounted on average to €9,361 for BBL and €773 for BOL students. This value partly differs from another calculation for the cost of companies for providing training to BBL and BOL students. According to that calculation (Detmar and de Vries, 2009), which comprised a survey of 257 companies, the average training costs per year are around €12,000 for apprentices (BBL) and around €6,000 for interns (BOL) (Table C5.1 and Table C5.2). The costs in the latter calculation may be estimated higher as the capitalised productivity of students was most likely underestimated.

Table C5.1 Costs, expenses and revenues to employers per apprentice (BBL) per year

Costs, expenses and revenues	Yearly per apprentice (Euros)
Support costs	7,652
Salaries incl. reimbursement	15,752
Total costs and expenses	23,404
Capitalised productivity of apprentice	8,691
Tax deductible sum	2,500
Total revenue	11,191
Average training costs per apprentice	12,213

Source(s): Detmar and de Vries (2009); Economix.

Table C5.2 Costs, expenses and revenues to employers per trainee (BOL) per year

Costs, expenses and revenues	Yearly per trainee(Euros)
Support costs	6,215
Salaries incl. reimbursement	3,200
Total costs and expenses	9,415
Capitalised productivity of apprentice	3,512
Total revenue	3,512
Average training costs per apprentice	5,902

Source(s): Detmar and de Vries (2009); Economix.

The costs for companies differ regarding different types of MBO students. Work-based (BBL) students have a working contract and receive a wage, which is negotiated in collective agreements, and is equivalent to at least the minimum wage. Most of the companies pay BOL trainees an allowance for the work they perform in the company. In general, an internship allowance is paid. Moreover, for both types of MBO students the companies have to spend money on supervising students during their work placements. Often companies also reimburse their apprentices/trainees with further costs such as for books, clothes, instruments and examination fees, etc. (Detmar and de Vries, 2009). The companies receive a tax deductible sum of €2,500 for every apprentice they train.

C5.3 Direct and indirect returns

C5.3.1 Productivity of MBOs

During the time apprentices (BBL) and trainees (BOL) are in the company, they are involved in regular business activities. However, since they simultaneously learn and are still in training, they cannot work productively for a whole working day. In addition, apprentices and trainees are not always fully effective because they are not sufficiently qualified for certain activities, or because certain activities may cause risks to the apprentices/trainees. In a survey of 257 companies in 2008, companies were asked to indicate the share of working time a student is productive. On this basis, the average

productive working hours of apprentices and trainees were calculated. On average, apprentices work productively for 66 per cent of their working time and trainees around 50 per cent of the time spent in the company. The productive working hours of apprentices and trainees in practice varies with the level of training. As students develop further during the training process their employability also increases. The productive working hours of apprentices and trainees at MBO level 1 was significantly lower than that of students at other levels. The productive time of students, however, indicates little about the contribution of apprentices and trainees relative to the companies' turnovers and profits (Detmar and Vries, 2009).

C5.3.2 Future workforce and higher quality of work

Employers offer training to ensure their future workforce. After graduation, 75 per cent of students are employed by their training company, making 'work placement by far the most important tool in employment strategy' (Colo, 2010d, p. 2).

Research shows that training MBO students is the best way to recruit new personnel and that the quality of work improves if a company becomes a training company. The increased quality of work may be explained by higher employee motivation to improve their own skills level on the one hand, and by fewer errors and higher productivity of employees on the other hand, as they have to serve as examples for the apprentices/trainees (Colo, 2010d).

C5.3.3 Higher esteem

Companies which train gain an additional social role. The status of a company is conducive to the company's competitiveness and reputation. Moreover, the Dutch Ministry of Finance awards a tax deductible sum to companies that offer work placements. In addition, a recognised work placement company also receives support from its industry organisations (Colo, 2010d).

C5.3.4 The risk of poaching

The fact that graduates are provided by both learning pathways lowers the risk of poaching because if an MBO graduate switches to another company, a qualitatively similar MBO graduate can easily be recruited. The costs of MBO training are not high compared with the costs for regular employees, given that during training the apprentices/trainees contribute with productive work. Employers' investment in training is therefore low which additionally decreases the risk of poaching.

C5.4 Adjustment needs from employers' perspective

The role of employers in intermediate vocational training could be increased. After the WEB law was implemented in 1996, companies and trade unions were officially integrated in the vocational training system for the first time, and could exert influence on the contents of training and skills certification. However, according to several expert interviews, employers cannot influence the supply of training courses at vocational schools. This can lead to mismatches between companies' labour needs and the supply of workers.

Small firms would often like to train but do not have the resources to offer all elements of the prescribed learning programme. This problem has partly been solved by cooperating with other firms that specialise in training apprentices. Apprentices are employed by so-called 'cooperative firms' and are financed by participating companies, tariffs for apprentices, outsourced work for the cooperating firms, sector funds and fiscal incentives (Gelderblom and Collewet, 2009). This initiative is particularly important in the green sector and the building and installation sector.

According to a small survey of firms in 2002, there is a need for improvement on both tracks (BOL and BBL). The importance of making improvements was assessed on a scale of 1 (very important) to 5 (hardly necessary). The average result of the companies interviewed lay at 2.4. In both learning pathways, companies indicated the importance of good supervision which needs to be improved in vocational schools. Moreover, better cooperation between companies and schools regarding contents and structure of training, education materials, requirements for apprentices and grading was indicated by the companies (Hövels and Roelofs, 2007). An improvement in the coordination of theoretical and practical contents was also indicated as necessary.

C6. Responsiveness of participants

C6.1 Incentives to participants

In the Netherlands, the majority of students participate in intermediate vocational training (MBO). For many young people, financial aspects play a crucial role in choosing the work-based (BBL) track (Hövels and Roelofs, 2007).

Participation in MBO training leads to intermediate level skills which are needed on the labour market. It leads to higher incomes and lower unemployment risks. The flexibility of the Dutch system guarantees that there are no dead-end streets in the system and many young people take advantage of that permeability. Since August 2007, it has been compulsory for all young people up to 18 years of age to attend school until they attain a basic qualification (HAVO, VWO or MBO level 2 certificate).

According to a small survey of 55 MBO students about their reasons for starting BOL training and not BBL training, it was indicated that BOL training offered more opportunities for further education upon completion (indicated by 72 per cent of interviewees). In addition, many suggested that BOL training offered better job and career opportunities (52 per cent) and that a BOL diploma was worth more (46 per cent). Another reason given was the wish to complete an entire training course/qualification (43 per cent) (Hövels and Roelofs, 2007).

C6.2 Costs of training

Both costs apply: both school-based (BOL) and work-based (BBL) students have to pay tuition fees (school fees and course fees) for their training. Full-time BOL trainees pay tuition fees, and apprentices and part-time trainees pay course fees which are legally prescribed. Tuition fees amounted to €993 in the school year 2008/2009 (Eurydice, 2009). Course fees vary depending on the MBO level of the course. In 2008/2009, course fees for assistant-level and basic vocational training were €205, while the course fees for middle-management and specialist training equalled €499 (Eurydice, 2009). The fees for BOL students are much higher than for BBL students as they spend much more of their time in vocational schools. On 1 August 2005 tuition fees were abolished for all pupils and students aged 16 and 17.

BOL students aged 18 and over can apply for financial support. The financial support of BOL students at levels 1 and 2 includes a basic scholarship, a possible additional scholarship and a student ticket for the public transportation system (see Table C6.1). Trainees at this level do not have to pay back the financial support they receive. BOL trainees at levels 3 and 4 receive a performance-based scholarship. It comprises the

same elements as for the level 1 and 2 trainees and an additional performance-based share which the trainees do not have to pay back if they complete their training within ten years (Hövels and Roelofs, 2007). All level BOL trainees can also apply for a loan (at the IB-Groep).

Table C6.1 Monthly public grant for vocational training (Aug-Dec 2007)

€	Resident at parents' house	Resident out of parents' house
Basic scholarship	71.57	233.53
Additional scholarship	311.38	292.46
Loan	155.89	155.89
Sum	538.84	681.88

Source(s): Hövels and Roelofs (2007); Economix.

Foregone earnings arise during a training period. As the Dutch law prescribes compulsory participation in the education system until the age of 18 or on attaining basic qualifications, an earlier entrance to the labour market is not possible. According to the OECD (2010b), the forgone earnings of an individual obtaining upper secondary or post-secondary non-tertiary education as part of their initial education in the Netherlands in 2006, were US\$ 44,221 (€33,055) for men and US\$ 42,220 (€31,559) for women. This is above the OECD average of US\$ 27,630 (€20,653) and US\$ 25,504 (€19,064), for men and women respectively (Table C6.2).

Table C6.2 Private net present value for an individual obtaining upper secondary or post-secondary non-tertiary education in the Netherlands (2006)

US\$	Male	Female
Direct costs	-3,666	-3,666
Forgone earnings	-44,221	-42,220
Total costs	-47,887	-45,886
Gross earnings benefits	115,846	121,122
Income tax effects	-38,453	-17,599
Social contributions effect	-18,703	-46,965
Transfers effect	-5,949	-12,382
Unemployment effect	13,179	24,165
Total net benefits	65,919	68,340
Net present value	18,032	22,454

OECD, (2010b).

The OECD (2010b) also calculated the net present value of investing in upper secondary education or post-secondary non tertiary vocational training (Table C6.2). For this calculation the life-time costs and benefits are discounted back to the start of the investment. Graduates benefit from gross earnings and unemployment effects, while income taxes, social contributions, and transfer effects lower the benefit side. In the

Netherlands the net present value was US\$ 18,032 (€13,479) for men and US\$ 22,454 (€16,784) for women in 2006. This is considerably below the OECD average of US\$ 67,902 (€50,756) for men or US\$ 47,064 (€35,179) for women. The low net present value of training in the Netherlands is mainly due to the comparatively high individual (learner) costs of training.

C6.3 Indirect and direct returns

C6.3.1 Training allowances

Apprentices are paid according to the minimum wage. In the Netherlands every worker under 65 years of age is entitled to the Dutch minimum wage and holiday allowance. The monthly minimum wage is age-related. In Table C6.3 the yearly, monthly, weekly and daily gross minimum wages are illustrated by age group. As well as being age-related, the net amount also depends on taxes and premiums, which are deducted from the wage and will vary individually.

Table C6.3 Gross minimum wage rates in Euros, January 2011

Age (years)	Yearly (€)	Monthly (€)	Weekly (€)	Daily(€)
23 +	17,093	1,424.40	328.70	65.74
22	14,529	1,210.75	279.40	55.88
21	12,392	1,032.70	238.30	47.66
20	10,512	876.00	202.15	40.43
19	8,974	747.80	172.55	34.51
18	7,777	648.10	149.55	29.91
17	6,752	562.65	129.85	25.97
16	5,897	491.40	113.40	22.68
15	5,128	427.30	98.60	19.72

Source: Ministry of Social Affairs and Employment (2011).

C6.3.2 Life-time benefits of training

In the Netherlands, people with an upper secondary and post-secondary education (ISCED 3 and 4) earned 15 per cent more than a person with an education below upper secondary education in 2006 (OECD, 2010b). Moreover, job prospects are higher for those with an upper secondary or post-secondary education. Those with an education below an upper secondary education had an employment rate of 63.7 per cent compared to 81.5 per cent of those with an upper secondary or post-secondary non-tertiary education in 2008. The unemployment rates in 2008 were also higher for those with an education below upper secondary education and lay at 3.4 per cent compared to 2.1 per

cent (OECD, 2010b). However, the low unemployment rates for those with an education below upper secondary education diminish the incentives to invest in higher education.

C6.4 Adjustment needs from participants' perspectives

In the previously mentioned survey of 55 BOL students (Hövels and Roelofs, 2007), they were also asked how satisfied they were with the different aspects of their training. The students indicated that they were very satisfied with the class community, the quality of the internships, the orientation towards theory and the technical knowledge of the teachers. They were less satisfied with the financial burden (tuition fees etc.), the quality of the school buildings, and the up-to-datedness of training contents (Table C6.4). As the survey is relatively small, the significance and generalisation of findings is limited.

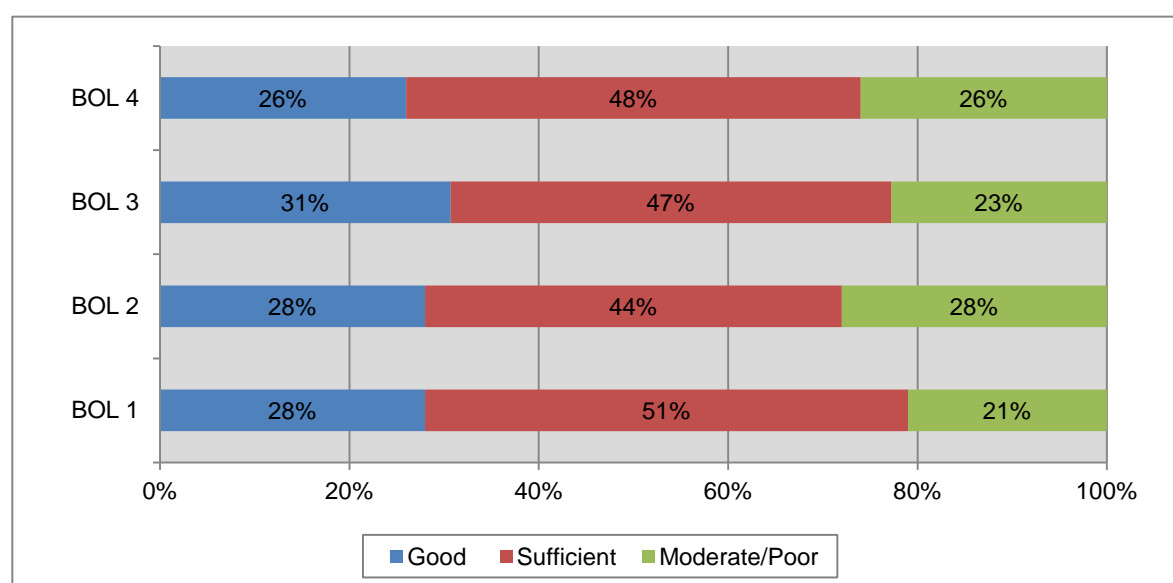
In another survey by the Research Institute for Education and the Labour Market (ROA 2008) of BOL graduates, they were asked one and a half years after graduation to evaluate the alignment of skills acquired during their training and their present position (OCW, 2010). The share of people who assessed the alignment as being moderate or poor was between 21 per cent and 28 per cent at the different BOL levels. Between 28 per cent and 31 per cent thought that the alignment was good and between 44 per cent and 51 per cent indicated the alignment as being sufficient (Figure C6.1).

Table C6.4 Satisfaction with different aspects of BOL training
(1= very satisfied, 5= very unsatisfied)

	Average
Class community	1.90
Quality of internship (contents and type of training)	2.35
Orientation towards theory	2.37
Technical knowledge of teachers	2.46
Burden of homework (after school)	2.56
Orientation towards praxis	2.79
Supervision and counselling provided by teachers	2.87
Quality of infrastructure	2.93
Variation in learning contents	2.94
Balanced proportion between theory in school and praxis in companies	2.98
Transfer of learning competences	3.02
Transfer of social competences	3.04
Organisation of training	3.06
Pedagogical-didactical skills of teachers	3.06
Availability of modern technical equipment	3.15
Up-to datedness of training contents	3.17
Quality of school building	3.46
Financial burden	3.60

Source(s): Hövels and Roelofs (2007); Economix.

Figure C6.1 Alignment of education with later employment in 2007 (BOL graduates)



Source(s): OCW (2010); Economix.

Bibliography (Netherlands)

Anderson, K.M. and Hassel, A. (2008) *Pathways of Change in CMEs: Training Regimes in Germany and the Netherlands*, Working Papers, No. 17, April 2008, Hertie School of Governance, Berlin. Available: http://www.hertie-school.org/binaries/addon/515_hsog_wp_no_17.pdf.

Bundesagentur für Arbeit (2008) *Mobil in Europa: Niederlande*. Available: http://www.volksbank-heiligenstadt.de/fileadmin/extern//Mobil_Europa_Niederlande.pdf

CBS (2011a) *Quarterly national accounts; changes*. Statistics Netherlands, The Hague. Available: <http://statline.cbs.nl/StatWeb/publication/?VW=T&DM=SLEN&PA=81171ENG&LA=EN>. [Accessed July 2011].

CBS (2011b) *Statistical Yearbook 2011*. Statistics Netherlands, The Hague. Available: <http://www.cbs.nl/NR/rdonlyres/D4D0493E-8A94-4509-A0F1-310ADD8E7614/0/2011A3pub.pdf>.

CBS (2011c) *Costs per MBO student*. (unpublished data)

CBS (2010a) *StatLine*. Statistics Netherlands, The Hague. Available: <http://statline.cbs.nl/StatWeb/dome/?LA=EN>. [Accessed December 2010].

CBS (2010b) *Nearly one in five first-year mbo students leave school without a diploma*, web magazine, 26. October 2010. Statistics Netherlands, The Hague. Available: <http://www.cbs.nl/en-GB/menu/themas/onderwijs/publicaties/artikelen/archief/2010/2010-3222-wm.htm>.

CBS (2010c) *Senior secondary vocational students cost more than higher education students*, web magazine, 16. December 2010. Statistics Netherlands, The Hague. Available: <http://www.cbs.nl/en-GB/menu/themas/onderwijs/publicaties/artikelen/archief/2008/2008-2634-wm.htm>.

CBS (2009) *Statistical Yearbook 2009*. Statistics Netherlands, The Hague. Available: <http://www.cbs.nl/NR/rdonlyres/421A3A8C-956D-451D-89B6-D2113587F940/0/2009a3pub.pdf>.

Cedefop (2010) *Skills supply and demand in Europe: Medium-term forecast up to 2020*. CEDEFOP, Luxembourg. Available: http://www.cedefop.europa.eu/en/Files/3052_en.pdf.

- Cedefop (2009) *European guidelines for validating non-formal and informal learning*. European Centre for the Development of Vocational Training (CEDEFOP), Luxembourg. Available: http://www.cedefop.europa.eu/EN/Files/4054_en.pdf.
- Cinop (2008) *General education, vocational education and training in the Netherlands*. Cinop, Den Bosch. Available: <http://cinop.brengtlerentotleven.nl/smartsite.dws?ch=ENG&id=1190>.
- Colo (2010a) *Senior Secondary VET*. Colo, Zoetermeer. Available: <http://www.colo.nl/senior-secondary-vet.html>. [Accessed December 2010].
- Colo (2010b) *Brochure prepared for the future: Dutch qualifications for the labour market*. Colo, Zoetermeer. Available: <http://www.colo.nl/publications.html>.
- Colo (2010c) *Colo Barometer of work placements and training on the job*, December 2010. Colo, Zoetermeer. Available: <http://www.colo.nl/publications.html>
- Colo (2010d) *Workplacement companies NL*. Colo, Zoetermeer. Available: <http://www.colo.nl/publications.html>
- Detmar, B. and de Vries, I. (2009) *Beroepspraktijkvorming in het MBO: Ervaringen van leerbedrijven*. DIJK 12, Amsterdam. Available: http://api.ning.com/files/1zqRkRIShxbASW68czsx-YupG13B1Ox1WLtYzLa7pHPR3ELQsJ3kcpsBIF9UnAxXpXf*mBqUkdLst4TkPeZC63ydnpmPb2nE/Beroepspraktijkvormingervaringenleerbedrijven.pdf
- Eurofound (2009) *Netherlands: Labour market*. European Foundation for the Improvement of Living and Working Conditions, Dublin. Available: <http://www.eurofound.europa.eu/emire/NETHERLANDS/LABOURMARKET-NL.htm>. [Accessed April, 2011].
- Europass (2010a) *Certificate Supplement, Servicemonteur installatietechniek*. Available: http://www.nlntp.nl/certificate-supplements-p-s.html?file=tl_files/certificaatsupplementen/Engels/P-tm-.
- Europass (2010b) *Certificate Supplement, Verkoopsspecialist detailhandel*. Available: http://www.nlntp.nl/certificate-supplements-p-s.html?file=tl_files/certificaatsupplementen/Engels/P-tm-.
- European Commission (2004) *Common European Principles for the Identification and Validation of Non-formal and Informal Learning*. European Commission, Brussels. Available: http://ec.europa.eu/education/lifelong-learning-policy/doc/informal/validation2004_en.pdf.

- European Commission (2000) *Lisbon European Council 23 and 24 March 2000: Presidency Conclusions*. European Commission, Brussels. Available: http://www.europarl.europa.eu/summits/lis1_en.htm.
- Eurostat (2011). *Statistics*. European Commission, Brussels. Available: <http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/themes>. [Accessed April, 2011].
- Eurydice (2009) *Organisation of the education system in the Netherlands 2008/9*. European Commission, Brussels. Available: http://eacea.ec.europa.eu/education/eurydice/documents/eurybase/eurybase_full_reports/NL_EN.pdf.
- FNV (2010) *Visie FNV op het beroepsonderwijs/educatie*. Federatie Nederlandse Vakbeweging. [Unpublished paper].
- Geledersblom, A. and Collewet, M. (2009) *Collective Measures: Country Report Netherlands*. UK Commission for Employment and Skills, Wath-Upon-Deane.
- Hövels, B. and Roelofs, M. (2007) *Vollzeitschulische Berufsausbildung in ausgewählten europäischen Ländern mit dualen Berufsbildungsangeboten: Die Niederlande*, Endbericht. Knowledge Centre for Vocational Training and Labour Market (KBA), Nijmegen. Available: http://www.kenniscentrum-ba.nl/doc/pdf/Endbericht%20DUITS_07.pdf.
- Kansopstages (2010) *Arbeidsmarktrapporten kenniscentra*. Available: http://www.kansopstage.nl/templates/mercury.asp?page_id=1475 [Accessed January 2011].
- Karsten, S. (2006) *Onderwijs waarop we kunnen bouwen: De publieke waarde van het beroepsonderwijs*. University of Amsterdam, Amsterdam. Available: <http://dare.uva.nl/document/165345>
- Kenniscentrum EVC (2009) *Information APL in the Netherlands*. Available: http://www.kenniscentrumevc.nl/images/stories/documenten/engels/Information_APL_in_the_Netherlands.doc
- Marzell, K. and Marzell, B. (2010) *KLIKKEN OP NEDERLAND 2010 - Internetführer zur Berufsausbildung in den Niederlande*. Euregio Rhein- Waal, Kleve. Available: <http://www.jumpacrossborders.com/medien/dokumente/Availablefuehrer.pdf>

- Ministry of Social Affairs and Employment (2011) *The minimum wage, everyone is entitled to it*. Ministerie van Sociale Zaken en Werkgelegenheid, The Hague. Available: http://docs.minszw.nl/pdf/135/2011/135_2011_1_26593.pdf.
- NFIA Singapore (2010) *Facts and figures 2010 on education from Statistics Netherlands*. Available: <http://www.nfia-singapore.com/nieuws.html?id=106>
- Nieuwenhuis, L. (2006) *Een drieluik over beroepsonderwijs en innovatie: Vernieuwend vakmanschap*. University of Twente, Twente. Available: http://doc.utwente.nl/57763/1/rede_Nieuwenhuis.pdf.
- OCW (2010) *Key Figures 2004-2008*. Ministerie van Onderwijs, Cultuur en Wetenschap (Ministry of Education, Culture and Science), The Hague. Available: <http://english.minocw.nl/documenten/key%20figures%202004-2008.pdf>.
- OCW (2009) *Joint report on the implementation of the education and training 2010 work programme: The Netherlands' report*. Ministerie van Onderwijs, Cultuur en Wetenschap (Ministry of Education, Culture and Science), The Hague.
- OCW (2008) *Strategische agenda Beroepsonderwijs en Volwasseneneducatie 2008-2011: Werken aan vakmanschap (Strategic Agenda for Vocational Training and Adult Education 2008-2011: Working on Skills)*. Ministerie van Onderwijs, Cultuur en Wetenschap (Ministry of Education, Culture and Science), The Hague. Available: <http://www.rijksoverheid.nl/documenten-en-publicaties/publicaties-pb51/werken-aan-vakmanschap-strategische-agenda-beroepsonderwijs-en-volwasseneneducatie-bve-2008-2011.html>.
- OECD (2010a) *StatExtracts: LFS by sec and age - Indicators*. Organisation for Economic Cooperation and Development, Paris. Available: http://stats.oecd.org/Index.aspx?DataSetCode=LFS_SEXAGE_I_R. [Accessed December 2010].
- OECD (2010b) *Education at a Glance 2010*, Organisation for Economic Cooperation and Development, Paris.
- Oenstenk, J. and Blokhuis, F. (2007) 'Apprenticeship in the Netherlands: connecting school- and work-based learning', *Emerald Education & Training*, Vol. 49, No. 6, pp. 489-499. Available: <http://www.emeraldinsight.com/journals.htm?articleid=1626256&show=html>.

- Reinisch, H. and Frommberger, D. (2004) *Zwischen Schule und Beruf: Aspekte der historischen Entwicklung beruflicher Bildung in den Niederlanden und in Deutschland aus vergleichender Sicht*, Berufsbildung Nr. 32, Europäische Zeitschrift, CEDEFOP, Luxembourg. Available:
http://www.cedefop.europa.eu/etv/Upload/Information_resources/Bookshop/399/32_de_reinisch.pdf.
- Renique, C. (2010) *Skills developments in The Netherlands; the importance of sectoral involvement*. Paper presented at the High Level Conference African private sector, Johannesburg, 8-10 April 2010.
- ROA (2009) *De arbeidsmarkt naar opleiding en beroep tot 2014*. Researchcentrum voor Onderwijs en Arbeidsmarkt (Research Center for Education and the Labour Market), Maastricht. Available:
http://www.roa.unimaas.nl/pdf_publications/2009/ROA_R_2009_5.pdf.
- ROA (2008) *Schoolverlaters tussen onderwijs en arbeidsmarkt 2007*. Researchcentrum voor Onderwijs en Arbeidsmarkt (Research Center for Education and the Labour Market), Maastricht. Available:
http://www.roa.unimaas.nl/pdf_publications/2008/ROA_R_2008_3.pdf.
- The Dutch Inspectorate of Education (2010) *The state of education in the Netherlands 2008/2009*. Inspectie van het Onderwijs, Utrecht. Available:
http://www.onderwijsinspectie.nl/actueel/publicaties/The+State+of+Education+in+the+Netherlands+2008_x002f_2009.html.
- Visser K. (2009) *Netherlands: VET in Europe: Country Report*. CEDEFOP, Luxembourg. Available:
http://libserver.cedefop.europa.eu/vetelib/eu/pub/cedefop/vetreport/2009_CR_NL.pdf
- Visser K., Cox A. (2008) *VET Policy Report: The Netherlands 2008*. CEDEFOP, Luxembourg. Available:
http://libserver.cedefop.europa.eu/vetelib/eu/pub/cedefop/policyreport/2008_PR_NL.pdf.

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