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# Funding skills development

## The private sector contribution

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**Education Sector**

Education 2030

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# Executive summary

Some key points of this report are noted below.

## Background

- The overall objective of this project is to develop a methodology to forecast the amount of revenue that could be raised by means of a training levy.
- The aim of this report is to present the main findings of the literature review that has been carried out for the purpose of this project, along with a methodology to evaluate the potential of private sector resources to invest in technical and vocational education and training (TVET) schemes. This qualitative analysis is also supplemented by some quantitative results to provide an estimate of the amount of resources that could be mobilized from the private sector for training purposes.

## Key messages

- Training levies are important tools to provide a pool of funding which can contribute to the advancement of human capital. The potential of this type of fiscal instrument is especially important for countries that have unstable public budgets.
- The review of the existing literature has pointed out that the vast majority of the research work undertaken has followed a qualitative approach. This is because of a lack of the statistical data that is required to conduct empirical analysis.
- UNESCO's review of the literature has revealed that some pieces of research cover issues such as the general outcomes of training programmes, and the training that has been financed by means of a training levy in a particular sector. However, to the best of our knowledge there is no study that provides forecasts of the potential amount of resources that could be raised by this type of tax.
- In order to contribute to the existing body of knowledge, we propose a conceptual framework which shows how the amount of revenue raised will depend on the levy base and the rate at which the levy is set. However, there are other factors that could influence the final outcome achieved by the relevant levy, such as the economic and institutional context and the general conditions of the labour market.

# 1. Introduction

# 1. Introduction

## 1.1 Rationale for the study

The international community has set an ambitious 2030 Agenda for Sustainable Development. The Agenda calls for an integrated approach to development. Education and training are central to the achievement of the 2030 Agenda. The vision for education is fully captured by Sustainable Development Goal (SDG) 4, 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all'.

In this context, Education 2030 devotes considerable attention to i) technical and vocational skills development, specifically regarding access to affordable quality technical and vocational education and training (TVET); ii) acquisition of technical and vocational skills for employment, decent work and entrepreneurship; and iii) elimination of gender disparity and ensuring access for the vulnerable. Bearing in mind these initiatives, TVET is expected to address multiple demands of an economic, social and environmental nature by helping young people and adults to develop the skills they need for employment, decent work and entrepreneurship, promoting equitable, inclusive and sustainable economic growth, and supporting transitions to green economies and environmental sustainability.

In order to achieve these objectives, mobilizing the means for implementing the technical and vocational skills agenda is crucial. The role of the private sector is fundamental in this context. The Third International Congress on TVET organized in Shanghai in 2012 considered that 'Scaling up existing models of TVET provision to include more young people and adults is not the solution. It also involves a paradigm shift that includes the active involvement of relevant actors, such as industry.'

To provide a full picture of the current policy debate, it needs to be noticed that training funds are an increasingly common vehicle for financing skills for work (CEDEFOP, 2008; Johanson, 2009; Dunbar, 2013; Walther and Uhder, 2014; UNESCO, 2015a, 2015b).

## 1.2 Overview of the report

The aim of this report is twofold. First, we present the main findings of the review of literature on existing funding methods for TVET. UNESCO sees TVET as: comprising education, training and skills development relating to a wide range of occupational fields, production, services and livelihoods. TVET, as part of lifelong learning, can take place at secondary, post-secondary and tertiary levels and includes work-based learning and continuing training and professional development which may lead to qualifications. TVET also includes a wide range of skills development opportunities attuned to national and local contexts (UNESCO, 2015b).

Second, we propose a methodology to estimate the amount of private sector resources that could be available for TVET. The literature review covers a broad scope of reports in order to identify clearly the determinants of the revenue that could be raised by means of training levies. We identify three main types of scheme:

- revenue-generating schemes
- levy-subsidies schemes
- levy-exemption schemes.

Subsequently, we discuss in detail each scheme to analyse its strengths and weaknesses, along with the existing evidence on its efficiency in those countries where it was implemented.

An important issue we encountered while reviewing the existing body of knowledge and developing the methodology was the absence of previous contributions that conducted a similar exercise to the current project. In this context, the present report goes beyond the existing literature since it discusses the effectiveness of several training levies and proposes a method to quantify their potential.

Finally, some estimates of the amount of private sector resources that could be mobilized for training purposes within the next five years are provided.

## 1.3 Structure of the report

After this introductory chapter 1, this report layout is as follows:

**Chapter 2** provides an overview of different schemes of training funds that are currently being implemented, along with some international evidence of their effectiveness and the issues that policy-makers have encountered in implementing them. It also discusses some methodologies of assessment that have been employed.

**Chapter 3** presents UNESCO's approach to estimating the potential amount of revenue that could be raised by means of training levies. It also proposes a proxy for the levy base and identifies key features of the levy rate.

**Chapter 4** provides an overview of the TVET being carried out in the Dominican Republic, along with the estimates of the potential revenue that could be raised by means of training levies.

**Chapter 5** presents similar information to Chapter 4, focusing on the scheme being implemented in Cyprus.

**Chapter 6** shows the estimates that we have produced to evaluate the impact of training levies in Côte d'Ivoire. As in the previous two chapters, some background information on the scheme is provided.

**Chapter 7** presents the methodology and guidelines that a country or institution managing a training fund could follow in order to produce its own estimates.

**Appendix A** presents some guidelines to collate the data that will be required later in this project to test empirically the proposed methodology.

**Appendix B** provides an overview of the studies that have been reviewed for the purpose of this report, along with a summary of their main findings.

**Appendix C** lists the meetings that were held for the purpose of each mission.

# 2.
# Literature review

# 2. Literature review

## 2.1 Introduction

This chapter focuses on the main findings from the review of existing literature on training levies. It starts with the presentation of the key messages that have been identified in the existing body of knowledge with regard to the potential effects associated with the implementation of a training levy.

Next, it outlines a typology to categorize the existing schemes. The remainder of the chapter provides some evidence and a discussion of the different methodologies of analysis that have been employed for the assessment of training levies. Finally, it presents a way forward to overcome the limitations of previous analyses.

## 2.2 Understanding training levies

### Preliminary findings

As defined by UNEVOC/NCVER (2009), a training levy is a tax imposed on employers with a view to financing training activities. In other words, training levies are a means to collect funds from employers. The money collected is then invested in the industry in the form of training. The aim is twofold: to support employers that train their workforce, and to promote skills development.

As acknowledged in the existing literature, an important challenge that policy-makers need to confront is the underprovision of adult learning as a result of market failure or credit constraints (Hoeckel, 2008). In this context, where quite often insufficient efforts are being made by the private sector, public intervention is needed to ensure that the necessary amount of lifelong learning takes place[1]. In general terms, training levies are important tools to provide a pool of funding which could contribute to the advancement of human capital (Dunbar, 2013). The potential of this type of fiscal instrument is quite important for all countries, regardless of the degree of development of their economy. The necessity for public sector involvement has been acknowledged by the existing body of literature. For example, Falch and Oosterbeek (2011) analyse the experience of several European countries in financing lifelong learning. Among their findings are that:

- In England, making training available at low cost has not been as effective as was expected in generating take-up from low-skilled workers;

1 Public intervention can adopt several forms such as tax deductions (effectively subsidizing learning), training levies, delivery of training at low cost or free of charge, and guidance to employees and employers.

- 'Deadweight losses' were identified in Switzerland and the Netherlands. In both countries, a voucher system financed training which would have taken place without the system in half of the cases under consideration;
- The age tax deductions implemented in the Netherlands contributed to the postponement of training activities, since the scheme is not designed to target specific groups, such as low-skilled workers.

## Positive externalities

Training levies also create a means for under-educated members of society to continue to train and build up their human capital. This could be particularly relevant for the informal sector, which tends to employ workers with low levels of education. They provide a useful tool in a context of market failure and the underprovision of continuing education. Specifically, Hoeckel (2008) and Falch and Oosterbeek (2011) argue that in addition to the benefits that a particular employer receives from having a well-trained work force, training provides wider benefits to the whole economy.[2] Examples of these positive externalities are the dissemination of knowledge across the national employment pool (Falch and Oosterbeek, 2011) and greater abilities to innovate (Smith, 2001). However, employers might fail to account for these spillover benefits, and only consider the increased productivity of their own workforce when assessing the potential benefits of providing additional training.

Therefore under free market conditions, the level of training provision is lower than the societal optimum, as employers do not take the additional societal benefits into consideration when assessing whether it is worthwhile to pay for workforce training (see Stone, 2010 for further discussion). Along the same lines, Torres (2012) states that the underinvestment in human capital could be caused by imperfect credit markets, since this type of capital cannot be used as collateral. (That is, human capital is not an asset which can be used to underwrite external financing.) This restricts the demand for lifelong learning as it restricts self-funding opportunities for individuals. Although credit market frictions affect all economies, this issue is particularly relevant to countries that are members of the Organisation for Economic Co-operation and Development (OECD). In these countries capital markets tend to play a larger role in the general development of the economy, and this eventually also affects the financing of training.

## Potential distortions

Despite the potential of training levies to contribute to skills development, the existing literature has also pointed to some distortions that it could create. In particular, levies could raise the cost of employing people, leading employers to either reduce the number of workers they employ, or compensate for the additional cost by paying lower wages (Johanson, 2009).

2 Falch and Oosterbeek (2011) discuss further the positive externalities created by continued learning. They conclude that the externalities are extremely hard to quantify and there is no robust evidence whether the effect is large or small.

Johanson (2009) points out that levy-funding schemes that are supported by an industry act as a form of benefit: that is, those that pay the tax ultimately benefit from the spending that results. However, this report also highlights how unequal access to training schemes 'breeds resentment' and how this compromises the principle of 'benefit taxation'. Ziderman (2002) also emphasizes that there can be pressure on governments to use training levy funds in areas other than training, particularly when they suffer from serious budget constraints. This diversion of funds would also distort the benefit tax aspect of a training levy.

## Detrimental effects for small firms

Another issue that policy-makers need to consider when establishing a training levy is how its effects could differ across sectors and between different-sized companies. A key message from the existing literature is that smaller companies tend not to take up the opportunity to send staff for training. A major reason is that this creates a short-term need to replace staff while they are attending the training, which can be difficult and expensive. Additionally, they may have cashflow constraints that make it impossible to pay the cost of training upfront (Dickinson and Marsden, 2013), even if it will subsequently be refunded. Thus, under certain funding mechanisms, small companies pay the levy but are unable to take advantage of the scheme, as discussed by Johanson (2009). Conversely, larger companies tend to use the training opportunities.[3] This inequality in uptake of the training funded by levies effectively leads to a redistribution of resources from smaller to larger companies.

## Negative effects of large administration costs

Policy-makers should also bear in mind administration costs,[4] which if large could dampen the efficiency of a scheme.[5] Some countries, such as Denmark,[6] have managed to keep the costs low, but many less-developed countries with weak organizational infrastructure find that the costs reach excessive levels. This was true, for example, for Kenya and Tanzania.[7] Moreover, large and inefficient bureaucratic systems mean that companies that try to access the funds also incur expenses, even if they are opportunity costs rather than direct costs. This top-heavy inefficiency has been one of the key problems of the Hungarian system of training levies. As Johanson (2009) highlighted, many Hungarian companies believe that the government and trade unions are excessively involved in the actual training provided. This has eroded private sector confidence in the scheme.

3 See Muller and Behringer (2012) for empirical evidence of the Vlamivorm scheme in Flanders.

4 An example of administration costs is the fees paid to chambers of industry, commerce and trade in Germany. These bodies oversee and monitor the development of apprenticeship in firms. See Rauner (2007) for further discussion.

5 Muller and Behringer (2012) also found that the administration costs of the training levy scheme in Ireland were so high that only 69 per cent of the budget went to training grants.

6 Administration costs only make up 2 per cent of the budget of the Danish levy system (Gasskov, 2002).

7 Johanson (2009) states that Kenya and Tanzania rely on training agencies to collect the levy, which is highly inefficient compared with systems in which funds are collected centrally, through taxes or by social security authorities.

## Typology of training levies

For a better understanding of the notion of training levies, a typology to categorize them is provided. In general terms, the amount of revenue which could be raised for training purposes by means of a training levy will mainly depend on the following two elements:

1. the (%) rate at which the levy is set; and
2. the base to which the rate is applied, such as payroll (headcount or wage bill), turnover, output, contract value, product value, production costs, or profits.

Based on previous evidence gathered by UNESCO, *Table 2.1* provides an overview of the bases used by past and present schemes. It shows a clear predominance of financing through a payroll tax. More specifically, three different types of training levies using payroll-based funding can be distinguished: see *Box 2.1*.

**Table 2.1** Overview of training funds by type of levy base

| Levy base | Country |
|---|---|
| Company profit tax | Jordan, Egypt (suspended) |
| Levy on foreign workers | Bahrain, Marshall Islands |
| Payroll | Belgium, Bulgaria, Cyprus, France, Greece, Hungary, Italy, Ireland, Netherland, Poland, Romania, Spain, United Kingdom, Algeria, Morocco, Tunisia, Singapore, Barbados, Bolivia, Brazil (for SENAI, SENAC and SENAT), Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Nicaragua, Paraguay, Peru, Uruguay, Venezuela, Benin, Burkina Faso, Central Africa, Chad, Côte d'Ivoire, Guinea, Malawi, Mali, Mauritania, Mauritius, Namibia, Nigeria, Senegal, South Africa, Tanzania, Togo, Zimbabwe |
| Fixed amount per worker | Slovenia |
| Value product | Brazil (SENAR), South Africa Agricultural Training Fund (SETA) |
| Social security fund | Panama |

*Source:* adapted from UNESCO (2015).

### Box 2.1 Typology of schemes based on payroll taxes

Previous research has identified several types of scheme that use payroll taxes to raise resources for funding skills development:

- Revenue-generating schemes base their funding on a fixed-rate levy per working hour or per employee. The revenue is generally earmarked for regional or sectoral training programmes. This type of system is used in Brazil.
- Levy-subsidy schemes (also called levy-grant and reimbursement schemes) use payroll contributions that are centrally collected from enterprises and distributed in the form of grants to set against the cost of training. This strategy has been used in Denmark and Singapore.
- Levy-exemption schemes allow companies to offset the cost of the training they provide or purchase against their tax liabilities. This system has been used in Quebec, Tunisia and France.

Gasskov (2002) to be consulted for more information.
*Source:* Cambridge Econometrics.

An alternative typology is provided by Dar et al. (2003):

- **Revenue-raising schemes** are defined like the revenue-generating scheme outlined in *Box 2.1*;
- In **levy-disbursement schemes**, payroll tax revenues, rather than being spent directly on building up a national training system, are allocated to firms in the form of grants, exemptions and reimbursements in direct relation to the amount of training they provide. This category includes both the levy-subsidy schemes and levy-exemption schemes described in *Box 2.1*, as well as straight cost reimbursement schemes.[8]

## Further considerations

Before moving on to present empirical evidence from existing literature, we elaborate on other aspects that could harm the effectiveness of training levies: see *Box 2.2*.

8 Cost reimbursement schemes are those where an employer is reimbursed the cost of training from a fund sourced by the levy.

### Box 2.2 Further discussion of training levies

Assessing the potential of training levies has proved a challenging task. In particular, one area that must be considered is the level of transparency and accountability in the collection and allocation of funds and resources (UNESCO, 2010). Johanson and Adams (2004) suggest that an effective training fund is characterized by i) transparent rules for allocation; ii) good governance including employers and worker representatives; iii) sound management, effective targeting instruments, regular monitoring and evaluation of training results; and iv) attention to fiscal sustainability. We identified the following key messages related to these issues in the existing literature:

- Transparency, corruption and accountability are three core elements which must be considered when it comes to the ability of countries raise any form of funding. It is important to consider these aspects when assessing the effectiveness of TVET fundraising. Adams (2008) emphasizes that corruption results in rising administrative costs, which eventually reduce the amount that can be spent on improving human capital;
- Dunbar (2013) suggests that governments facing budgetary pressure might be 'tempted' to use ring-fenced funds for purposes not related to training;
- One way of tackling this problem is to improve accountability in the tax system. Muller and Behringer (2012) suggest creating a clear separation between the TVET fund and other funds controlled by the government and other bodies. Falch and Oosterbeek (2011) report that a number of European countries are moving away from centrally organized schemes, reflecting the argument that decentralization can lead to greater efficiency and accountability;
- Hofstetter (2014) also highlights that an important challenge faced by TVET funding is the 'threat' of corruption. In particular, he identifies misuse of funds to give preferential treatment to some training providers;
- Johanson (2009) also suggests that improving accountability can help ensure that TVET schemes meet a set standard, and are relevant to learners' needs. Adams (2008) adds that when there is little or no accountability, there is little incentive to review the outcomes of the training provided. This could lead to a sub-optimal level of training and rising prices.

*Source:* Cambridge Econometrics.

## 2.3 Some stylized facts

### International evidence

In this section, we present some stylized facts that commentators have highlighted in considering the effectiveness of training levies and their potential to finance skills development.

*Revenue-generating schemes*

To begin with, we focus on revenue-generating schemes. These schemes are arguably the most reliable in generating funding for training in countries where there is a persistent shortage of funding available to promote skills development. They can also greatly reduce the cost to governments of training provision. For example, in Brazil a major body providing commercial training (Serviço Nacional de Aprendizagem Comercial, SENAC) receives 80 per cent of its revenue through levy-based funds, as Gasskov (2002) reported. Johanson (2009) highlights that SENAI (Serviço Nacional de Aprendizagem Industrial), the Brazilian industrial training scheme, has failed to increase participation rates, as has happened for other revenue-generating schemes. This is probably because it does not offer any incentives to employers to provide additional training (see Johanson, 2009 for further details on the Brazilian training funds).

Although they have considerable potential, a major issue with revenue-generating levy schemes is their administrative and organizational requirements. They tend to create a lot of bureaucracy. They are typically centralized, and this can lead to inefficiencies. Levy-exemption schemes allow individual firms to select training courses that have clear relevance for their staff, but revenue-generating schemes normally use centrally mandated training bodies and courses, as the Brazilian experience revealed (see *Box 2.3*).

### Box 2.3 Revenue-generating training funds: the case of Brazil

There are currently five training funds in Brazil, all funded via the revenue-generating method, although they are some differences among them:

- SENAI – the national training scheme
- SENAC – a training fund which is commerce-specific
- SENAT – a fund specifically for transport training
- SEBRAE – a training scheme focused on servicing small businesses
- SENAR – a training scheme for rural areas.
- SENAI, SENAC and SENAT all impose a 1 per cent payroll levy on all industrial enterprises, while SENAI charges an additional 0.5 per cent for companies with more than 500 employees. SENAR applies a 2.5 per cent tax on the sale of agricultural goods, while SEBRAE imposes a 0.3 per cent levy across all sectors.

For more information, please see the Study of Müller, N. and F. Behringer (2012), "Subsidies and Levies as Policy Instruments to Encourage Employer-Provided Training", OECD Education Working Papers, No. 80, OECD Publishing, Paris.

*Source:* Cambridge Econometrics.

*Levy-subsidy schemes*

Previous research suggests that one benefit of implementing a levy-subsidy scheme is that the allocations of grants do not have to provide more benefit to those who have contributed more to the fund, thus this system can be far more redistributive than levy-exemption schemes. There have been successful examples in Denmark and Singapore (Gasskov, 2002; Dickinson and Marsden, 2013). In the Danish case levy-subsidies are used to cover 90 per cent of the apprenticeship scheme's costs. The Singapore scheme was designed to actively target lower-income workers, small and medium-sized enterprises (SMEs) and under-educated individuals. There is evidence that this scheme more than tripled the uptake of continued learning between 1981 and 1991. In 2008–09 this system enabled the creation of 376,000 training places.[9]

However, a major drawback of levy-subsidy schemes is the large administrative burden they can create. Many such schemes allocate grants case-by-case, so each application requires expensive individual assessment. This is the reason that levy-subsidy schemes have been shown to have a weaker national impact than other types of scheme, especially in the less-developed world (Gasskov, 2002).

9 Further details on the Singapore Continuing Education and Training (CET) system are available at the website of the Singapore Workforce Development Agency. please see: www.wda.gov.sg/content/wdawebsite/L101-ForIndividuals/L220A-004CETFullList.html

It is also important to consider 'deadweight losses'.[10] This is the term for granting subsidies when the market would have provided the training without intervention. In those cases, the scheme not only fails to create more training, its administrative costs are essentially an absolute loss. To illustrate the importance of minimizing 'deadweight losses', we focus on the United Kingdom. Muller and Behringer (2012) reported that only 2 per cent of the participants in a Small Firm Development Accounts scheme did not provide any form of employee training prior to the implementation of the programme. In addition, only 7 per cent of the firms involved in this scheme recognized that it gave them the opportunity to provide further training in addition to the training that they were planning on providing without the mentioned scheme being in place. In other words, the vast majority of participants used the scheme to provide training that they had already planned on carrying out, and would have done even if the scheme had not been in place. This implies that the scheme produced a large 'deadweight loss'.

For a better understanding of the levy-subsidy schemes, *Box 2.4* elaborates on the Singapore scheme.

### Box 2.4 The levy-subsidy scheme: a case study of Singapore

The Singapore Skills Development Fund (SDF) raises financial resources through a levy-subsidy scheme. Revenues from the skills development levy (SDL) are used to fund training grants and vouchers. A levy or tax of 1 per cent of payroll costs is charged to employers of low-paid staff (defined as those earning less than S$2,000 per month). There are strict rules regarding the training that grants and vouchers can be spent on, which focus on training for capital-intensive industries and information technologies.

- The grants and vouchers offered by the SDF are not tied to the individual firm's contributions. However, the scheme focuses on giving grants for programmes designed to upgrade workers' skills. The overall purpose of this programme is to retain employees within the workforce and contribute to the skills development of young new workers who will enter the labour force.
- Despite the increasing number of individuals who have benefited and company training programmes that this scheme has financed, the system has difficulty convincing companies, especially SMEs, to apply for the grants. By the end of the 1990s only 14 per cent of the grants were taken up by small firms.

For more information, please see the Study of Johanson (2009)

*Source:* Cambridge Econometrics.

10 'Deadweight loss' is the term for subsidizing a company that had intended to carry out training regardless of whether it received a subsidy. It stands in contrast to 'additionality', which is found when government support leads to positive results in terms of training provided.

Box 2.5 provides some details of the approach adopted in Hungary, whose scheme has a levy-subsidy component.

### Box 2.5 A mixed approach: the Hungarian experience

In the case of Hungary, there is a 1.5 per cent payroll tax called a 'vocational training contribution' (see, Muller and Behringer (2012) for further details). This scheme was initially designed as a pure revenue-generating scheme although eventually it included facets from a number of different funding scheme methods. In particular, Hungarian firms are given the opportunity to choose how they contribute to and utilize the scheme:

- Levy-exemption aspect – Up to a third of the vocational training contribution that a firm has to pay can be spent on continuing training for its employees. In that case the company is exempt from the full training levy provided the training programme is included in the national vocational qualification register;
- Levy-subsidy aspect – Alternatively as much as 75 per cent can be spent directly on a vocational school or higher education unit, with the remaining 25 per cent being pooled in a central vocational training fund. This central fund can be used by the Minister of Education for vocational education and training grants.
- In 2003, 13.3 per cent of the payroll levy went to employees while 86.7 per cent was used to finance training activities that would have happened without the existence of the levy. Despite the influence employers had on the scheme, they still believe the government exercised too much control over the fund and thus limited its effectiveness.

*Source:* Cambridge Econometrics.

*Levy-exemption schemes*

The literature reviewed highlights that there are quality advantages in training provided under the third type of scheme, levy-exemption schemes, since the company itself will know the educational and training needs of its staff better than an external body could do. In general terms, smaller companies fail to take full advantage of the training schemes. The reasons for this suggested by Dunbar (2013) include firms' reluctance to release staff from their day-to-day work so they can go on training courses, and a lack of cash to pay for courses upfront. Levy-exemption schemes can help alleviate these problems.[11]

Other positive aspects of levy-exemption schemes are that they give freedom to employers to organize training that is relevant to their specific needs, and have low organizational costs. In other words, these are employer-led schemes.[12] Keating (2007) and Gasskov (2002) report how the Australian system has shown these advantages. There is much less risk of inefficient bureaucracy swallowing a large proportion of the budget. However, Dickinson and Marsden (2013) highlight that levy-exemption schemes – such as the ones used in Belgium – could lead to suboptimal results if there is inadequate external control and monitoring.

Levy-exemption schemes have also been criticized for failing to convey to employers the benefits of investing in training. In particular, if employers are not entirely convinced of the value of training, they might spend the bare minimum that is required to give them the levy exemption, rather than choosing the training programme that is most suitable for their purposes (Johanson, 2009). In other words, there can be a 'levelling' effect. Also, those employers that do spend well above the required figure might well have invested in training even without the scheme, so the scheme generates a 'deadweight loss' (Hoeckel, 2008).

11 The French 'Loi favorisant le developpement de la formation de la main-d'oeuvre' enables smaller companies to pool their training budgets, lowering the cost per employee of buying in training.

12 It is particularly challenging for SMEs to implement levy-exemption schemes. This is best achieved through the pooling of resources, for example through sectoral bodies such as federations or councils.

### Box 2.6 The Vocational Training and Development Fund (FDFP): some evidence from the Côte d'Ivoire

A successful hybrid levy scheme is in force in Côte d'Ivoire: the Fonds de Développement de la Formation Professionnelle (FDFP) provided training for 71,000 individuals in 2000. Johanson (2009) reports that between 1993 and 2006,[13] 24,600 programmes were carried out that reached 483,000 employees. The scheme takes the form of:

- Two compulsory payroll levies, which are set at 0.4 per cent for apprentice training and 1.2 per cent for continued vocational training;
- A 0.6 per cent levy exemption for some approved company training plans;
- Any funds not exempted can be used directly by the FDFP. They can also be employed to fund additional training schemes for micro-enterprises, female entrepreneurs, and enterprises in the informal sector. In this case the FDFP will work in the same way as a revenue-generating system.

Survey data revealed that the beneficiaries of this funding scheme showed high levels of satisfaction. One reason for FDFP's success is its autonomous funding system. It is funded directly through the tax authority and is independent of the government. This structure guarantees stable funding and control over the type of training provided (ADEA and AFC, 2014). However, research has revealed that the benefits of the training were limited because of the lack of key infrastructure in the country such as access to credit and water.

Please see, ADEA and AFC (2014) and Muller and Behringer (2012) for further discussion about this fund.

*Source:* Cambridge Econometrics.

Finally, evidence of the success of the Skillsnet Training Network Programme in Ireland is provided in *Box 2.7*.

13 More up-to-date and accurate data may be difficult to obtain because of the Second Ivorian Civil War.

### Box 2.7 Case study: training funds in Ireland – the Skillsnet Training Network Programme

The aim of the Skillsnet Training Network Programme, which was introduced in the 1990s, is to support and develop training in SMEs in sectors where there is underinvestment in training. In 2013, around 10,000 companies and 42,000 workers have benefited from the programme. Up to 50 per cent of the scheme is funded by taxes paid by companies.

Some important features of this scheme are:

- It is partly funded by a 0.7 per cent payroll tax on eligible groups (which covers approximately 75 per cent of employees) and is automatically administrated through the Pay As You Earn (PAYE) system;
- The complexity of the scheme means it requires dedicated full-time staff, which results in increased costs. However, the levy-based funding only makes up a small part of the cost. In fact the levy is so unobtrusive that many employers are not aware of the potential of the scheme. In other words, they tend to undervalue the training provided;
- As a result of the recent recession, state funding for the scheme fell from 75 per cent to 50 per cent for all training activities, with a total budget of €15 million in the case of the programme for the period 2012–13. However, this reduction in state funding has had no discernible impact on training levels;
- The most important lesson learned from this initiative is that a payroll levy should be neither administratively cumbersome nor intrusive. In this context, it is necessary that the tax is coupled with an effective tax system. The introduction of the levy funding Skillsnet led to no net change in tax requirements, meaning that it could be implemented with little disruption to the current tax administration system.

Please see, Dickinson and Marsden (2013) for further details.

*Source:* Cambridge Econometrics.

Finally, we provide some additional evidence of training levies that are currently being implemented in several OECD countries: see *Box 2.8*.

Although there is no firm prescription for the best design of a training levy, our comparison of the three methods suggests that levy-exemption schemes could be the most attractive, since they allow firms to decide what training courses their employees should attend, instead of training being allocated by a central body. However, the existing literature has

acknowledged that revenue-generating schemes could be more suitable for developing countries, where opportunities for education are often scarce. The core reason is that this type of scheme has proved to be the most effective way of raising resources.

### Box 2.8 Training levies in the context of the OECD countries – further evidence

The OECD's skills strategy seeks to assist countries in improving economic growth and social inclusion through better supply of, anticipating the demand for, and optimizing the use of skills in the workforce (OECD, 2011). Some examples of the 'translation' of this strategy into particular policies are provided below:

- In Poland the Corporate Training Fund (CTF) has been implemented to encourage employers to set aside the equivalent of 0.25 per cent of payroll for the upgrading of their employees' skills. Firms that join the scheme receive a subsidy of either 50 per cent of the training costs of an employee facing redundancy or 80 per cent of the training cost for an employee on training leave for longer than three weeks. This scheme has been well received by employers. However, only 4.3 per cent of the respondents to a Polish Ministry of Labour survey confirmed that they had created training funds as a consequence of the scheme;
- In Belgium the Leverage Fund for Innovation-Oriented Training provides subsidies of up to 27.5 per cent for training courses that last for at least 20 hours. This scheme has been extremely successful in mobilizing funding for private sources;
- The Republic of Korea implemented a Vocational Ability Development Program (VDAP). VDAP is funded by a levy on payroll, which is paid through employment insurance contributions, ranging from 0.1 per cent (for enterprises with less than 150 employees) to 0.7 per cent (for enterprises with more than 1,000 employees). The fund pays for paid educational leave, training courses external to the firm, and subsidizes training equipment. This scheme has been relatively successful, with more than 80,000 companies receiving support between 2001 and 2010. However there is still a gap in uptake, with low-skilled labourers using the scheme less than office and sales workers.

For further details, please see, also OECD (2009).

*Source:* Cambridge Econometrics.

## 2.4 Overview of existing methodologies of analysis

### Methods of assessment

The vast majority of the existing literature analyses current or planned TVET funding schemes from a qualitative perspective. Much of the qualitative research carried out takes the form of interviews with local experts such as policy-makers and individuals directly affected by the different training levy schemes. The purpose of these interviews is to shed light on the problems encountered by schemes and on the areas where they have succeeded. In those cases in which data are not available, an alternative approach is to conduct a survey which allows conclusions to be drawn about the efficiency and effectiveness of the schemes based on the respondents' answers.

#### *Qualitative studies*

The qualitative analyses reported have mostly used case studies. These draw on feedback from local experts, and on logic chain analysis. Examples are:

- Gasskov (2002) explored the effects of the differing levy schemes on Brazil, France, Canada, Denmark and Singapore. This study focused on the analysis of the expenditure of firms and the disbursement of funds by the schemes. A weakness of this study is its limited assessment of the success of the schemes;
- Muya, Price and Edum-Fotwe (2007) conducted several interviews to analyse the potential impact of the implementation of a training levy scheme in the Zambian construction sector. Their report concluded that the private sector can provide stable funding for lifelong learning. An important policy recommendation of this piece of research is that sector-specific policies can be more effective;
- CEDEFOP (2009) compared the levels of public to private investment in TVET under differing levy schemes, to give a brief insight into whether revenue-generating schemes could command greater private investment than levy-subsidies. The comparison revealed that revenue-generating schemes led to larger proportions of private investment in TVET, with Polish schemes split between 90 per cent private funding and 10 per cent public funding. However, subsidy-based funding was less successful at attracting private investment;
- Torres (2012) developed a theoretical framework for education funding. He then applied it to the OECD countries, seeking a better understanding of how funding schemes should operate. The report concluded that there is no ideal system, and the most suitable approach will differ from country to country, since societal attitudes to income redistribution, tax compliance and the level of underinvestment in education and lifelong learning tend to affect the suitability of the different funding schemes;

- Hofstetter (2014) conducted a literature review to gather robust evidence on existing TVET schemes in other countries in order to provide some insights into the potential effects of the implementation of a similar system in Nepal.[14] This study identified corruption and the lack of transparency in the system as the main impediments to the success of the Nepal Skills Development Project (SDP).

*Quantitative analyses*

As was explained earlier, the existing body of literature analysing the impact of training levies on economies is limited because of the lack of statistical data. Our review of this knowledge revealed that most researchers used a basic quantitative analysis in conjunction with a qualitative approach in order to provide robust results.[15] The statistics typically analysed the amounts contributed by companies and the increase in uptake of training schemes. A key reference in this field is CEDEFOP (2009).

### Box 2.9 Sharing the costs of vocational education and training

The CEDEFOP analysis assesses the strength of the different funding methods, with regard to their effectiveness (the extent to which the policy achieves its objectives), efficiency (reasonableness of their costs, user-friendliness and the administrative burden) and their impact (how much they avoid 'deadweight loss').

The key points of the analysis undertaken by CEDEFOP (2009) are:

- Dependent variable: Levels of private investment and participation in TVET were used as dependent variables. However, because of the lack of reliable and available data, composite statistics were used;
- Neither private investment nor participation in TVET could be measured directly. In order to bypass this problem, the researchers used data from Eurostat's Continuing Vocational Training Survey (CVTS). In particular, this data source provided data on a) expenditure on educational institutions from private sources, b) cost of CVT sources as a percentage of total labour cost, c) percentage of employees participating in CVT courses, and d) number of hours in CVT courses per employee;

14 In order to assess the suitability of the different TVET schemes in place in other countries, logic chain analysis is employed.

15 Elson-Rogers and Westphalen (2006) concentrate on the varying training costs for specific European countries, such as Denmark, France and the Netherlands. However, a concern about their analysis is the comparability of the data. This is because each country defines the scheme in a particular way and the structure of each country's national accounts differs.

- Focus-independent variables: These variables were split into two categories: a) TVET cost-sharing mechanisms, which represent the method and source through which funding for TVET schemes is made available to participants, including (among other methods) tax incentives, training funds, subsidies mechanisms and loans; and b) TVET cost-sharing regulatory instruments, which are general rules of the schemes consisting of payback clauses and training leave. In this context the cost-sharing mechanism refers to a situation where the funding for TVET is shared between public organizations and private companies;
- Contextual variables: This category includes variables such as public spending on education, certainty of training investment, technological progress and labour market equilibrium;
- Subsequently, some econometric analysis was applied to an unbalanced panel of the twenty-seven EU member states across the period from 1999 to 2006.
- Because of the lack of reliable data on TVET schemes, this study focused on the effects of the contextual factors on the dependent and independent variables.
- The contextual factors affected both the levels of investment and participation in TVET schemes, as well as the mechanism and regulation. This study found that although all the contextual factors have an impact on investments and participation in VET, technological progress is the element that has had the greatest impact.

Please see, also, CEDEFOP (2009) for full details.

*Source:* Cambridge Econometrics.

## 2.5 Way forward

Our review of the existing literature has shown that the vast majority of the studies undertaken have followed a qualitative approach. This is largely because of the lack of the data that would be required to conduct an econometric analysis.

In general terms, previous research has been limited to assessing the effectiveness of different schemes, typically using interviews and surveys. A 'cutting-edge' contribution to this field is a CEDEFOP report (2009). This report combines qualitative and quantitative analyses to improve the robustness of its findings. As highlighted in this report, two important problems that the research in this field will need to face are the lack of data and of a well-developed body of knowledge.

This review of the existing literature revealed that some pieces of research cover issues such as the general outcomes of training programmes (Ziderman, 2002) and the training that has been financed by a training levy in a particular sector (Muya et al., 2007). However, to the best of our knowledge, no previous research has attempted to estimate the potential revenues that could be raised through training levies. In order to fill this gap, we propose a combined approach which will build on the findings of several interviews with relevant experts, along with some quantitative analysis, as described in *Chapter 3*.

# 3.

# Methodology

## to estimate potential resources for skills development

# 3. Methodology to estimate potential resources for skills development

## 3.1 Introduction

This section presents a detailed description of the methodology that has been developed to estimate the potential of private sector resources for skills development. First, we propose a proxy for the levy base. Then we describe the main features of the levy rate. Subsequently, we elaborate on a conceptual framework to estimate the potential revenues that could be raised. Further discussion of our approach is also provided to identify the advantages and limitations of the proposed methodology.

## 3.2 Design of a proxy for the levy base

### Payroll/remuneration within a sector

The empirical evidence gathered for the purpose of *Section 2.1* has revealed that the vast majority of the schemes currently in operation are designed to raise funds through taxes that are applied to the payroll (see *Table 2.1* for further details). Ideally, it would be useful to distinguish several broad sectors and use the total payroll for a sector as a proxy for the levy base.[16] However, official statistics that track the evolution of the payroll through time are unlikely to be available, since some of its components may be difficult to monitor. For example, bonuses can be quite volatile – they can be related to worker productivity, profitability or other indicators which can vary substantially between two successive periods. In this case, we could approximate the base levy by using the gross annual earnings in the economy (or in a sector if there are available data).

#### *Further justification of the selected proxy*

In general terms, our proposed proxy for the levy base, total payroll/remuneration, is preferred to other variables such as turnover since that variable could fluctuate dramatically between two successive periods.

However, our proposed methodology needs to be flexible enough to use several proxies for the levy base, since not all the training levies are designed in the same form. For example, in Panama social security contributions are the appropriate proxy, as shown in *Table 2.1*. [17]

16 This could improve the accuracy of the results, since training levies might present a different behaviour in each sector. Eventually, aggregated totals would be calculated since this is the focus of the study.

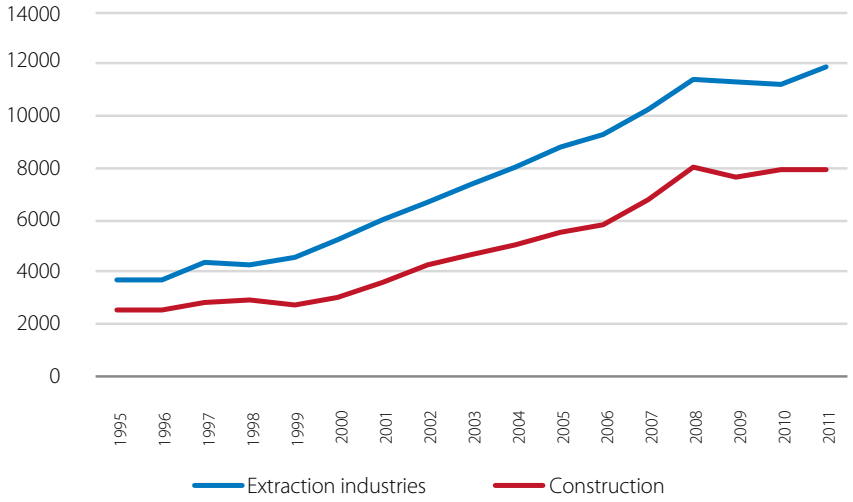
17 For example, another proxy is the value of production, which is relevant for Brazil.

Turning to remuneration, some empirical evidence on Hungary is provided in *Figures 3.1a* and *3.1b*, which show the evolution of average annual remuneration in four broad sectors.[18] The evolution of average annual earnings across sectors follows a smooth trend over time.

Both figures make it evident that Hungary has followed the same path as the main European economies, where a transition to a knowledge, service-based economy has been taking place in the first decades of the twenty-first century.

**Figure 3.1a**

**Average annual earnings by broad sectors in Hungary**

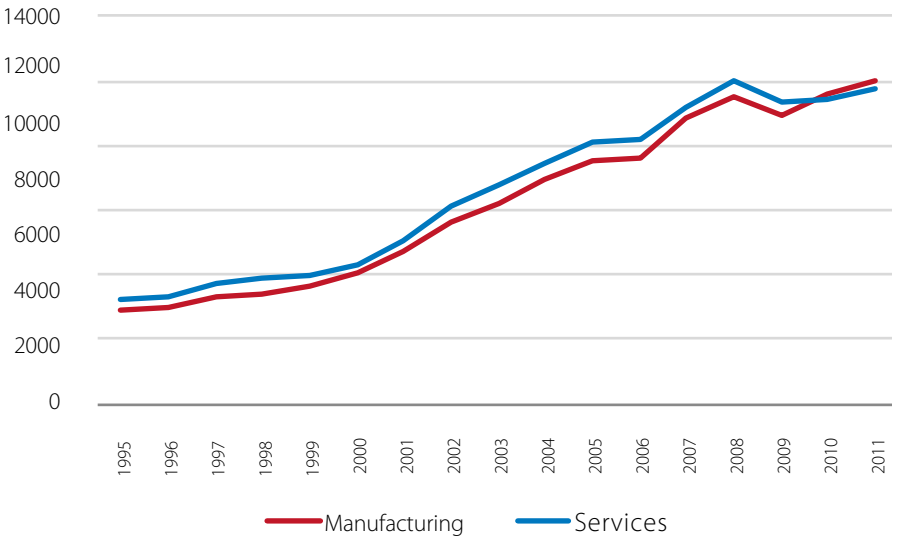



*Source:* Eurostat, © European Union, http://ec.europa.eu/eurostat/web/main/home , 1995 - today. Responsibility for the adaptation lies entirely with Cambridge econometrics.

18 For visualization purposes, the data has been organized in charts taking into account the size of each sector.

**Figure 3.1b**

**Average annual earnings by broad sectors in Hungary**




*Source:* Eurostat, © European Union, http://ec.europa.eu/eurostat/web/main/home , 1995 - today. Responsibility for the adaptation lies entirely with Cambridge econometrics.

We can anticipate that the inclusion of a variable with an unstable value will not produce significant results from an econometric perspective. Moreover, variables such as the average turnover or profits in a sector could not provide an accurate representation of that particular industry since they are more firm-specific.

*Data requirements*

In order to provide estimates of the private resources that could be available for training, two sets of data are needed. First some historical data is needed to estimate the relevant parameters, which are described in *Section 3.4*. In addition, some forecast data is also needed to build the baseline.[19] If not enough periods of data on the payroll (earnings) are available for analysis, we could produce the required time series by setting the existing observations to grow at the same rate as sector gross value added (GVA). That is, we make the assumption that wages are a constant fraction of value added for any given sector.[20]

19 Further details on the data requirements for this project are provided in Appendix C.

20 For transparency a similar rule would be applied to generate the relevant observations for other variables such as social security contributions.

## 3.3 Identifying key features of the levy rate

### The levy rate

The levy rate is the level at which the tax is set to fund the TVET scheme. This can be considered as the outcome of a social dialogue, public–private partnership (PPP) or policy decision. The 'buy-in' indicator is the spending on training that is financed. Figures reported in the existing literature reveal that the rates across countries and even across sectors are quite heterogeneous. In general terms, the rate applied to payroll is reported to be in the range of 0.1 per cent (Belgium) to 4 per cent (Benin).

#### *Examples of levy rates*

Some examples of levy rates are provided in *Table 3.1*.

**Table 3.1** In-service training initiatives

| Country | Rate (%) | Revenue generating | Payroll tax exemption | Levy grant | Training cost reimbursement |
|---|---|---|---|---|---|
| Bahrain | 1.0–3.0 | ✓ | | | |
| Brazil | 1.0–1.5 | ✓ | | | |
| Côte d'Ivoire | 1.6 | | ✓ | | |
| France | 1.5 | | ✓ | | |
| Honduras | 1.0 | ✓ | | | |
| Hungary | 1.5 | | | ✓ | |
| Ireland | 0.7 | ✓ | | | ✓ |
| Jordan | 1.0 | | | | ✓ |
| Kenya | 1.0 | | | | ✓ |
| Korea | 0.5 | | ✓ | | |
| Malawi | 1 | | | ✓ | ✓ |
| Malaysia | 0.5–1.0 | | | | ✓ |
| Mauritius | 1 | ✓ | | | ✓ |
| Morocco | 1.6 | ✓ | | | |
| Nigeria | 1.25 | | | | ✓ |
| Panama | 15 | n.a. | | | |
| Singapore | 1.0 | | | | ✓ |
| South Africa | 1.0 | | | ✓ | |
| Tanzania | 2.0 | | | ✓ | |
| Turkey | n.a. | ✓ | | | |
| United Kingdom | 0.5–2.5 | | | ✓ | |

*Source:* Cambridge Econometrics adaptation

*Data source*: UNESCO (2015) and "Dar, Amit. 2004. Training Levies : Evidence from Evaluations. World Bank Employment Policy Primer; No. 6. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/11810 License: CC BY 3.0 IGO." Responsibility for the views and opinions expressed in the adaptation rests solely with the author or authors of the adaptation and are not endorsed by any member institution of the World Bank Group."

## General trends

In addition, the literature review has identified the following findings:

- The mean levy rate on payroll in Europe as well as in North Africa is approximately 1 per cent;
- Latin America and the Caribbean, and sub-Saharan Africa, have an average levy on payroll of 2 per cent;
- Of the countries that apply a levy on payroll, Belgium has set the lowest rate;
- The Flemish Employment and Vocational Training Service (VDAB) in Belgium is a levy-exemption scheme that caters to eleven different sectors. Flemish employers that invest less than 0.1 per cent of payroll cost in training are subject to a social security contribution of 0.05 per cent;[21]
- Of the African countries, an ambitious scheme is running in Benin, where a 2 per cent levy rate was established, although the rate at which the tax is set is not directly related to a fixed share of the payroll;[22]
- Brazil's SENAR training fund applies a 1 per cent levy on all agricultural goods. The revenues of these funds are earmarked for rural training schemes. This is a distinctive feature of this scheme;
- In Jordan and previously Egypt, the payroll tax is applied to corporation profits. These countries apply a 1 per cent rate, which is paid nationally rather than by one specific industry;
- Panama deserves special mention, since its rate is 15 per cent. In Panama, the Instituto Nacional de Formación Profesional y Capacitación para el Desarrollo Humano (INADEH) scheme was introduced in 2006 with the aim of monitoring and implementing programmes of vocational and general training as well as managing and distributing public resources allocated for that purpose. The previous training scheme, Instituto Nacional de Formación Profesional (INAFORP), was funded by a payroll levy of 2.7 per cent.

21 See Torres (2012) for further details.

22 A peculiar feature of Benin's Fund for the Development of Vocational Training and Apprenticeships (FODEFCA) scheme is that it focuses on financial training in the informal sector. Approximately 21,000 persons were trained over the period between 1999 and 2004. This scheme failed to reach its target for training female workers (Johanson, 2009).

## 3.4 Theoretical approach to estimate potential revenues

### Testable hypothesis

In general terms, the amount of revenue raised by means of a training levy will depend on two components, the levy rate and the levy base, as shown in formula (1):

$$\text{Revenue raised} = \text{levy base} * \text{levy rate} \quad (1)$$

### Relevant variables

However, other contributing factors can affect the final outcome. *Table 3.2* focuses on this additional set of explanatory factors.

**Table 3.2** Explanatory factors of the amount of revenue raised

| Factor | Rationale | Relevant variables to categorize each dimension |
|---|---|---|
| Economic context | Economic contextual factors directly affect the participation of firms in the schemes.[23] | National wealth (gross domestic product – GDP), sectoral value added, productivity, average wages, sectoral employment (number of jobs), etc. |
| Labour market structure | Labour market factors seem to have an impact on TVET (albeit a slight one);<br><br>Employment rates also affect the levy base since an increase in the proportion of individuals who are participating in income-generating activities will increase the levy base; | Unemployment rates, labour participation rates, educational attainment level of the population, expenditure on labour market training as percentage of GDP, etc. |

23 The importance of including the economic context in the analysis is justified in CEDEFOP (2009).

| | | |
|---|---|---|
| | Educational attainment levels of the population also influence the revenue raised. In principle, more skilled workers will be more productive and obtain higher remuneration, which eventually affects the levy base.[24] | |
| Institutional setup | Institutional factors such as the size of the informal sector directly affect the outcomes and disbursement of the training funds.[25] The size of the informal sector could also help to explain a low amount of revenue raised. | Relative weight of the informal economy and the relative weight of the public sector over the total economy. |

*Source*: adapted from UNESCO (2015).

Formula (1) can be expanded by including the set of factors described above in order to produce a model where the volume of revenue raised is a function of the levy features: the levy base and the levy rate, the economic context, the setup of the labour market and the institutional context, as shown in formula (2).

$$Rev = f(LeB, LeR, Eco, Lab, Ins) \quad (2)$$

$$+ \quad + \quad +/- \quad +/- \quad +/-$$

Where ***Rev*** is revenue raised, ***LeB*** is the levy base and ***LeR*** is the levy rate. ***Eco*** is a vector which includes those variables that refer to the economic conditions, ***Lab*** represents a vector which comprises several variables to reflect the structure of the labour market, and ***Ins*** refers to a vector that captures variables that reflect the institutional context.

The sign below a variable indicates the partial derivative of the dependent variable with respect to that variable: that is, the expected direction of the contribution of that variable to revenue raised.

24 There is a repeating cycle where the higher the skill base of the economy is, the greater the creation of jobs which require higher skills, which in turn leads to more training demanded to fill those roles. This iterative process leads to higher demand for skilled labour, which ultimately leads to higher revenues created by training levies. This is also true for the effect of public expenditure on training (see also CEDFOP, 2009 for further explanations).

25 See also Hofstetter (2014) for further justification.

Subsequently, we assume a semi-log linear specification of the relationship proposed in equation (2), and proceed to estimate equation (3):

$$Rev_t = \beta_0 + \beta_1 LeB_t + \beta_2 LeR_t + \beta_3 Eco_t + \beta_4 Lab_t + \beta_5 Ins_t + u_t \quad (3)$$

where the symbols account for the same variables as in equation (2), with the exception of $\beta_0$ which is a constant; $\beta$ are the estimated parameters, and $u_t$. is a vector of error white noise process. All the variables are expressed as logarithms,[26] with the exception of those defined as rates.

## Estimation procedure

Ideally, we would estimate an econometric model, as shown in equation (3), to quantify the contribution of the factors to the actual amount of revenue raised in the past. We can anticipate that the Engle and Granger (1987) cointegration technique will be employed, if the available time series are long enough to produce robust results. The value added of this approach is that cointegration techniques permit us to estimate an equilibrium relationship that describes the behaviour of the variables in the long run, along with an error-correction model which explains the dynamics of the variables in the short run. *Box 3.1* provides further explanations on the Engle and Granger (1987) cointegration technique.

### Box 3.1 Engle and Granger (1987) cointegration technique

The Engle and Granger (1987) cointegration technique is a two-step procedure. In summary:

- The first step is to estimate the long-run equilibrium relationship by means of ordinary least squares (OLS). Then, the existence of cointegration among the variables is tested by checking the stationarity of the residuals produced by the long-run relationship. In doing so, the augmented Dickey–Fuller test (Dickey and Fuller 1979, 1981) will be applied to examine whether the residuals are I(0);
- In the second step, the short-run dynamics are modelled by estimating a regression in differences, which also includes an error-correction term. The latter variable, which is built as the lagged residuals term of the cointegrating long-run relationship, shows the percentage of disequilibria eliminated between the short-run and the long-run model in each period.

*Source:* Cambridge Econometrics.

26 This allows for the interpretation of the parameters as elasticities.

The estimation procedure will follow the 'general to specific' modelling strategy (Hendry and Richard, 1983). In this we start by estimating a general model where several variables are included, and in subsequent iterations, we eliminate those variables that are not statistically significant until a parsimonious model where all the variables are significant is reached.

However, there is always a risk that the available data is not sufficient to produce robust econometric results.[27] Indeed, that the literature review identified very few quantitative analyses does suggest that limited data availability may restrict the approaches that can be used. In this case, OLS and simple correlation analysis will be applied.

### Box 3.2 Correlation

A correlation coefficient measures the linear relationship between two variables. It does take account of variables measured in different units, although it does not catch higher-order relationships. For example, the correlation between two random variables X and Y can be calculated by means of this formula:

$$Corr(X,Y) = \frac{Cov(X,Y)}{sd(X) * \mathrm{sd}(Y)} = \frac{\sigma_{xy}}{\sigma_x \sigma_y}$$

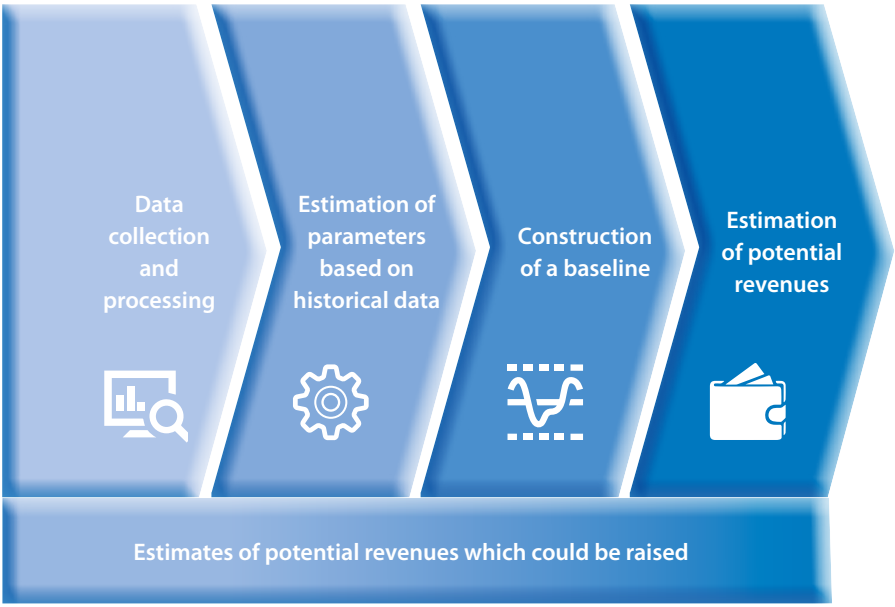
*Source:* Cambridge Econometrics.

Subsequently, once the relevant determinants of the amount of revenue raised are identified, we proceed to the estimation of the potential revenues. This stage uses official economic forecast data, such as data published by the International Monetary Fund (IMF), OECD or the national statistical office, to build a baseline that reflects potential future development of the economy. Then we apply the estimated parameters to three different scenarios – business as usual (BAU), optimistic and pessimistic – to produce the estimates. A final stage of the procedure is to validate the estimates by checking the residuals. This should show whether the regression error term (actual revenue raised minus model prediction) displays any pattern that might indicate a tendency to bias. *Figure 3.2* summarizes our approach and shows how the different steps fit together.

27 This could happen if there are only a few observations of data. (Typically over thirty observations are needed, but this also depends on the stability of the long-run relationship.)

**Figure 3.2**

**Methodology to estimate potential revenue raised**




*Source:* Cambridge Econometrics

## 3.5 Implementation of our approach: advantages and limitations

For the purpose of this project, we have developed a conceptual framework which shows how the amount of revenue raised will depend on the levy base and the rate at which the levy is set. However, other factors could influence the final outcome, such as the economic and institutional context, and the general conditions of the labour market.

We may also note that if the levy rate and the levy base cannot be proved to be the main drivers of the revenue raised through a training levy, the proposed approach will not provide relevant results. In this case, what is needed is a qualitative analysis to explore the role of tax avoidance and public involvement. This new approach will require additional communication with country experts.

As introduced above, we have attempted to go beyond the existing literature by estimating econometrically the testable hypothesis presented in *Section 3.4*. A strength of our approach is that it combines qualitative and quantitative analysis. We envisage that discussion during field missions will be key to the development of the qualitative aspect.

However, the inclusion of quantitative analysis is a potential limitation of our approach, since successful implementation will rely on the quality and availability of data.

# 4.

# Pilot country I

## Dominican Republic

# 4. Pilot country I: Dominican Republic

## 4.1 Introduction

The aim of this chapter is to present the main findings of the research conducted on the Dominican Republic, in order to assess the potential revenues from the private sector through the training levy as it currently operates there.

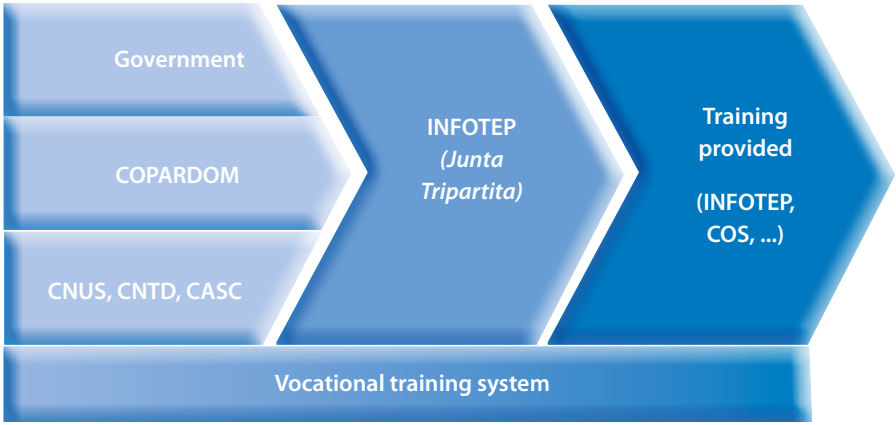
*Section 4.2* presents background information on the features of the country's TVET system. *Section 4.3* provides an overview of the data available for research purposes. *Section 4.4* concentrates on the main results of the quantitative analysis undertaken. *Section 4.5* summarizes and concludes the case study.

## 4.2 Description of scheme

This section gives an overview of the vocational training system, and how the different bodies involved fit within the economy.[28] See *Figure 4.1*.

**Figure 4.1**

**Structure of the Dominican Republic's vocational training system**




*Source:* Cambridge Econometrics (based on understanding from country visit).

28 Some relevant documents which provide a good understanding of the training levy and the VTE system in the Dominican Republic are: Ley No. 116-80. Available at: www.infotep.gov.do/pdf_prog_form/ley116.pdf Código de Trabajo de la República Dominicana. Available at: www.comisionadodejusticia.gob.do/phocadownload/Biblioteca_Virtual/Codigos/Codigo%20de%20Trabajo%20Republica%20Dominicana.pdf

## INFOTEP

The body in charge of providing vocational and technical education (VTE)[29] is the Instituto Nacional de Formación Técnico Profesional (INFOTEP), which is funded by three different sources:

- 1 per cent tax on payroll
- 0.5 per cent tax on employees bonuses
- government funds.

The existing coordination between INFOTEP and the Social Security Administration (Tesorería General de la Seguridad Social) has proved an efficient mechanism to reduce tax avoidance.

### *The role of the Junta Tripartita in INFOTEP*

INFOTEP is directed by the Junta Tripartita, with representatives from the government, the employer federation, Confederacion Patronal de la Republica Dominicana (COPARDOM), and three trade union bodies (the National Confederation of Trade Union Unity (CNUS), the National Confederation of Dominican Workers (CNTD) and the Autonomous Confederation of Workers' Unions (CASC)). The three parties have reached a consensus over participation in the process of deciding which initiatives will be implemented. It is of particular relevance that trade unions consider themselves fully represented and a major player in the system.

INFOTEP is organized into a national office, four regional offices and various satellite centres. It also works in close collaboration with several affiliated private centres, the centros operativos del sistema (system operating centres, COS). Each regional office includes an oficina territorial de empleo (regional employment office, OTE) which plays an active role in connecting jobseekers with employers.

Trade unions in the Dominican Republic play an active role in connecting INFOTEP with citizens. For instance, trade unions could be involved in selecting candidates for a training programme.

## Training provided

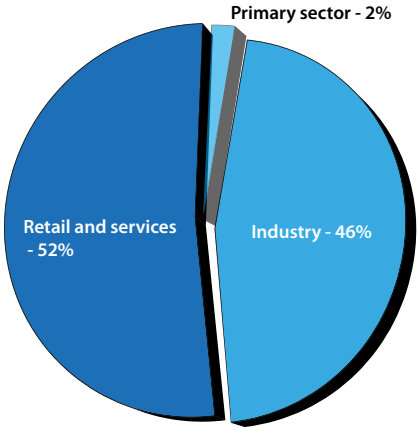
Currently, INFOTEP runs 704 programmes aiming to promote skills development at several levels, with 104 of them having a special focus on vulnerable groups, such as those in very poor areas. Frequent surveys are conducted to identify the main skills shortages in each sector. The system relies on a fluent and dynamic dialogue between the government, employer federations and trade unions – monthly meetings are scheduled for discussion among the three bodies. Impact assessment studies are conducted regularly in order to monitor the outcomes of the training provided.

29 INFOTEP uses the term VTE, which is synonymous with TVET.

In general terms, INFOTEP provides training in three broad areas. More details on the number of students who participate in each broad area is provided in *Figure 4.2*.

**Figure 4.2**

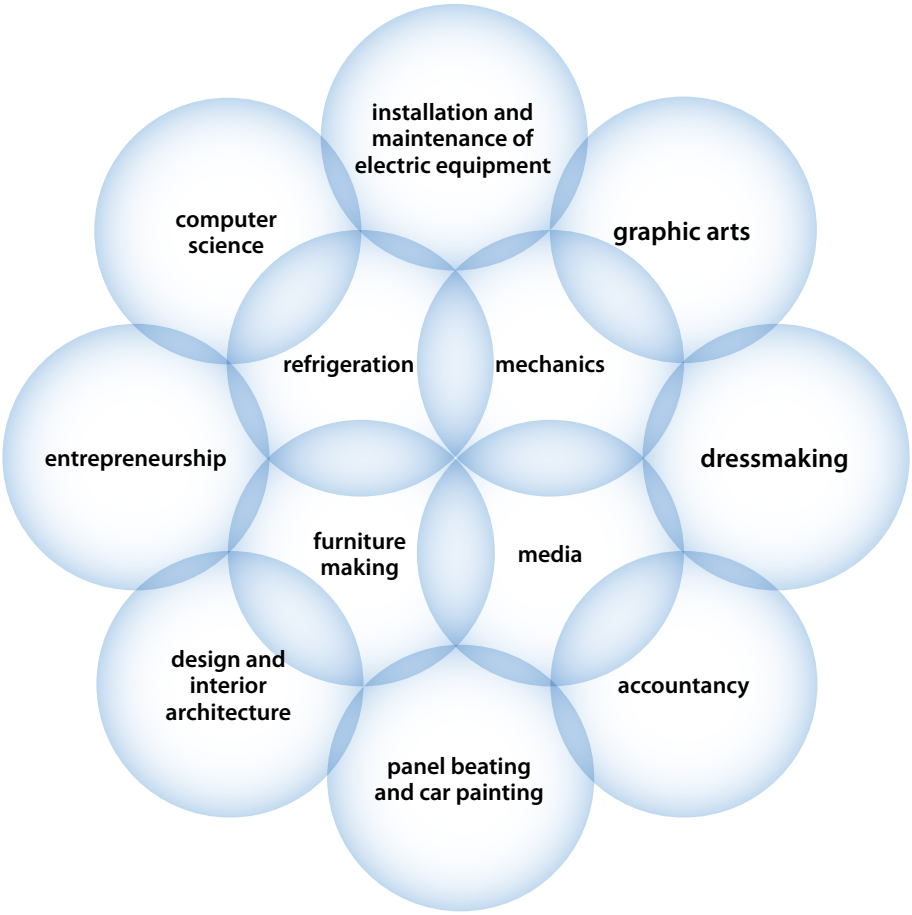
**Structure of the Dominican Republic's vocational training system, by broad area**




*Source:* Cambridge Econometrics (based on information gathered during country visit)

To provide a better picture of INFOTEP's priority lines of action, these are some areas in which training is provided:

## Areas




*Source:* UNESCO

## Some training is provided for workers in the informal economy

An interesting feature of this system is its coverage of workers in the informal economy. For example, informal-sector workers with practical skills can obtain a certificate based on their existing abilities. There are several programmes to promote entrepreneurship, and to encourage self-employed informal workers to join the formal sector. The relative size of the informal economy is growing over time. One reason is the poor quality of the employment in the formal economy, where low wages and temporary jobs are prevalent.

## Training is provided through the 'Programa Dual' scheme

Some of the training provided is in the form of the 'Programa Dual', which uses a combination of practical training in workplace settings and theoretical training in INFOTEP or one of its affiliated centres. Participating firms are required to offer employment to 80 per cent of the trainees on completion. In many cases this type of programme did not have the large positive impact anticipated, since few companies are willing to accept these terms.

## Understanding the needs of the Dominican Republic

Despite the flexibility of the system, which targets individuals with a variety of levels of educational attainment (from the illiterate and those with only primary education upwards), the main limitation of the system is that the current supply of training is not sufficient to meet demand. In many cases only between 10 and 30 per cent of the total demand for training is satisfied. This means that individuals could wait for a long time before obtaining a training place. Some of the courses organized by INFOTEP are in such high demand that a single call for applications provides sufficient applications to fill an entire year's places.

### *Heterogeneous quality of the training*

Another challenge is created by the heterogeneity of the training provided. Currently, there are significant differences in quality between the various centres, which in turn affect the employability of their graduates. In particular there is an increasing need to improve the quality of courses that train participants beyond a basic level of skills. For example, consultation with some of the relevant actors has revealed that the maintenance costs for machinery and equipment in some sectors are very high in comparison with other countries, and could be reduced substantially by improving the quality of the training provided to employees who handle maintenance tasks.

## Further considerations

There is a broad consensus about the needs of the economy for skilled workers. However, there is a mismatch between the supply of university graduates and their employability, which has been highlighted by the different actors involved in the discussion. More specifically, rising demand for workers who have technical and vocational qualifications has been identified, while there is less 'appetite' for workers who hold university degrees.

### *Full potential is not reached*

The benefits of the Dominican Republic's VTE system are still far from being fully realized, since employers do not take advantage of all the opportunities available. Many employers still consider the training levy as another tax instead of a channel to improve the skills of their employees. A change in the culture regarding VTE is needed.

*Challenges in the near future*

In the near future, the system will need to increase the resources invested in training and improve coordination between the different actors (such as INFOTEP and its affiliated centres) if it is to operate effectively as the single provider of VTE. Additional interaction with universities would be a positive step in confronting the challenges of the labour market.

Finally, another issue which requires action is the existence of regional disparities. Additional training centres are needed to match training provision to the skills needs in each region, especially in those areas poorly served at present.

## 4.3 Available data

### Absence of long time series

An important problem we encountered when gathering data was the lack of the long time series required for a reliable cointegration analysis (see *Box 3.1*). In particular, the time horizon of our analysis was constrained by these variables:

- Wages and salaries: data were only available for the period 2007–10. These data are included in the supply and use tables published by the Banco Central de la Republica Dominicana;
- Data on revenue raised by the training levy, provided by INFOTEP, and covering the period 2007–15.

In the absence of sufficient data to conduct econometric analysis, one option is to apply correlation analysis as explained in *Box 3.2* (see *Section 3.4*). We did this using a set of variables covering the different dimensions identified in *Section 3.4*:

- revenue raised
- levy rate
- employee remuneration – to approximate the levy base
- GDP and employment – to allow for changing economic conditions
- labour participation rate and unemployment rate – to reflect the particular circumstances of the labour market
- relative weight of the informal economy, to introduce the institutional context.

*Data sources*

An overview of the data obtained and their sources is provided in *Table 4.1*.

**Table 4.1** Variables and data sources for the Dominican Republic

| Variable | Source | Time coverage |
|---|---|---|
| Revenue raised (% of GDP) | INFOTEP | 2007–14 |
| Levy rate (%) | INFOTEP | 2007–14 |
| GDP (US$ millions, constant prices 2005) | World Bank | |
| Employee remuneration (RD$ millions); GDP (RD$ millions) | Banco Central de la Republica Dominicana | 2007–10 |
| Employment (1,000s) | Ministerio de Economía Planificación y Desarrollo (MEPyD) | 1991–2014 |
| Unemployment rate (%) | World Bank | 1990–2014 |
| Labour participation in the formal economy (%) | MEPyD | 2000–14 |
| Informal economy (% of GDP) | MEPyD | 2000–14 |

*Source*: Cambridge Econometrics.

*Data gathered*

*Table 4.2* summarizes the actual data used in our quantitative analysis. As described in *Section 4.2*, there are two components of the levy, a 1 per cent tax on payroll and an 0.5 per cent tax on bonuses.

**Table 4.2** Summary of historical data for the Dominican Republic

| Series | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|
| Employment (1,000s) | 3,548.3 | 3,653.9 | 3,593.9 | 3,753.5 | 3,912.4 | 3,990.7 | 4,018.4 | 4,199.8 |
| Unemployment rate (%) | 15.7 | 14.2 | 14.9 | 12.4 | 14.7 | 14.7 | 15.0 | 14.5* |
| Labour participation rate in the formal economy (%) | 44.7 | 43.1 | 43.6 | 43.7 | 43.4 | 43.2 | 44.2 | 44.6 |
| Informal economy (% GDP) | 55.7 | 57.1 | 56.5 | 56.5 | 56.9 | 57.0 | 55.9 | 55.5 |
| GDP (US$2005m) | 40,133.9 | 41,395.6 | 41,783.0 | 45,251.9 | 46,528.4 | 47,751.9 | 50,033.3 | 53,706.2 |
| Employee remuneration, as % GDP | 31.9 | 32.6 | 33.8 | 32.8 | 32.8* | 32.8* | 32.8* | 32.8* |
| Employee remuneration (US$2005m) | 12,818.6 | 13,524.6 | 14,124.2 | 14,866.7 | 15,269.2* | 15,670.7* | 16,419.5* | 17,624.8* |
| Revenue raised (by 1% payroll levy), % GDP | 0.005 | 0.064 | 0.069 | 0.067 | 0.067 | 0.070 | 0.071 | 0.072 |
| Revenue raised (by 1% payroll levy), (US$2005m) | 2.1 | 26.6 | 29.0 | 30.4 | 31.4 | 33.4 | 35.8 | 38.6 |
| Revenue raised (by 0.5% bonus levy), % GDP | 0 | 0.0009 | 0.0026 | 0.0023 | 0.0027 | 0.0030 | 0.0031 | 0.0031 |
| Revenue raised (by 0.5% bonus levy), (US$2005m) | 0 | 0.4 | 1.0 | 1.0 | 1.2 | 1.4 | 1.5 | 1.7 |

*Sources*: Cambridge Econometrics.

*Note(s):* The unemployment rate for 2014 was estimated by taking the average of the data for 2007–13. Employee remuneration (%GDP and US$2005m) over the period 2011–14 are Cambridge Econometrics estimates based on average value period (2007–13). (*) denotes estimated data. US$2005m means US$ millions at constant 2005 prices.

## 4.4 Estimation of revenues

### Correlation coefficients

For the purpose of this analysis, we calculated correlation coefficients between the variables. This provides a measure of the average linear relationship between any two variables. We calculated two variants:

- Variant I used only data for 2007–10. This is the period with a full dataset available from national statistical sources (the constraint being data on total remuneration);
- Variant II uses estimates for missing data, so as to cover the period from 2007 to 2014.

The correlation coefficients are not given here, but are available from Cambridge Econometrics on request.[30] Their main findings are that:

- Wages and salaries are positively and strongly related to GDP;
- There is a linear and strong positive relationship between the amount of revenue raised by the training levy and the proxy of the levy base, wages and salaries.

To estimate the resources that could be available for training purposes in the near future, we first need an estimate of future employee remuneration. Currently, the only available macroeconomic forecast for the Dominican Republic is published by MEPyD and covers the period 2015–19. Unfortunately it does not include an estimate of total wages. We therefore explored the potential correlation between GDP and revenue raised: see *Table 4.3*.

**Table 4.3** Correlation coefficients for GDP and levy revenue

| Variables | Variant I: 2007–10 | Variant II: 2007-–14 |
|---|---|---|
| GDP, Revenue raised by 1% tax | 0.7525 | 0.7525 |
| GDP, Revenue raised by 0.5% tax | 0.8782 | 0.8782 |

*Source:* Cambridge Econometrics calculations.

Note: GDP and revenue raised are expressed in US$ millions at constant 2005 prices.

30 See *Box 3.2* for further details on how to calculate a correlation coefficient between two variables.

As was explained above, there appears to be a linear relationship between the wage bill and GDP, and *Table 4.3* confirms that this linear relationship also applies between GDP and the revenue raised by the training levy. This makes it possible to estimate the potential resources from the private sector that could be mobilized for training purposes. The formula used is:

$$\text{Estimated revenue} = \text{GDP} * \text{revenue raised (\% GDP)} \quad (4)$$

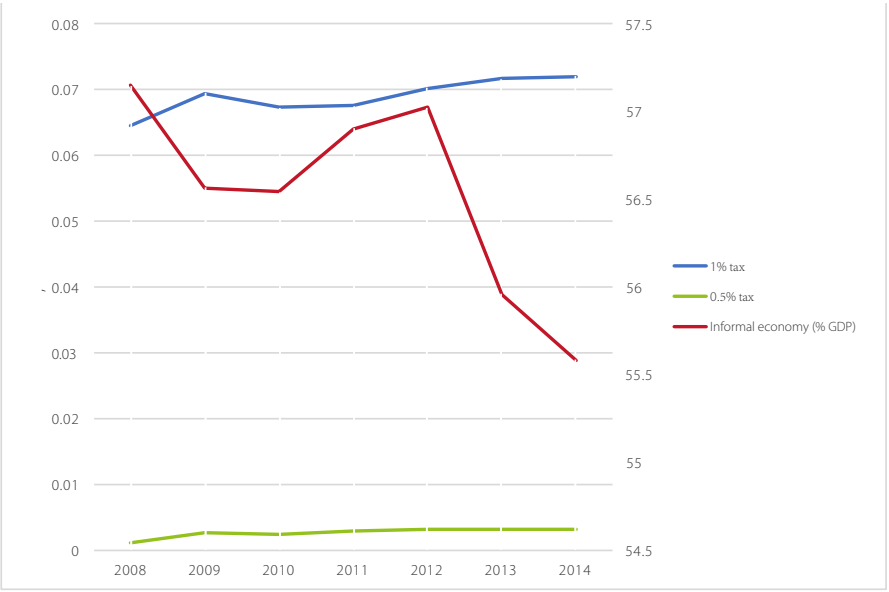
Essentially, formula (4) is a variant of formula (1) which allows us to deal with the absence of data on wages.

An advantage of using this procedure is that it allows us also to estimate the resources that could be raised through the 0.5 per cent tax on employee bonuses.

In this context, the next step is to check the stability of the effective tax rate –the revenue raised as a percentage of GDP – over time. *Figure 4.3* shows how the relevant data has varied over the period 2008–14, along with the evolution in the size of the informal economy in the Dominican Republic.

**Figure 4.3**

**Effective tax rate and size of the informal economy, Dominican Republic, 2008–14**



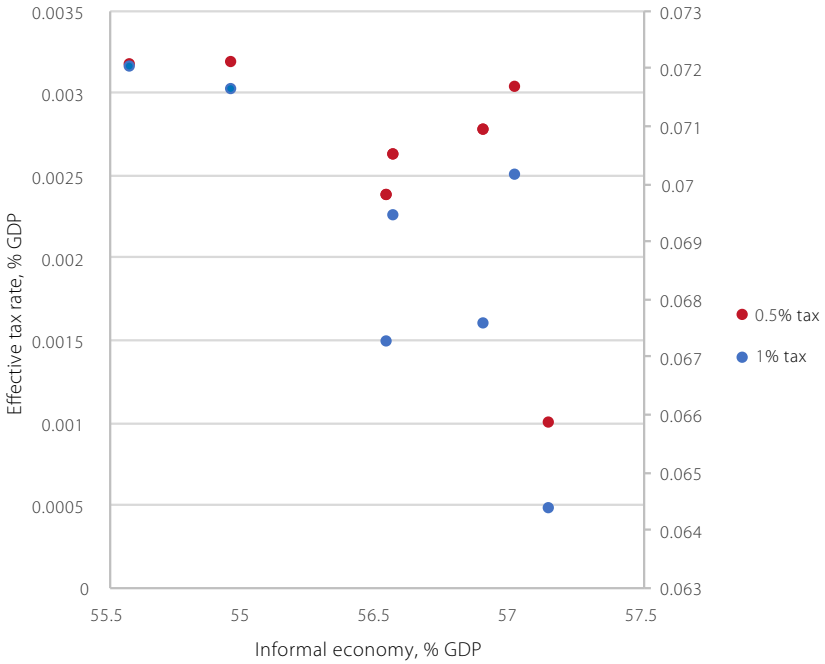

*Sources:* Cambridge Econometrics (based on information gathered during country visit).

Note: data for 2007 are not included since there is an outlier in this year.

Despite the fluctuation in the relative weight of the informal economy, *Figure 4.3* suggests the effective tax rate remains stable over time. *Figure 4.4* is a scatter plot of the effective tax rate and the size of the informal economy, and suggests that as the relative size of the formal economy increases, there is potential for the revenue raised to increase.

## Figure 4.4

**Effective tax rate and size of the informal economy, Dominican Republic, 2008–14**




*Sources:* Cambridge Econometrics (based on information gathered during country visit).

Note: data for 2007 are not reported since there is an outlier in this year.

### Estimates for the amount of revenue raised

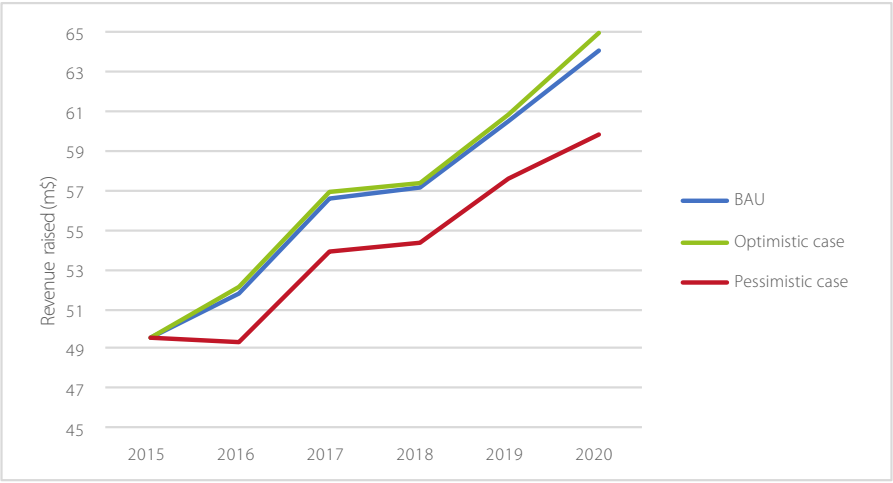
Based on the data provided by INFOTEP for the revenue raised as a percentage of GDP (in other words, the effective tax rate), we considered three scenarios:

- Baseline, assuming that revenue as a percentage of GDP stays the same as in 2014 for the forecasted period;
- Pessimistic case, based on an average percentage for the period 2008–14;
- Optimistic case – the annual rate of growth of the last two years of data available was used to produce alternative shares of revenues over GDP.

*Tables 4.4* and *4.5* present the relevant estimates, and *Figure 4.5* shows them graphically.

**Figure 4.5**

**Forecasted revenue from a training levy, Dominican Republic, 2015–20**




*Source:* Cambridge Econometrics.

**Table 4.4** Baseline: potential private sector resources that could be mobilized for training, Dominican Republic, 2015–20

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| Baseline case | | | | | | |
| GDP (US$ million) | 65,662.1 | 68,945.3 | 75,392.5 | 76,012.1 | 80,572.9 | 85,407.4 |
| Revenue raised as % GDP (1% rate) | 0.072 | 0.072 | 0.072 | 0.072 | 0.072 | 0.072 |
| Revenue raised by 1% rate (US$ millions) | 47.2 | 49.6 | 54.3 | 54.7 | 58.0 | 61.5 |
| Revenue raised as % GDP (0.5% rate) | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| Revenue raised by 1% rate (US$ millions) | 2.0 | 2.1 | 2.3 | 2.4 | 2.5 | 2.6 |
| Total (US$ millions) | 49.6 | 51.8 | 56.6 | 57.1 | 60.5 | 64.1 |

*Source:* Cambridge Econometrics' calculations.

Note: Estimates are provided in US dollars to allow comparison among the countries included in this study. The GDP forecast for 2020 has been calculated by applying the rate of growth of the last year available.

**Table 4.5** Scenarios: potential private sector resources that could be mobilized for training, Dominican Republic, 2015–20

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| Pessimistic case | | | | | | |
| GDP (US$ million) | 65,662.1 | 68,945.3 | 75,392.5 | 76,012.1 | 80,572.9 | 85,407.4 |
| Revenue raised as % GDP (1% rate) | 0.072 | 0.068 | 0.068 | 0.068 | 0.068 | 0.068 |
| Revenue raised by the 1% rate (US$ millions) | 47.2 | 47.5 | 51.9 | 52.3 | 55.5 | 58.1 |
| Revenue raised as % GDP (0.5% rate) | 0.003 | 0.002 | 0.002 | 0.002 | 0.002 | 0.002 |
| Revenue raised by the 1% rate ($ millions) | 2.0 | 1.7 | 1.9 | 1.9 | 2.0 | 1.7 |
| Total (US$ millions) | 49.6 | 49.3 | 53.9 | 54.3 | 57.6 | 59.8 |
| Optimistic case | | | | | | |
| GDP (US$ millions) | 65,662.1 | 68,945.3 | 75,392.5 | 76,012.1 | 80,572.9 | 85,407.4 |
| Revenue raised as % GDP (1% rate) | 0.072 | 0.073 | 0.073 | 0.073 | 0.073 | 0.073 |
| Revenue raised by means of the 1% rate (US$ millions) | 47.2 | 49.9 | 54.6 | 55.0 | 58.3 | 62.3 |
| Revenue raised as % GDP (0.5% rate) | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 | 0.003 |
| Revenue raised by means of the 1% rate (US$ millions) | 2.0 | 2.1 | 2.3 | 2.3 | 2.5 | 2.6 |
| Total (US$ millions) | 49.6 | 52.1 | 56.9 | 57.4 | 60.8 | 64.9 |

*Source:* Cambridge Econometrics calculations.

Note: Estimates are provided in US dollars to allow comparison among the countries included in this study.

## 4.5 Conclusions

This chapter provides an overview of the training levy currently being implemented in the Dominican Republic. As described above, the training system relies on INFOTEP as the main training provider. INFOTEP is funded from three different sources: a 1 per cent tax on payroll, a 0.5 per cent tax rate on employee bonuses, and top-up government funds.

Leaving aside the government's contribution, we have estimated the amount of revenue that could be raised by the 1 per cent and 0.5 per cent taxes. We used MEPyD's forecast of GDP for the period 2015–20 (the only forecast that seems usable in this context). The estimates reported in *Section 4.4* suggest that revenues will be in the range of US$49.3–52.1 million and US$59.8–64.9 million for 2016 and 2020 respectively.

# 5.

# Pilot country II

## Cyprus

# 5. Pilot country II: Cyprus

## 5.1 Introduction

This chapter provides some background information on the training levy that is in force in Cyprus. It also presents some estimates of private resources that could be mobilized for training purposes over the next five years. These have been produced using the methodology outlined in *Chapter 3*.

*Section 5.2* describes the role played by the Human Resource Development Authority of Cyprus (HRDA), the body in charge of managing training funds in Cyprus. *Section 5.3* focuses on the data used in the quantitative analysis. *Section 5.4* presents and discusses the estimates. *Section 5.5* summarizes and concludes the chapter.

## 5.2 Description of scheme

### HRDA

HRDA is a semi-government organization with a tripartite board of directors including government, employer and trade union representatives. HRDA reports to the government through the competent minister, who according to Regulation 509/2012 is the Minister of Labour, Welfare and Social Insurance. Our consultation with the different social actors involved indicated a smooth cooperation and a common understanding, reflecting the importance which has been given historically to skills and qualifications in the Cypriot economy. A general overview of the system is presented in *Box 5.1*.

### Box 5.1 The levy-subsidy scheme: a case study of Cyprus

HRDA is the body in charge of managing Cyprus's scheme. The system relies on contributions paid by all employees, with the exception of the self-employed and government workers. By law the Human Resource Development Levy rate cannot exceed 1 per cent of the emoluments paid to each employee. In practice, the levy rate is 0.5 per cent of payroll, with a monthly cap of €4.533 (Regulation 509/2012). Subsequently, HRDA issues grants to employers for approved training as well as allowances to trainees and financial assistance for obtaining training equipment. In general terms, the HRDA subsidizes 80 per cent of the cost of training, although this rises to 100 per cent for 'high-priority multi-company training programmes'.

- The training levy is collected by the Social Insurance Department of the Ministry of Labour, Welfare and Social Insurance. Further to the collection of the levy, a commission is paid to the Ministry. This commission has accounted for 0.63–0.73 per cent over the period 2012–14.
- Cyprus has seen a large increase in the number of benefactors of these grants (growing from 4,000 to 54,000 between 1983 and 2005). However, in 2003 only 66 per cent of the total funds at HRDA's disposal went to subsidies (with firms in the construction industry utilizing only 50 per cent of their contribution).
- Despite the success of this system, a few limitations need to be mentioned. In particular, the system has not performed as well as expected for low-skilled workers and microenterprises. (Both of these categories receive beneficial treatment in the scheme.)

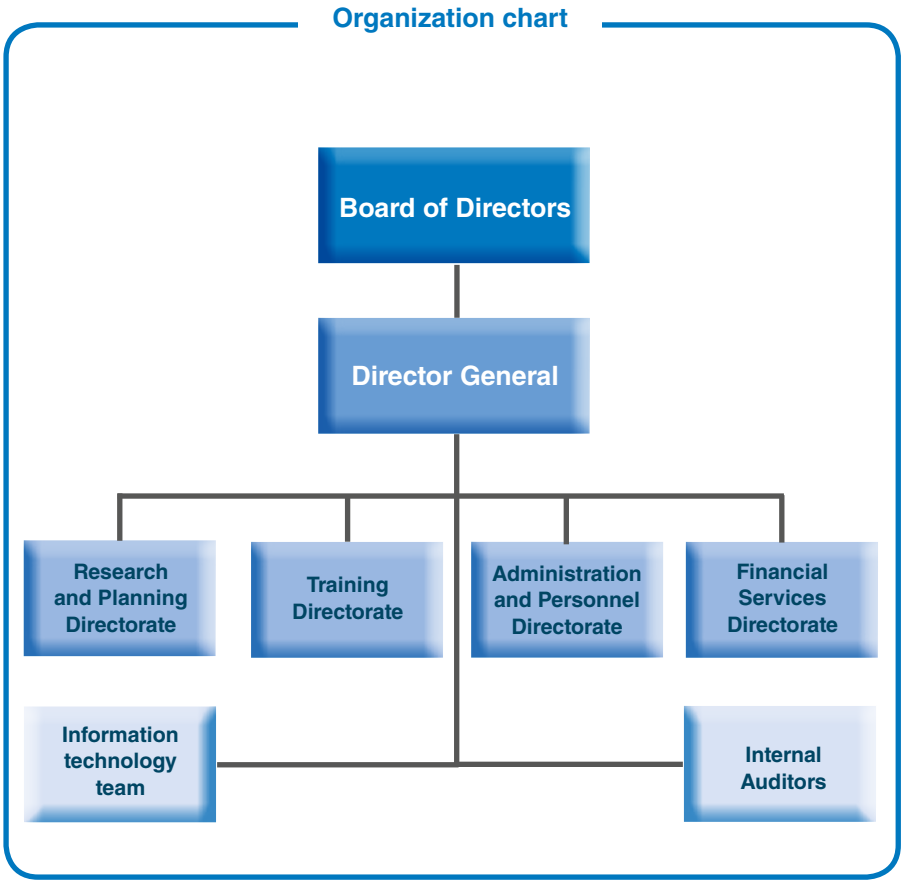
For additional information, please see also, HRDA website and CEDEFOP (2009).

*Source:* Cambridge Econometrics.

*Organization*

*Figure 5.1* provides an overview of HRDA's structure.

**Figure 5.1. HRDA's structure**




*Source:* Human Resource Development Authority of Cyprus (reproduced with permission).

## Strategic objectives

As defined in the HRDA Targets 2015, the mission of the organization is to 'create the necessary prerequisites for the planned and systematic training and development of Cyprus' human resources, at all levels and in all sectors,[31] for meeting the economy's needs, within the overall state socio-economic policies' (HRDA, 2014).

In order to develop its mission, HRDA's initiatives are structured around three strategic objectives:

(i) Upgrading the country's human resources, through the continuous lifelong learning of the employed, the unemployed and the inactive, with a focus on young, older-age and low-skilled workers and the long-term unemployed;

(ii) Improving the productivity and enhancing the competitiveness of Cypriot enterprises through the better utilization of their human resources and the improvement of their potential adaptability;

(iii) Enhancing quality assurance and the efficiency of the system for the training and development of human resources through the assessment and certification of training provision, as well as the knowledge and skills of the country's human resources.

### *Policy interventions*

HRDA's policy interventions are designed to meet the following targets:

(i) Contribution to the integration of the unemployed and inactive into employment – by implementing programmes to support active employment, such as job placements and training for enhancing employability;

(ii) Promotion of lifelong learning of the employed – this target covers actions that aim to facilitate the continuous upgrading of workers' knowledge and skills in order to adapt to a changing economic environment;

(iii) Enhancement of Quality Assurance Systems – this target refers to the promotion of the quality of the training and development of human resources. The System of Vocational Qualifications and the System of Assessment and Certification of Training Providers are key elements to achieve this target;

(iv) Promotion of research and development – research activities are crucial to forecast employment demand, and employment and training needs. Research is also important for assessing the impact of HRDA activities;

31 The self-employed and civil servants are excluded.

(v) Effective governance – enhancement of the governance systems and mechanisms of HRDA and its partners, aiming to use the available information and communication technologies at their maximum potential and for an efficient management of the available financial and human resources.

More specifically, the Authority promotes training by subsidizing 80 per cent of the eligible cost of the programmes that enterprises propose, provided the training programmes are approved by HRDA.

## Financial resources

HRDA is the body in charge of managing training funds but is not a training provider. Currently the Authority's funds come from two different sources:

(i) The Human Resource Development Levy, which is currently set at 0.5 per cent of payroll, subject to a monthly cap (and as noted above, does not apply to government employees and the self-employed);

(ii) European Social Funds (ESF).

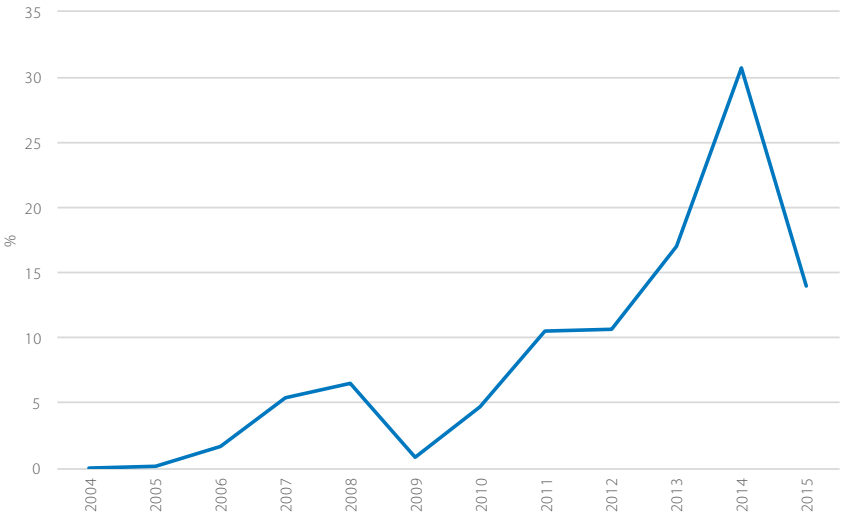
Cyprus's accession to the European Union in 2004 and its subsequent access to European finance – in this context, to the ESF – has meant a considerable increase in the resources potentially available for training. Our consultation with the social partners revealed a strong consensus in favour of keeping the levy rate at 0.5 per cent. They confirmed that this rate does not discourage employment (including recruitment of new staff).

These two sources of funding have been sufficient for HRDA to subsidize all the training programmes that have been approved.

We have not included the contribution of ESF in our model since this is an exogenous source of funds. The proportion of European funds in HRDA's total revenue has also been quite volatile over time (see *Figure 5.2*).

**Figure 5.2**

**Ratio of income from EU funds to total income of HRDA (%)**




*Source:* Cambridge Econometrics elaboration based on provided information for the study in Cyprus.

Note: at the time of preparing this report the data for 2015 was preliminary.

## Peculiarities of the system

An interesting feature of the Cypriot system is its flexibility, which appears to be a key element of its success. The flexibility arises from the fact that HRDA is not a training provider. Instead, training is provided by private institutions, which can adjust rapidly to the changing needs of the economy. Around 150 training institutions are currently operating in the country. Note too that the existing initiatives allow HRDA to finance training abroad. In 2014, HRDA expenditure on human resource development was €21.9 million. Subsidies provided to enterprises accounted for 43.4 per cent of its total expenditure.

It should also be noted that although the self-employed are excluded from paying the training levy, this group have shown some interest in contributing so that they can be provided with subsidized training.

## Activities

HRDA's activities for promoting the skills and knowledge of Cypriot human resources are implemented through several programmes. These are the main HRDA activities for 2015, with the percentage of financial resources allocated for each one, according to the Financial Budgets for HRDA Schemes:

(i) Scheme for the Employment and Training of the Tertiary Education Graduates (16.0 per cent)

(ii) Scheme for Job Placement of Unemployed Young Tertiary Education Graduates for Acquisition of Work Experience in Enterprises/Organizations (2014) co-financed by the HRDA/ESF during the programming period 2014–20 (15.1 per cent)

(iii) Schemes for Job Placement of Young Unemployed Graduates of Lower Secondary, Upper Secondary and Post-Secondary Education of up to Two Years for the Acquisition of Work Experience in Enterprises/Organizations, co-financed by the HRDA/ESF during the programming period 2014–20 (12.2 per cent)

(iv) Training Programmes for the Unemployed (4.0 per cent)

(v) Multi-Company Training Programmes – Participation of the Unemployed (2.4 per cent)

(vi) Single-Company Training Programmes in Cyprus (18.5 per cent)

(vii) Single-Company Training Programmes Abroad (2.0 per cent)

(viii) Multi-Company Training Programmes (10.3 per cent)

(ix) High-Priority Multi-Company Training Programmes (4.8 per cent)

(x) Trade Union Officials' Continuing Training Programmes (2.2 per cent)

(xi) Training Programmes organized by HRDA (1.4 per cent).

## Challenges

The challenges that the system will face in the future are mainly related to the consequences of the global financial crisis, which Cyprus experienced more strongly over 2012–13 than in 2008–09. In particular, the current priority is to deal with high long-term unemployment and youth unemployment. The financial crisis has also induced a shift in the perception of skills needs and training. Previously training was oriented to upgrading employee skills, while now resources have been redirected to the prevention and reduction of unemployment.

Other areas where initiatives are required are:

(i) Promotion of skills in new areas such as renewable energy, deployment of new energy sources such as oil and natural gas, and work in the green and blue economy;

(ii) Identification of economic sectors with a low volume of domestic workers, and implementation of initiatives for promoting the development of skills at domestic level;

(iii) Increased training for microenterprises and low-skilled workers.

HRDA (2015) reports that despite the low participation of small enterprises in HRDA activities, these types of firm seem to benefit comparatively more from the system. More specifically, enterprises employing 1–9 and 10–49 persons have the highest percentage coverage of subsidies, at 53.5 per cent and 52.3 per cent respectively in 2014, compared with 37.5 per cent and 23.6 per cent for medium and large enterprises respectively. However, only 2.6 per cent of microenterprises and 28.2 per cent of small enterprises participate in HRDA activities, in contrast to 65.2 per cent of medium-sized and 92.9 per cent of large enterprises. Some explanations for this low participation rate are:

- limited information
- inability to organize and implement training programmes
- difficulties in releasing their staff to attend training during regular work time or outside the company premises.

## 5.3 Available data

### Data availability

For the purpose of this analysis we focus on the period 2000–14. This time horizon was determined by the availability of the Labour Force Survey (LFS) data, which started in 2000. However, there are two variables for which some information is missing:

- Data on public expenditure in education (at different levels) are only available for the period 2001–13;
- The weighting of the informal economy, which is only available between 2008 and 2013. These data were provided by HRDA.

In order to deal with these data constraints, linear extrapolation was used to produce a proxy for the size of the informal economy back to 2000. This might seem a long period to extrapolate over, but what data exists shows the informal economy to have a relatively constant share of total GDP (around 26 per cent with very little variation), and thus we felt this approach was justified. Additionally, the rate of growth of the last year available was used to fill in missing observations for public expenditure in education.[32]

32 Because of space constraints, the full dataset is not included in this report. It is available from the authors on request.

*Data sources*

An overview of the data obtained and its sources is provided in *Table 5.1*.

**Table 5.1** Variables and data sources for Cyprus

| Variable | Source | Time coverage | Comments |
|---|---|---|---|
| GDP, average wage, public expenditure on education (differing levels), unemployment, labour participation rate, educational attainment, tax burden | Eurostat | 2000–14 | Public expenditure in education (at different levels) is only available for 2001–13. |
| Labour participation rate, relative weight of the public sector over the total economy, inflation, GDP deflator | World Bank | 2000–14 | Data on relative weight of the public sector over the total economy are for 2000–12 |
| Employment, unemployment, informal economy as a percentage of GDP, GDP, employee remuneration, total wages and salaries, total employees social contributions, human resource development levy, levy commission, ratio of levy commission over human resource development levy, levy revenues, subsides revenue | HRDA | 2000–14 | Weight of the informal economy over 2008–13 |
| Labour productivity | Conference Board | 2000–14 | |

*Sources:* Cambridge Econometrics.

## 5.4 Estimation of revenues

### Correlation analysis

A preliminary step in the econometric analysis is to apply correlation analysis to identify linear relationships between the variables.[33] In particular, this analysis has revealed:

(i) The amount of revenue raised by the training levy is highly correlated to variables such as GDP, productivity and employment, which reflect the economic context and the performance of the labour market;

(ii) There is also a positive linear relationship between revenue raised and the wage bill (that is, total wages and salaries);

(iii) A strong and positive correlation was also identified between the revenue raised and public expenditure on education;

(iv) A negative linear relationship exists between the revenue raised and the administrative cost of the levy, which is measured by the levy commission;

(v) A negative correlation was also found between the relative size of the public sector and the amount of revenue raised.

All these linear relationships are signed correctly, and support the theoretical framework presented in *Chapter 3*.

### Checking for unit roots

With only fifteen years of observations available there is insufficient information to undertake formal analysis to check whether the various indicators are stationary or not. However, from visual analysis of time series plots it would seem that most series are non-stationary (with a non-constant mean and variance over time).

### Econometric estimates

Without a sufficiently long time series it is not possible to test for the presence of a long-run relationship using cointegration techniques. Instead, the general form of the models that can be estimated is summarized in equation (5):

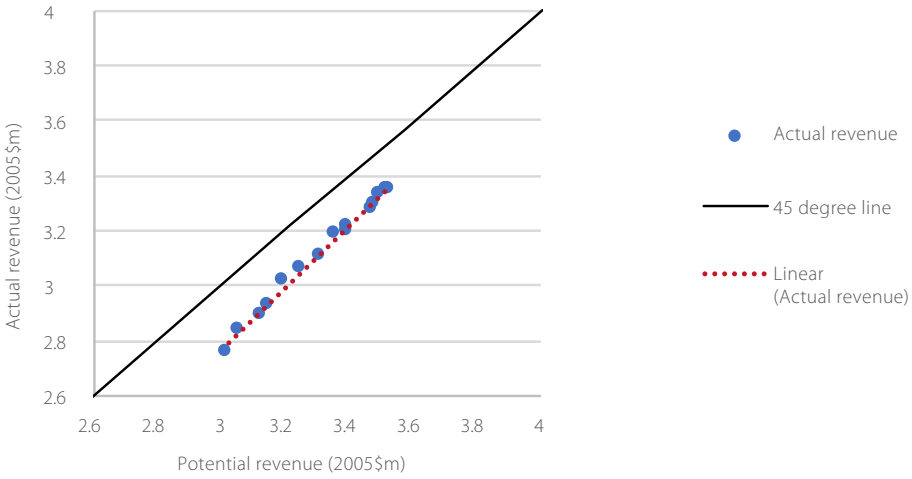
$$\text{Total revenue} = f(\text{potential revenue, others}) \quad (5)$$

33 Because of space constraints, the correlation matrix is not included in this report. It is available from the authors on request. It should also be noted that correlation does not necessarily imply causation.

where ***potential revenue*** has been calculated by multiplying total employee remuneration in the private sector by the levy rate (0.5 per cent), and ***others*** includes variables that reflect the economic conditions, the structure of the labour market and any other elements included in the theoretical framework presented in *Chapter 3*. An underlying assumption of all these models is that the coefficient of ***potential revenue*** would be equal to 1 in a 'ideal' system with no distortions. A major distortion is caused by the informal economy, which in Cyprus accounted for an average of 26 per cent of total economic activity over the period 2008–13. Additionally, a cap for employer contributions adds complexity to the system and helps to explain why the parameter deviates from 1. Another element which could explain the deviation is the fact that public employees' emoluments are exempt.

Before moving on to the econometric estimates, we offer some graphical evidence of the relationship between the amount of revenue raised and the 'potential' revenue (see *Figure 5.3*).

**Figure 5.3 Actual revenue raised versus potential revenue, Cyprus**




*Source:* Cambridge Econometrics elaboration based on provided information for the study in Cyprus.

Notes: Potential revenue is calculated by multiplying the wage bill, i.e. the levy base, by the levy rate. Both variables shown in the chart are expressed as logged values. Potential revenue and actual revenue are shown along the horizontal and vertical axis respectively.

*Parameters and interpretation*

For the purpose of this chapter, a linear relationship between the variables has been assumed. The relevant parameters that have been estimated using OLS are shown in equation (6):

$$\ln(rev_t) = -0.583 + 1.118 * \ln(revp_t) + \varepsilon_t \quad (6)$$

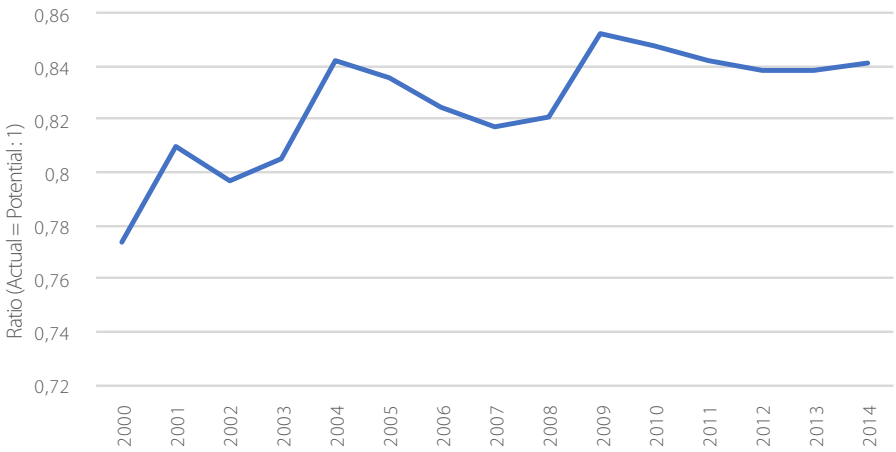
where ***rev*** is the revenue raised, and ***revp*** is calculated by multiplying employee remuneration by the levy rate.[34]

Some interpretation of the coefficients is needed. As expected, there is a positive relationship between the amount of revenue actually raised and the revenue that could be potentially raised if the existing cap were removed. In particular, the estimates suggest that a 1 per cent increase in the potential revenue will lead to a 1.1 per cent increase in the actual revenue.

Further explanation is needed for the fact that the estimated coefficient is above unity (which we might expect to provide a natural long-run limit). This reflects the fact that the cap of the levy has been increasing through time, and subsequently, the actual revenue has become a rising share of potential revenue. *Figure 5.4* illustrates this finding. It is interesting to note that, even with the limited time series data available, there seems to be a pattern in which the ratio of actual-to-potential revenue first rises, then decreases, before rising again to reach a new (localized) peak. The cause of this behaviour could involve the periodic increase of the cap and the behaviour of firms, although because (to date) the dates of any historical increase have not been provided, this possibility cannot be confirmed.

34 The parameter and the intercept are significant, i.e. for each coefficient the probability (p-value) is close to zero so we can confidently reject the null hypothesis that the coefficient equals zero. A 1 per cent significance level has been considered for potential revenue. Preliminary estimates have also found a long-run relationship between the potential revenue that could be raised, revp; the level of employment, emp; and the relative weight of the public sector in the economy, pus. However, the final specification of the model shown in (6) only includes potential revenue as an explanatory variable. Both employment and the relative weight within the economy are not included in the model since they are correlated with potential revenue.
A dynamic version of the model presented in (6) was also estimated, although the lagged term of actual revenue was not found significant. That specification of the model presented an estimated parameter for revp which was below and close to 1.

**Figure 5.4 Ratio of actual revenue to potential revenue, Cyprus**




*Source:* Cambridge Econometrics.

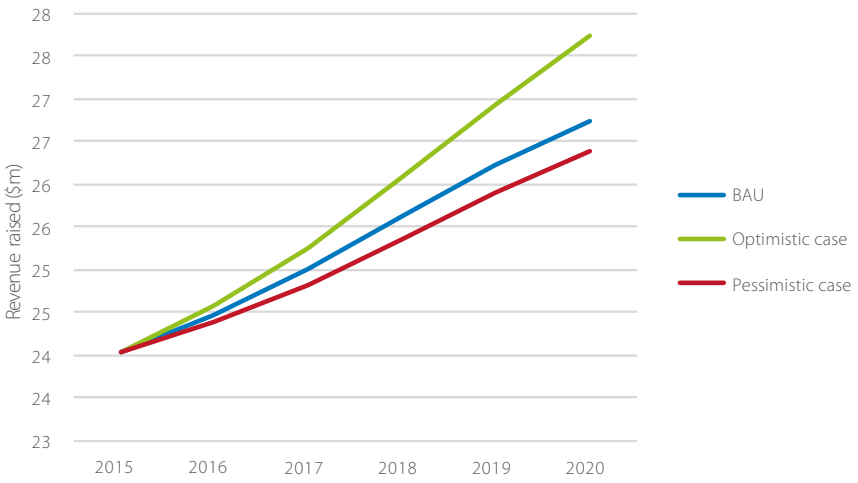
### *Forecasted revenue*

The process of estimating the econometric model shown in (6) is followed by applying the model in the construction of a baseline and two alternative scenarios. Subsequently, these scenarios are used to calculate the future revenue that could be raised by a training levy.

The relevant forecast for the business as usual (BAU) case is presented in *Table 5.2*, along with the optimistic and pessimistic cases. In the BAU case, which is consistent with the IMF forecast, it has been projected that HRDA revenue will grow over the period from 2015 to 2020. Similar trends are expected in both scenarios although the amount of revenue raised is different in each one. *Figure 5.5* provides an overview of the forecast amount of revenue that HRDA could raise in each scenario.

All scenarios use the model shown in (6) to forecast the available revenue. As the coefficient for potential revenue is greater than unity, this implies an ever-narrowing gap between actual and potential revenue moving into the forecast period. Clearly such a position cannot continue indefinitely, because ultimately actual revenue would be forecast to exceed potential revenue. However, for the relatively short-term nature of the forecast being considered in this study, such an assumption is considered reasonable. The alternative (assuming a coefficient of unity for the forecast) would naturally result in lower future revenues.

**Figure 5.5 Forecasted revenue from a training levy, Cyprus, 2015–20**




*Source:* Cambridge Econometrics.

**Table 5.2** Potential private sector resources that could be mobilized for training, Cyprus, 2015–20

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| Baseline case | | | | | | |
| Employee remuneration[35] (US$2005 m) | 8,249.3 | 8,381.3 | 8,549.0 | 8,737.0 | 8,920.5 | 9,081.1 |
| Revenue raised by training levy (US$2005m) | 24.0 | 24.5 | 25.0 | 25.6 | 26.2 | 26.7 |
| Optimistic case | | | | | | |
| Employees remuneration (US$2005) | 8,249.3 | 8,414.3 | 8,624.7 | 8,883.4 | 9,132.2 | 9,378.7 |
| Revenue raised by training levy (US$2005m) | 24.0 | 24.6 | 25.2 | 26.1 | 26.9 | 27.7 |

35 The IMF Country Report does not include any forecasted data on wages and salaries. We made the assumption that wages will grow at the same rate as real GDP.

| | | | | | | |
|---|---|---|---|---|---|---|
| Pessimistic case | | | | | | |
| Employees' remuneration (US$2005) | 8,249.3 | 8,356.6 | 8,490.3 | 8,660.1 | 8,824.6 | 8,974.7 |
| Revenue raised by means of the training levy (US$2005m) | 24.0 | 24.4 | 24.8 | 25.4 | 25.9 | 26.4 |

*Source:* Cambridge Econometrics.

## 5.5 Conclusions

This chapter focuses on the training levy in Cyprus. The Cypriot system relies on the role played by the HRDA, which is the managing body for funds but not itself a training provider. In particular, the HRDA obtains funding through the Human Resource Development Levy, which is currently set at 0.5 per cent of employee payroll subject to a monthly cap (excluding the government and the self-employed), and ESF.

An interesting finding of our consultation with social partners is their consensus in favour of keeping the levy rate at 0.5 per cent, which does not discourage continuing employment and new recruitment.

Moving on to the quantitative analysis, we established an econometric model. In particular, the econometric analysis conducted suggests a long-run relation between the amount of revenue received by HRDA, the levy rate and the levy base of employees' remuneration, and the relative weight of the public sector in the economy.

The estimates presented above reveal that a rising levy base (that is, a rising wage bill) will lead to an increase in the total resources available to HRDA. Additionally, the model also highlights that an increase in the relative size of the public sector will negatively affect the amount of revenue collected.

# 6.

# Pilot country III

## Senegal

# 6. Pilot country III: Senegal

## 6.1 Introduction

This chapter concentrates on the training levy system in Senegal. It provides an overview of the system, along with other details on the data used and results of the quantitative analysis conducted, to provide some estimates of the funds that could be mobilized through a training levy. The method we used is consistent with the methodology outlined in *Chapter 3*.

*Section 6.2* describes the current system which funds the Senegalese vocational and training scheme. *Section 6.3* focuses on the data used for the quantitative analysis. *Section 6.4* presents and discusses the results of the analysis. Finally, *Section 6.5* provides some concluding remarks.

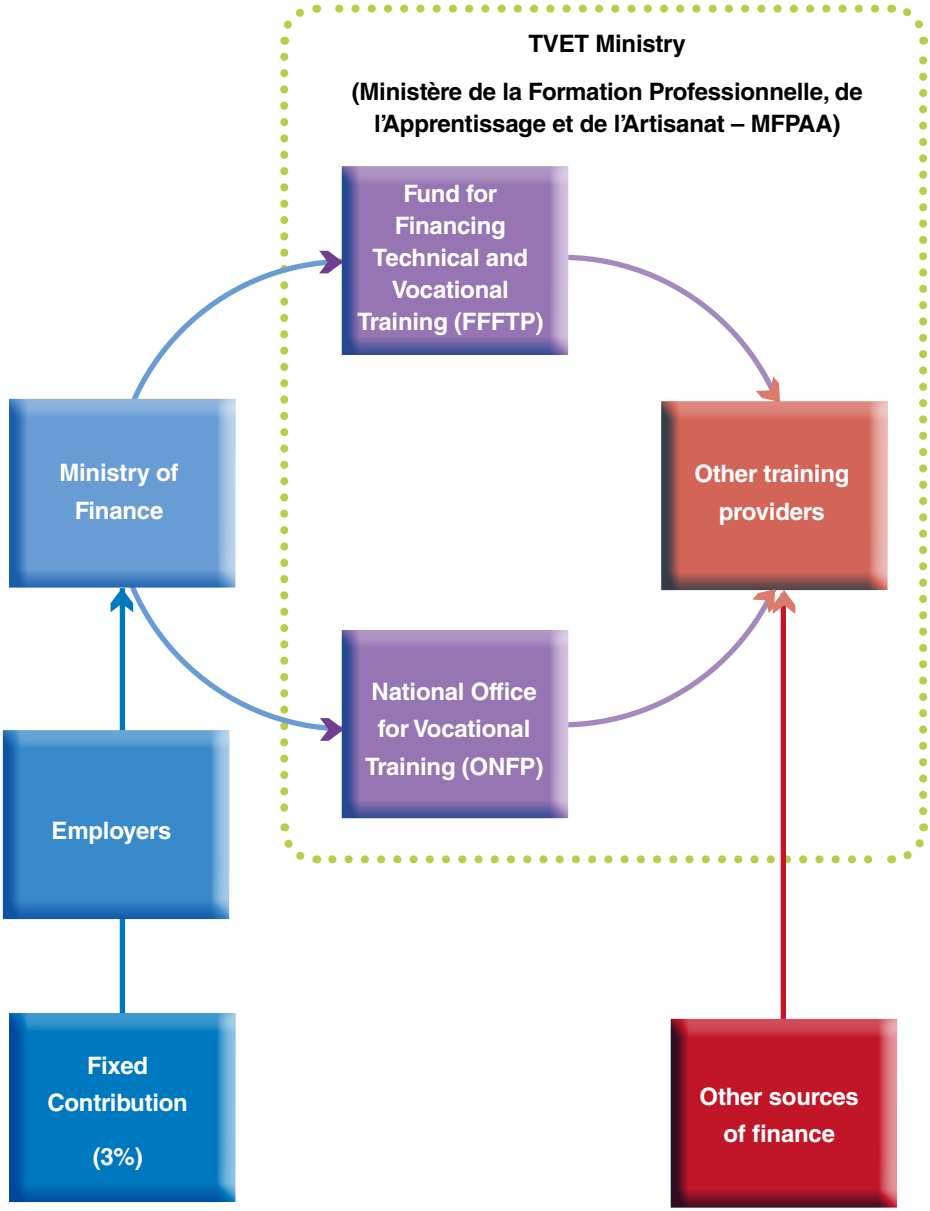
## 6.2 Description of the scheme

### Overview of TVET schemes in Senegal

The Ministry of Vocational Education, Apprenticeship and Crafts (MFPAA) runs the major public TVET schemes in Senegal in conjunction with the Ministry of National Education (MEN). Over the last decades the system has been subject to substantial and dramatic changes which have improved it.

An overview of the structure of the current system is presented in *Figure 6.1*.

**Figure 6.1** Overview of the Senegalese system




*Source:* Cambridge Econometrics (based on understanding from country visit).

*Figure 6.1* illustrates how the different training providers are funded through the training levy and additional resources from the government and international organizations such as the World Bank. Further details on the existing training providers and relevant bodies are provided below.

### *Organization*

Distinctive features of the system implemented in Senegal are that several bodies provide training (state, private, national and international bodies such as non-governmental organizations, NGOs), and there are several different sources of funds. In particular, the following bodies play a major role:

(i) Fund for Financing Technical and Vocational Training (Fonds de Financement de la Formation Professionnelle et Technique, FFFPT),[36] which manages the funds collected by the training levy;

(ii) National Office for Vocational Training (Office National de Formation Professionnelle, ONFP), which is a training provider although it also has other functions.

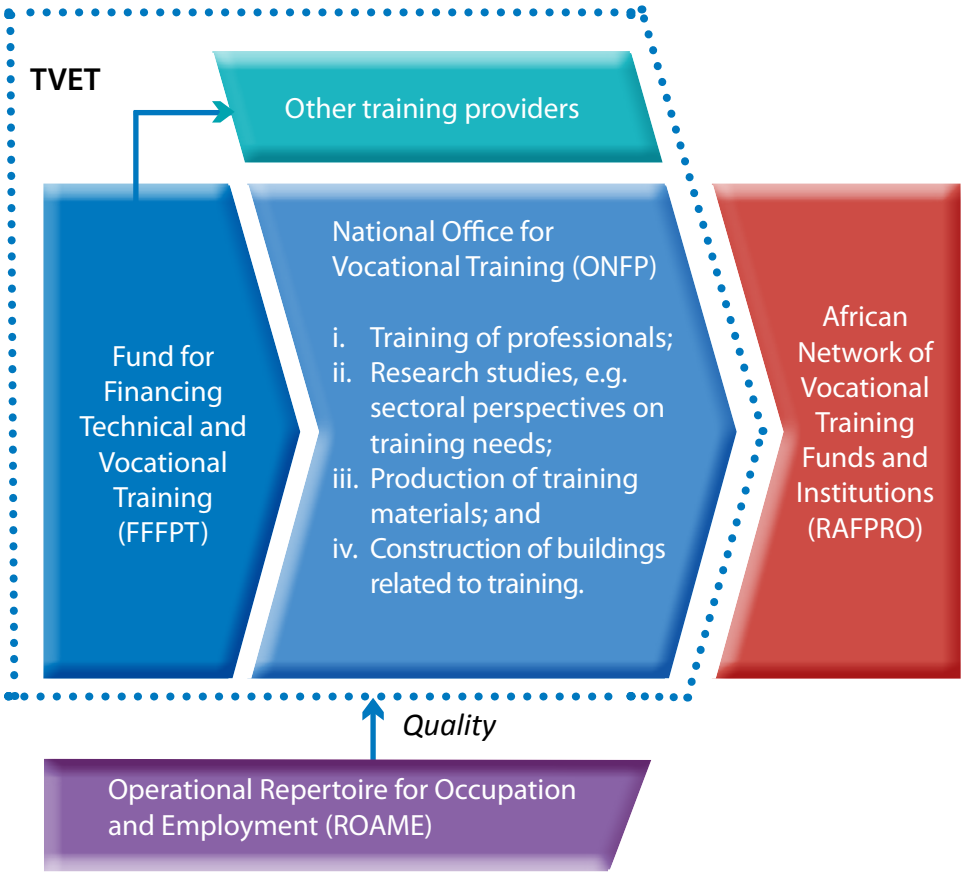
Other institutional bodies involved in the system:

(i) The African Network of Vocational Training Funds and Institutions (RAFPRO) is a network of national funding institutions;

(ii) Operational Repertoire for Occupation and Employment (Répertoire Opérationnel des Métiers et Emplois, ROAME) is a tool to enhance the quality of the TVET system.

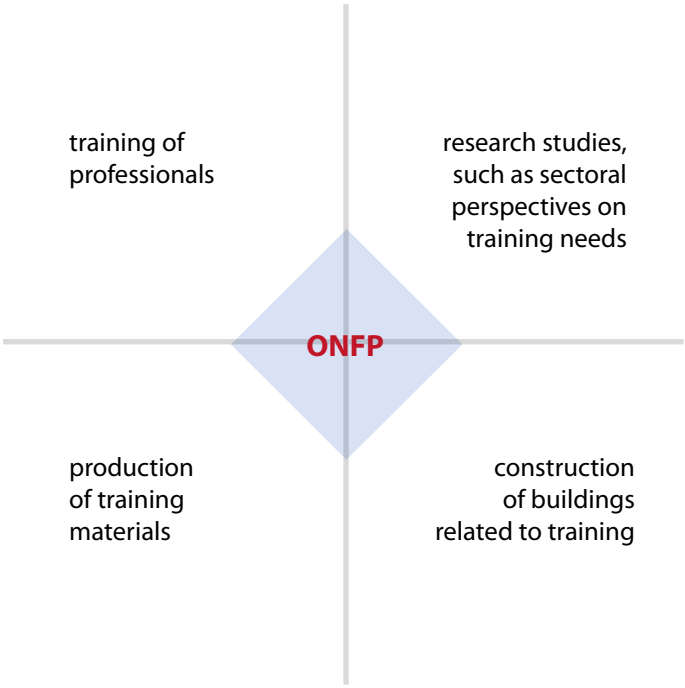
36 This fund replaced the previous Fund for Development of Technical Education and Vocational Training (FONDEF). FONDEF was created in 2004 and during its implementation funded more than 600 projects. In particular, FONDEF pursued the following objectives: (i) implementing vocational and technical training to meet the needs of the economy; (ii) ensuring the adequacy of the current TVET system in Senegal; (iii) acting as a quality regulator of continued education services in Senegal and the correctness of their application; and (iv) ensuring that staff in enterprise and the modern sectors are adequately trained.

**Figure 6.2 Summary of the institutional bodies, Senegal**




*Source:* Cambridge Econometrics (based on understanding from country visit).

As shown in *Figure 6.2*, ONFP has four main functions:




*Source:* UNESCO

*Other training bodies*

In addition to these bodies, other organizations also provide TVET in the Senegal economy at various levels and in various areas of training. For example:

(i) Vocational and Technical Training Centre Senegal–Japan (Centre de Formation Professionnelle et Technique Sénégal-Japon, CFPT)

(ii) National Centre of Vocational Qualification (Centre National de Qualification Professionnelle, CNQP)

(iii) Sectoral Centres for Vocational Training, based on PPPs in several sectors (Centre Sectoriel de Formation Professionnelle aux métiers des Industries Agroalimentaires, CSFP-IAA; Centre Sectoriel aux métiers du Bâtiment et des Travaux Publics, CSFP-BTP; Centre de Formation des Métiers Portuaires et à la Logistique, CFMPL)

(iv) Polytechnic College (Ecole Supérieure Polytechnique, ESP)

(v) National School of Secretariat (Ecole Nationale de Secrétariat, ENS)

(vi) Professional Teaching Center (Centre d'Enseignement Professionnel, CEP)

(vii) Institute of Pattern Cutting, Sewing and Fashion (Institut de Coupe Couture et Mode: ICCM)

(viii) Delafosse National Center of Industrial and Commercial Professional Courses (Centre National des Cours Professionnels Industriels et Commerciaux Delafosse, CNCPICD)

(ix) Centre of Artisanal Formation (Centre de Formation Artisanale, CFA)

(x) National Centre of Professionals.

## The 'fixed contribution'

ONFP is funded directly by the revenue raised through a 'fixed contribution' (Contribution Forfaitaire à la Charge de l'Employeur, CFCE) which came into force in 1986.[37] This is set at 3 per cent of the payroll, and is collected by the Treasury (Ministry of Economy, Finance and Plan, MEFP).

It should be noted that certain types of employees are not affected by this tax. There are exemptions for:

- state and local authorities
- public and semi-public bodies
- the self-employed
- companies that export at least 80 per cent of their production
- mining companies.

Further exemptions are considered in order to promote foreign direct investment (FDI). In particular, new jobs are exempt for five years. An extension up to eight years could be given when 200 or more jobs are created by a firm. Other benefits exist for different types of job creation, such as outside Dakar, and when physical investment also takes place.

In general terms, large companies such as banking, telecoms, insurance and large manufacturers account for up to 60 per cent of the total revenue.

37 Prior to 2004 the system relied on two different levy rates: a 3 per cent rate for Senegalese employees and a 6 per cent rate for foreign workers. The levy is payable by natural and legal persons and organizations that pay wages and salaries, no later than 15 days in arrears. In addition, the employer must file an annual summary by 31 December each year.

## Other characteristics

### *Dual training market*

A peculiarity of the Senegalese system is that there is a rising private TVET market in which non-governmental providers train nearly half the total number of students (Johanson and Adams, 2004). This dual market could help explain the strong disparities between the cost per student in the public and private schemes. In 2002, the average cost per trainee in public schemes was CFA365,000, while for private providers the average was CFA250,000 (see also Atchoarena and Esquieu, 2002). It should be noted that the higher cost of public providers does always not translate into higher success rates. The only exception is Brevet Technique (BT), which shows higher success rates for publicly delivered programmes.

### *Availability of funds*

An issue that deserves further discussion is the insufficiency of available funds for training in the country. Until 2015, TVET in Senegal only received 5 per cent of the total sum raised by the payroll levy (which has mostly remained at 3 per cent from 2005 to 2015). Of this, one-third is spent on ONFP operating costs, while only two-thirds funds actual training (Atchoarena and Esquieu, 2002). Our consultation revealed that recently around 50 per cent of the budget has been used for training purposes. Another weakness of the system is the lack of a fluid dialogue between the different parties involved in terms of the designing of the programmes to be offered and selecting the approved providers.

## Limitations and challenges

Historically only 5 per cent of the total revenue raised by this tax has been transferred to FONDEF and ONFP to subsidize training. Our consultation with the local authorities revealed three limitations of the system, which all result from the manner in which the tax is collected:

(i) Stable resources cannot be guaranteed;

(ii) There is a disconnect between the levy base and the actual funds, which makes it difficult for employers and trade unions to engage with the system;

(iii) There is a lack of autonomous operation.

The disconnect identified between the revenue raised and the amounts disbursed for training calls for further consideration. A build-up of pressure over time from the private sector and trade unions, and a desire to improve the productive potential of the economy, led the government to change the system radically.

In 2014 a Plan Sénégal Émergent (Senegal development plan, PSE) was published which provides a vision to 2035 of Senegal becoming an emerging country (by boosting productivity, which has traditionally lagged behind neighbouring countries).[38] Employee training is the second of the ten pillars that underpin the plan. In particular, there is an agreement to transfer progressively up to 100 per cent of the CFCE to the Fund (10 per cent in 2015, 25 per cent in 2016, 50 per cent in 2017, and 100 per cent in 2018).

Another challenge that the system faces is the size of the informal economy. Historically, the informal economy has accounted for around 70–80 per cent of employment and around 40 per cent of GDP. As already identified in other countries such as the Dominican Republic, although the informal economy is not affected by the levy, workers in this sector do benefit from the training provision and materials. The impact of the informal economy calls for further consideration. If, as the experts consulted indicated, the informal economy benefits from the levy, there could be strong positive repercussions on the formal economy (for example, since the informal economy partly supports the formal economy).

## 6.3 Available data

### Data availability

An overview of the data used and its sources is provided in *Table 6.1*. In order to test econometrically the model proposed in *Chapter 3*, we used data for the period 1987–2014. Most of the data was provided by MEFP, although the World Bank database was also consulted.

38 See also World Bank (n.d.).

**Table 6.1** Variables and data sources for Senegal

| Variable | Source | Time period |
|---|---|---|
| CFCE revenue retained by government and percentage of tax base retained by government | MEFP | 1987–2014 |
| GDP at market prices (both constant and current), CFA/US$ exchange rates, and GDP per capita (both constant and current) | World Bank | 1987–2014 |
| CFCE tax base as percentage of GDP market prices | CE calculations | 1987–2014 |
| GDP growth (%) | World Bank | 2015–2017 |
| GDP growth (%) | PSE | 2015–2020 |

*Source:* Cambridge Econometrics.

## 6.4 Estimation of revenues

### Econometric estimates

In view of the peculiarities of the Senegalese system, the first step was to estimate a simple model in which the tax base[39] was a function of GDP. Since the time series are long enough, a lagged term of the tax base was included to produce a dynamic model. We used OLS to produce the estimates shown in equation (7):

$$taxb_t = -1.136 + 0.191 * GDP_t + 0.815 * taxb_{t-1} + \varepsilon_t \quad (7)$$

where GDP is measured in current and market prices, and ***taxb*** is the tax base variable. [40] Both variables are defined as logged terms.[41]

The estimates presented in (7) shows that a 1 per cent increase in GDP will lead to an initial 0.19 per cent increase in the levy revenue, but that the long-run effect will be a 1 per cent increase in the tax base, or full correspondence between the tax base and the proxy.[42]

39 The tax base is created by dividing the CFCE revenue retained by the government by the share of the tax base retained by the government.

40 The lagged tax base is also included in the model to determine whether time trends are present. As is typical for tax revenue, the data are in current prices which is why they need to be matched against an explanatory variable (e.g. GDP) which is on the same basis.

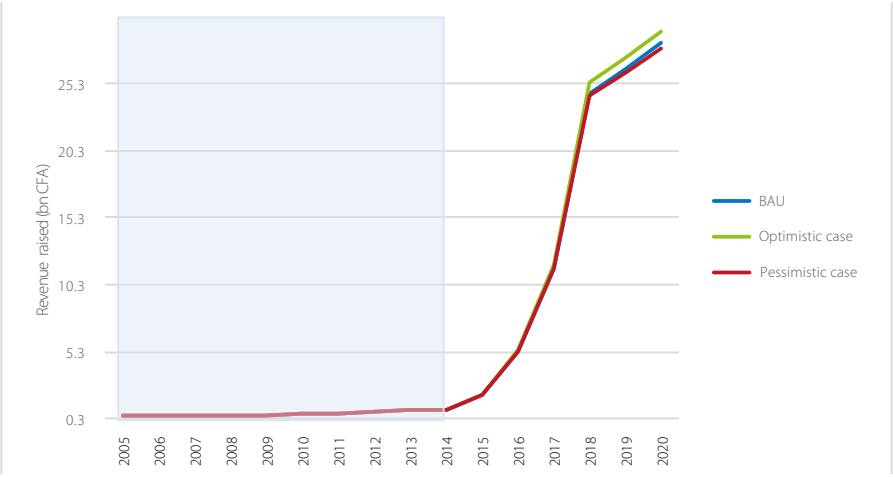
41 The parameter and the intercept are significant, i.e. for each coefficient the probability (p-value) is close to zero so we can confidently reject the null hypothesis that the coefficient equals zero. A 1 per cent significance level has been considered for potential revenue.

42 The initial (one-period) effect is the coefficient on GDP. The long-run effect is calculated by collecting terms, i.e. equals 0.191/(1 – 0.815).

*Forecast revenue*

After confirming GDP as a proxy for the levy base, we made a simple calculation to produce the forecast for each of the three cases under consideration. In particular, we applied the effective levy rate to the relevant GDP forecast to produce the results reported in *Table 6.2*. There were similar trends for the other two scenarios although the levels of the tax base differed. *Figure 6.3* provides an overview of the forecasted amount of the tax base in each scenario. It also captures how the changes in the system will lead to a rapidly rising amount of revenue which will be transferred to the fund.

**Figure 6.3 Actual and projected revenue raised by a training levy, Senegal, 2005–20**




*Source:* Cambridge Econometrics.

Note: The shaded area represents historical rather than forecast data.

**Table 6.2** Estimates of private sector resources that could be mobilized for training, Senegal, 2015–20

| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| Baseline | | | | | | |
| Tax base retained by government (%) | 90 | 75 | 50 | 0 | 0 | 0 |
| Total (actual) tax base (CFA billions) | 19.8 | 21.3 | 22.9 | 24.6 | 26.4 | 28.3 |
| GDP growth (%) | 4.8 | 5.0 | 5.2 | 5.0 | 5.0 | 5.0 |
| Potential revenue available for training funds (CFA billions) | 2.0 | 5.3 | 11.5 | 24.6 | 26.4 | 28.3 |
| Optimistic case | | | | | | |
| Tax base retained by government (%) | 90 | 75 | 50 | 0 | 0 | 0 |
| Total (actual) tax base (CFA billions) | 19.8 | 21.9 | 23.5 | 25.4 | 27.2 | 29.2 |
| GDP growth (%) | 6.9 | 7.9 | 8.0 | 8.6 | 8.5 | 8.5 |
| Potential revenue available for training funds (CFA billions) | 2.0 | 5.5 | 11.8 | 25.4 | 27.2 | 29.2 |
| Pessimistic case | | | | | | |
| Tax base retained by government (%) | 90 | 75 | 50 | 0 | 0 | 0 |
| Total (actual) tax base (CFA billions) | 19.8 | 21.3 | 22.8 | 24.4 | 26.1 | 27.9 |
| GDP growth (%) | 4.8 | 4.8 | 5 | 4.7 | 4.7 | 4.7 |
| Potential revenue available for training funds (CFA billions) | 2.0 | 5.3 | 11.4 | 24.4 | 26.1 | 27.9 |

*Source:* Cambridge Econometrics.

*Note:* The Global Economic Prospect database, which is maintained by the World Bank, only provides data for the period 2015–18. In order to provide results for the period 2015–20 we linearly extrapolated from this data. The baseline results are consistent with the World Bank GDP forecast; while the Optimistic case is consistent with the forecasted data provided by PSE. In order to avoid making assumptions for inflation and the exchange rate, we have reported the data in local currency.

## 6.5 Conclusions

This chapter focuses on the training levy and TVET schemes currently in place in Senegal, and provides some estimates of the revenue that could be mobilized. In Senegal, revenue is raised through a 'fixed contribution' approach, in the form of a 3 per cent levy rate. The levy base for this tax is payroll, and there are several cases in which the tax is waived. For example, the government and the mining sector are both exempt. Further exemptions are available for exporting companies and for new jobs created.

Because of the limited availability of alternative indicators (such as wages and salaries) we used GDP as the proxy for the tax base in building a forecasting model. Sufficient time series data allowed for a dynamic model to be estimated by the OLS method. The econometric estimates suggest that a 1 per cent increase in GDP will lead to a similar magnitude increase in the tax base in the long run.

Given the certainty with which the CFCE is collected (through payroll) it would seem that the main challenge facing the Senegal economy in the future is not raising sufficient funds for vocational training, but making sure that the rapid increase in funds expected in the coming years is spent effectively and efficiently. There is a risk that management and operations could be overwhelmed by such a sizeable increase in funding. We acknowledge that plans are being put in place, but putting them into practice is another thing entirely.

# 7.

# Extending the analysis

# 7. Extending the analysis

## 7.1 Introduction

This final chapter looks at how the work undertaken so far, the key messages and lessons learned, can be extended to other countries with TVET financing systems which also need to consider potential future funding. This is an important issue because in most countries TVET funds will not be forecasted as an individual item by the Ministry of Finance, but will most likely be grouped together with other direct taxation when undertaking national projections. This makes it impossible to know with any degree of certainty what funds will be available in future.

The chapter is structured as follows. First, the messages from the country visits and the wider literature review outlined in *Chapter 2* are distilled into a proposed decision tree framework. In principle, any country with a TVET system can follow this to discover which forecasting approach best suits their situation and characteristics. Second, a set of guidelines is presented, which take countries through the process of how to gather and undertake these funding forecasts.

## 7.2 Identifying a generalized methodology

### Key messages from country visits

As part of this research the team made three visits to countries with different characteristics in terms of geographical location, economic structure and level of development. The objective of each mission was to provide a more in-depth understanding of how the training levy was implemented in the country through discussions with the relevant actors.

**Table 7.1** Summary of country TVET systems

| Country | TVET system | Key stakeholders | Main issues |
|---|---|---|---|
| Dominican Republic | 1% tax on payroll<br><br>0.5% tax on employee bonuses | INFOTEP, trade unions and employer federation | Size of the informal economy – it accounts for more than half of total employment |

| | | | |
|---|---|---|---|
| Cyprus | Human Resource Development Levy (0.5% of employees emoluments subject to a cap) | HRDA, trade unions and employer federation | Rapid rise in external (EU) training funds |
| Senegal | Fixed contribution (3% of eligible payroll) | FFFPT, ONFP, Others | Rapid increase in funds expected in the coming years is spent effectively and efficiently |

*Source:* Cambridge Econometrics

These are some key messages that can be drawn from the research outcomes:

(i) It is a common practice to design a training levy applied to payroll. Usually government employees are not affected by this type of levy;

(ii) The size of the informal economy could be an important threat to the sustainability and the coverage of the system, as those informally employed do not contribute to its financing. Usually workers in the informal economy benefit from at least some of the training provided, particularly 'soft' training, which teaches transferable (non-job-specific) skills such as communications and interpersonal relations;

(iii) In many countries additional funding from international bodies such as the European Union and the World Bank is available. This supplements the revenue raised by the training levy. This can affect the ability to forecast revenues, because the amount of funding may only be loosely related to the fortunes of the domestic economy, although if a country receives a large share of its training funds through external sources we could assume that this money can be identified and distinguished from private sector resources.

## Data considerations

The preference when forecasting future tax revenues is for the prediction to be based on a sound historical relationship between the tax revenue and the tax base (or a suitable proxy for it).

A model that provides estimates using econometric techniques will only produce robust results when sufficient data are available and historical structures and relationships are

stable over time. As discussed above, if the time series are not long enough, it is preferable to make a calculation based on the effective tax rate rather than to infer conclusions from a small sample of data. This type of model will be also useful when no dramatic changes in legislation are expected over the forecast period.

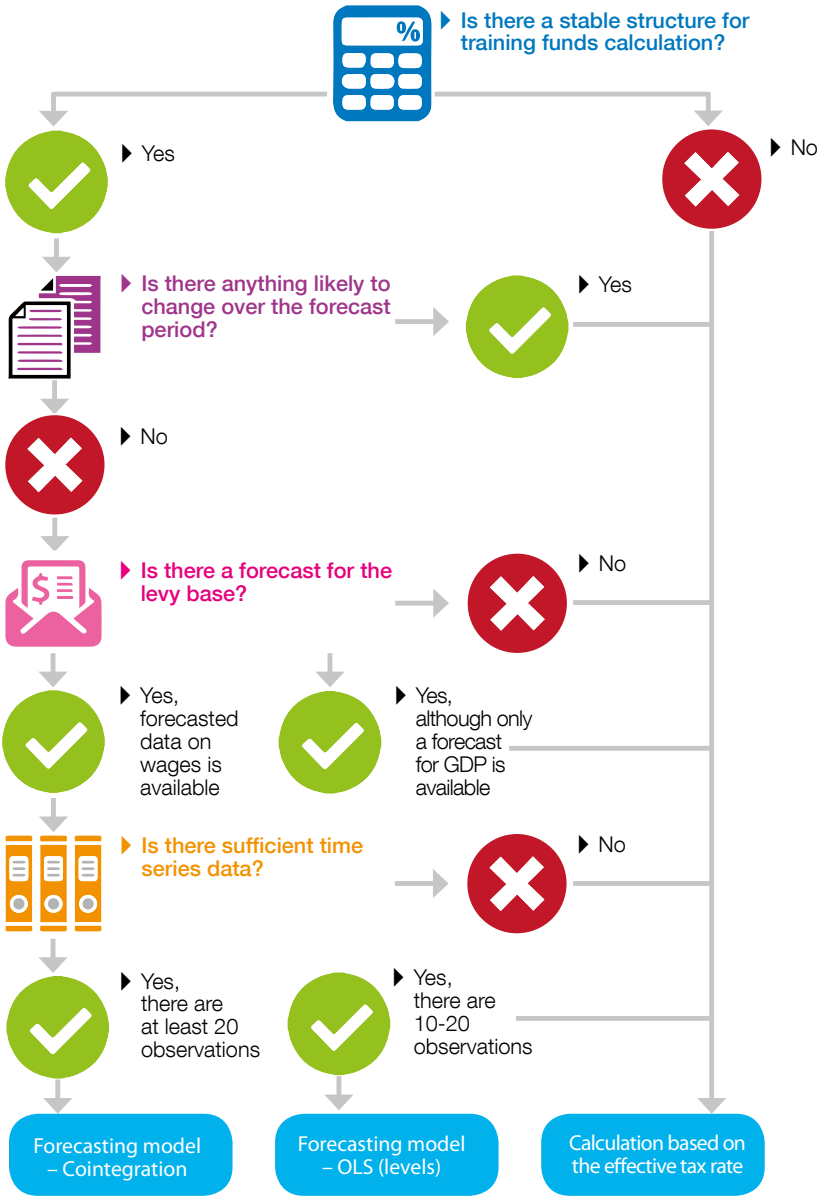
## Proxy for tax base

Nevertheless, a key issue when forecasting revenue is to identify a suitable proxy for the levy base. For most countries the total wage bill can be used. However, this would not be an appropriate proxy when several sectors are exempt from the levy (such as the public sector or major exporting sectors) or in countries where tax collection in general is a significant problem, and there is a significant degree of avoidance or evasion. In such cases, an estimate can be produced using a simple calculation in which the effective tax rate (the total amount of revenue as a percentage of GDP) is applied to a GDP forecast.

## Moving to a generalized decision process

In looking to see how the findings from the study can be relevant for other countries seeking to forecast their own training revenues, *Figure 7.1* presents a decision tree which could be used to arrive at the method that is most appropriate under the specific national conditions.

**Figure 7.1** Overview of forecasting decision tree




*Source:* Cambridge Econometrics.

*Selecting the appropriate methodology*

The starting point of the decision process relates to the current structure of the fund. In particular, it is fundamental to ascertain whether the fund has had a stable structure over the historical period in question. If there have been substantial changes it is unlikely that any econometric method will capture the relationships affecting the evolution of past revenue. In those cases, to make a simple calculation based on the effective levy rate is the best way forward. In other words, if the structure of the fund has changed substantially over time, we recommend that the ratio of revenue raised to GDP in the current period be applied to any available forecast for GDP. An alternative is to use the average ratio over the period subsequent to the last significant change in the fund's structure.

$$\text{Estimated revenue} = \text{GDP} * \text{revenue raised (\% GDP)} \quad (8)$$

The second level of decision refers to the structure of the levy rate in the near future. If there is likely to be a change in the legislation defining the training levy, the past will not be a good proxy for the future, so a forecasting model using estimates based on historical data will not perform well. In this case, some estimates can be calculated based on the effective levy rate, as indicated in formula (8).

When the structure of the levy has been stable in the past and no changes are expected in the coming years, an econometric approach could be used. Its construction will depend on the availability of data for both the historical and the forecast period. More specifically, we recommend the econometric estimation of a behavioural model when an official forecast is available for the variable used as a proxy for the levy rate. For the vast majority of countries, this means the availability of forecasts for wages and salaries, although GDP[43] could also be used, given the fairly stable ratio of the wage share to total value added over the long term. More specifically, a proxy for the wage bill could be constructed by applying a fixed percentage[44] to forecast GDP.

When a forecast is available, or can be generated in this way, it is viable to use an econometric model, although its complexity will depend on the data availability for the historical period. More specifically, we recommend using a simple OLS-type regression of the variables in levels when there are fewer than twenty periods of data, while a cointegration approach (based on identifying the long-run relationship between the levy and the tax base) would be suitable when the relevant time series includes more than twenty observations.[45]

43 GDP also has the added advantage that it is the most readily available forecast indicator.

44 The recommendation is to calculate this fixed value as the average value of the variable over the period of time under consideration.

45 See Gujarati and Porter (2009) and Enders (2014) for detailed explanations of econometric techniques such as OLS and cointegration.

## 7.3 Guidelines for forecasting training revenues

Once it is understood how resources from the private sector could be mobilized, and a methodology has been designed for forecasting, it is appropriate to provide some general guidelines that countries should follow in order to forecast the amount of revenue. These should be set alongside the calculation:

(i) If the bodies in charge of managing the training funds do not have the capability to produce their own forecast, they could ask the ministry of finance (or the body that effectively collects the tax) to produce the relevant forecast as part of its revenue-forecasting system or model. As stated previously, it is quite likely that a training levy will not have been separately identified by the ministry of finance. That does not mean it could not be done, and so the first task is to communicate between institutions so each is aware of what the other is doing;

(ii) If capacity is available, and the ministry of finance is not interested in forecasting the training revenue, then the managing institution should gather the relevant historical data (tax rate, tax base and tax revenue) and also obtain the relevant forecast data for the main variables (that is, the proxy for the tax base);

(iii) If there are no sufficient and robust data for the historical period from publicly available sources, the managing body should approach the national statistical office to see whether better time series can be supplied;

(iv) Ideally either the ministry of finance or the central bank should be able to produce the forecasts required. If that is not the case, the Global Economic Prospect database and World Economic Outlook –maintained by the World Bank and the IMF respectively – could be used instead, for GDP if nothing else;

(v) An important issue that the relevant authorities need to bear in mind when forecasting their revenues is the size of the informal economy. This could be an additional source of resources if those currently in informal employment are brought into the formal sector.

## 7.4 Conclusions

Using the information gathered from the three case study countries explored earlier in the report and the literature, we have been able to see trends in the way TVET schemes are funded, and have observed potential threats to the funding base (for example the size of the informal sector). The case study countries were also used in developing a methodological structure which provides information on what is needed to carry out robust statistical analysis, and forecasting future sizes of the funds. The two main features revealed here are the need for sufficient and reliable historical data, and some form of stable institutional structure which will continue for the forecast period. With this information we were able to create a decision tree (*Figure 7.1*) which informs countries which actions should be taken when forecasting TVET funds.

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# Acronyms and abbreviations

| | |
|---|---|
| BAU | Business as usual |
| CASC | Confederación Autónoma Sindical Clasista (Autonomous Confederation of Workers' Unions) (Dominican Republic) |
| CEDEFOP | European Centre for the Development of Vocational Training |
| CET | Continuing Education and Training (Singapore) |
| CFCE | Contribution Forfaitaire à la Charge de l'Employeur (Employer's Contribution) (Senegal) |
| CNTD | Confederación Nacional de Trabajadores Dominicanos (National Confederation of Dominican Workers) (Dominican Republic) |
| CNUS | Confederación Nacional de Unidad Sindical (National Confederation of Trade Union Unity) (Dominican Republic) |
| COPARDOM | Confederacion Patronal de la Republica Dominicana (employers' federation) (Dominican Republic) |
| COS | centros operativos del sistema (system operating centres) (Dominican Republic) |
| CVTS | Continuing Vocational Training Survey |
| ESF | European Social Funds |
| FDFP | Fonds de Développement de la Formation Professionnelle (Funds for professional development) (Côte d'Ivoire) |
| FDI | Foreign direct investment |
| FFFPT | Fonds de Financement de la Formation Professionnelle et Technique (Funds for financing professional and technical training) (Senegal) |
| FONDEF | Fund for Development of Technical Education and Vocational Training (Senegal) |
| FODEFCA | Fund for the Development of Vocational Training and Apprenticeships (Benin) |
| GDP | Gross domestic product |
| GVA | Gross value added |
| HRDA | Human Resource Development Authority of Cyprus |
| IMF | International Monetary Fund |

| | |
|---|---|
| INADEH | Instituto Nacional de Formación Profesional y Capacitación para el Desarrollo Humano (National Institute of Vocational Training for Human Development) (Panama) |
| INAFORP | Instituto Nacional de Formación Profesional (National Institute of Vocational Training) (Panama) |
| INFOTEP | Instituto Nacional de Formación Técnico Profesional (National Institute of Technical and Vocational Training) (Dominican Republic) |
| LFS | Labour Force Survey |
| MEFP | Ministry of Economy, Finance and Plan (Senegal) |
| MEN | Ministry of National Education (Senegal) |
| MEPyD | Ministerio de Economía Planificación y Desarrollo (Ministry of Economic Planning and Development) (Dominican Republic) |
| MFPAA | Ministry of Vocational Education, Apprenticeship and Crafts (Senegal) |
| NGOs | Non-governmental organizations |
| OEB | Cyprus Employers and Industrialists Federation |
| OECD | Organisation for Economic Co-operation and Development |
| OLS | Ordinary least squares |
| OMLAD | Observatorio del Mercado Laboral Dominicano (Dominican labour market observatory) (Dominican Republic) |
| ONFP | Office National de Formation Professionnelle (National office for professional training) Senegal) |
| OTE | Oficina territorial de empleo (National employment office) (Dominican Republic) |
| PEO | Pancyprian Federation of Labour |
| PPP | Public–private partnership |
| PSE | Plan Sénégal Émergent (Senegal development plan) |
| RAFPRO | African Network of Vocational Training Funds and Institutions |
| ROAME | Répertoire Opérationnel des Métiers et Emplois (Jobs and positions operational directory) (Senegal) |
| SDF | Skills Development Fund (Singapore) |
| SDG | Sustainable Development Goal |
| SEBRAI | Serviço Brasileiro de Apoio às Micro e Pequenas Empresas (Brazilian Support Service for Micro and Small Enterprises) (Brazil) |
| SENAC | Serviço Nacional de Aprendizagem Comercial (National Service for Commercial Training) (Brazil) |

| | |
|---|---|
| SENAI | Serviço Nacional de Aprendizagem Industrial (National Service for Industrial Training) (Brazil) |
| SENAR | Serviço Nacional de Aprendizagem Rural (National Service for Rural Training) (Brazil) |
| SENAT | Brazilian national service for transport training |
| SMEs | Small and medium-sized enterprises |
| TVET | Technical and vocational education and training |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| VDAB | Vlaamse Dienst voor Arbeidsbemiddeling en Beroepsopleiding (Flemish Employment and Vocational Training Service) |
| VDAP | Vocational Ability Development Program (South Korea) |
| VTE | Vocational and technical education |

# Appendix A: Guidelines for collating and verifying the relevant data

In order to test the methodological approach that has been elaborated for the purposes of this document, some statistical data will be required. It is likely that the raw data obtained from different statistical sources will need to go through further processing before it can be used for econometric analysis.

We used a detailed verification process prior to conducting the quantitative analysis for this project. Specifically, this process involves the steps described in *Box A.1*.

## Box A.1 Data verification process

- Check consistency with original source.
- For regional/sectoral data, check consistency with official total numbers.
- If any data are the result of a calculation, check that the right formula has been applied.
- For time series data, check rates of growth.
- Identify outliers and provide an explanation: changes in the statistical methodology, economic crisis, geopolitical changes, new legislation coming into force, etc.
- Interpretation of results: it is useful to define a testable hypothesis about the expected results that will be obtained in the quantitative analysis. When the results challenge the testable hypothesis, an explanation for the discrepancy needs to be provided:
- comparison of results for different industry sectors – further checking of unexpected results
- compare industry with average – further checking of unexpected results
- check the size of the results: for example, is the impact of a change in a particular variable too big or small?
- Graphical representations – this includes creating charts to look for patterns, distributions, outliers, checking that there are no duplications, etc.
- Consistency of units: for example, should population be recorded in millions or thousands?
- Consistency with other indicators in the dataset needs to be checked.
- Finally, check that the figures make sense from an economic theory and intuitive perspective.

*Source:* Cambridge Econometrics.

# Appendix B: Literature review

| | Reference | Scope | Methodology |
|---|---|---|---|
| 1 | Adams (2008) | Sub-Saharan Africa | Qualitative approach |
| 2 | ADEA and AFD (2014) | Africa | Literature review and survey carried out on training funds in West and Central Africa. |
| 3 | Billett and Smith (2003) | Australia | Literature review and expert interviews |
| 4 | CEDEFOP (2008) | Belgium, Denmark, Spain, France, Italy, Cyprus, the Netherlands and United Kingdom. | Qualitative analysis of the strengths and weaknesses of sectoral training funds |
| 5 | CEDEFOP (2009) | All 27 EU Member States with a focus on the 12 newer members. | Qualitative analysis – 64 experts were interviewed. Quantitative analysis of the contextual factors affecting the level of investment and participation in TVET. |
| 6 | Dar (2004) | 15 countries with varied geographic location and levels of development. | Qualitative approach |

| Main findings |
| --- |
| This study highlights the necessity of greater data availability to assess the role of TVET in the informal economy in African nations. The success of TVET schemes in sub-Saharan Africa strongly depends on opening up the market for private providers, including NGOs. |
| This study suggests a number of key strategic recommendations regarding the funding of a multitude of TVET systems in Africa. These recommendations cover areas such as the implication of the interaction between the formal and informal sector on training, and the pooling of knowledge and resources to effectively finance successful TVET schemes. |
| After assessing a number of different funding mechanisms, this study emphasizes that each system has experienced some form of success. However, the success of each programme is highly dependent on the level of employer commitment. Therefore policies that aim to increase the presence of TVET schemes are paramount for the success of lifelong learning schemes. |
| This report suggests that sectoral training funds (STFs) are beneficial to under-represented groups such as low-skilled or older workers, women, and unemployed young people who have already left formal education. It also provides some evidence that not all workers benefit from the funds, particularly employees in SMEs as these firms face restraints such as lack of time and difficulty in finding replacements while workers attend the relevant training. This study also remarks that bureaucratic 'red tape' could increase the costs of the scheme and 'deadweight losses'. |
| This research finds that the greater the effectiveness and efficiency of a TVET cost-sharing scheme, the lower the 'deadweight loss' and the higher the expenditure of participants on the scheme. Both the qualitative and quantitative analyses show that contextual factors influenced the level of private investment in TVET, while cost-sharing schemes and regulatory instruments failed to do so. The regression analysis also reveals that the existence of an equilibrium in the labour market, the certainty of investment and capacity of spending on education from public sources have impacted on the levels of investment and participation in TVET. |
| This report concludes that levy schemes are a more suitable option for middle-income countries. Low-income countries might find implementation problematic since they do not have effective administration mechanisms. The research also found that under certain circumstances training levies could act as a subsidy for larger companies, and a tax for smaller ones. |

| | Reference | Scope | Methodology |
|---|---|---|---|
| 7 | Dar et al. (2003) | 15 levy schemes from around the world. | Qualitative review of currently used levy schemes |
| 8 | Dickinson and Marsden (2013) | Australia, Ireland, the Netherlands, United Kingdom, European Union | Qualitative review |
| 9 | Dunbar (2013) | Low-income countries | Qualitative review of eight policies |
| 10 | Elson-Rogers and Westphalen (2006) | Nine member states of the European Union | Quantitative analysis of current and historical survey data collected in Europe |
| 11 | Falch and Oosterbeek (2011) | European education institutions | Review of empirical evidence relating to funding schemes for additional training |
| 12 | Galhardi (2002a) | 32 countries | Survey and statistical analysis |
| 13 | Galhardi (2002b) | Latin America | Qualitative approach |

| Main findings |
| --- |
| The implementation of levy schemes is a more appropriate strategy for middle-income countries than for lower-income ones because of the requirement for a strong governmental administrative setup. This study also finds that training levies could be viewed as a subsidy for larger companies and a tax on smaller ones. |
| This report finds that contextual factors such as the economic cycle, institutional and personal factors have a greater impact on participation and completion of training than financial incentives. When firms underinvest in training, it is more effective to improve their information about the benefits of increased training than to introduce financial incentives. |
| This research suggests that more private investment is needed in the developing world as national governments lack the administrative abilities to make levy schemes viable. Voucher schemes had mixed results but there is evidence that they can work in disadvantaged communities. Regardless of the type of scheme, contextual factors such as government stability, low and stagnant growth, and demographic make-up (for example if the population is urbanized or not) remain huge barriers to the success of schemes. |
| This report finds that there is movement away from state-led funding towards demand-led regulation. It also foresees more equality in the burden of cost among governments, individuals and companies as they seek alternative funding methods to reduce costs. |
| This study reports that voucher schemes can increase purchasing power in relation to TVET. However, it is important to increase individuals' awareness of the availability and importance of lifelong learning schemes. While vouchers might slightly impact the uptake of lifelong learning, previous studies have shown that many individuals who use the vouchers would have self-funded (or been employer funded). That provides some evidence for a 'deadweight loss'. |
| Out of the 32 countries surveyed no national statistic body was able to provide information on all areas of the questionnaire. To supplement the information gathered further data was provided by the national vocational training institutions or the ministry of labour. |
| Latin American governments have distanced themselves from the production of training and are now overseers of the lifelong learning market. Their new role is to facilitate private suppliers and set out the rules under which the market operates. In this new context, eventually, the government controls the available funding methods and the private enterprises that supply the training. |

| | Reference | Scope | Methodology |
|---|---|---|---|
| 14 | Gasskov (2002) | Brazil, France, Canada, Denmark, Singapore | Country-specific case study analysis, assessing the effects of levies, levy exemption schemes and levy grant schemes |
| 15 | Gauron and Walther (2006) | South Africa, Benin, Burkina Faso, Mali, Tunisia | Qualitative review and cross-cutting comparison of parameters |
| 16 | Gaušas and Dumčius (2009) | 12 new EU member states | Qualitative approach – literature review and survey of TVET experts |
| 17 | Gospel and Casey (2012) | United Kingdom | Qualitative review of the benefits of training levies |
| 18 | Hoeckel (2008) | Global | Literature review |
| 19 | Hofstetter (2014) | Nepal | Discussion-based review of key factors that affect training schemes |

| Main findings |
| --- |
| This paper concluded that a levy-based system has led to increases in training offered in some of the countries, with Canadian firms now training one in every three employees as opposed to one in every twelve in 1972. Firms aimed to take advantage of the levy-exemption schemes, and introduced training which was beneficial to the sector. This paper also states that levies can help build up TVET funds. However, a levy-based system can lead to firms being subsidized for training that they would have offered anyway. Moreover, this study concludes that levy-grant systems have benefited larger organizations more than smaller ones. It suggested that levy levels specialized by sector would be an approach to combat this. |
| This report found that although all the countries under scrutiny have implemented a vocational training tax, none of them allocates all the proceeds to in-service vocational training and apprenticeships. Specifically, there is a misallocation of the resources since in some of the countries these funds are used to finance basic training or social development. This dampens the efficiency of these schemes. |
| This research found that countries make little effort to monitor the progress of each 'mechanism and instrument' of TVET. Subsequently, there is a systematic failure to evaluate the effectiveness of the schemes under consideration. In spite of these difficulties, it reported that grant schemes have achieved their goals relatively well, while tax allowance schemes were ineffective in the countries considered. |
| This paper focuses on the Training Board – Construction Skills, the Engineering Construction Industry Training Board and the Skills Investment Fund. No evidence suggests that large firms benefit more than smaller ones. The interviews indicate that over time increased training becomes behavioural routine. However, this study did also find the presence of the 'deadweight loss' caused by subsidizing employers who would have implemented the training regardless. |
| This report suggests that an aggregated cost–benefit analysis is an impractical tool for evaluation, since TVET schemes and their definition vary greatly across economies and there are no standards for collecting data in a systematic form. The report also concludes that differing countries experience the benefits of TVET schemes differently because of economic factors such as labour market regulation. |
| This report suggests it may be more appropriate to implement multiple funding schemes to create an effective training system. This is because of the diversity of the groups that the schemes target. One issue that could arise from a centralized training fund is that allocation is based on favouritism instead of merit. Therefore transparent management and due diligence is imperative for the success of the scheme. |

| | Reference | Scope | Methodology |
|---|---|---|---|
| 20 | James (2009) | South Africa | Qualitative assessment |
| 21 | Johanson (2009) | A cross-country study involving 60 countries | Descriptive review |
| 22 | Kathure and Mbijjiwe (2014) | Africa | Qualitative review of TVET in Africa |
| 23 | Keating (2007) | Australia, Singapore, China, UK, Norway and Germany | Cross-country comparison |
| 24 | Kingombe (2012) | Sierra Leone | A comparative study looking at TVET around the world and comparing them with the one in Sierra Leone. |
| 25 | Márquez (2001) | Latin America | Report based on the discussion between several bodies: government, private sector and trade unions. |
| 26 | Muller and Behringer (2012) | OECD countries | Discussion and review of anecdotal evidence regarding training subsidies and levies. |
| 27 | Muya et al. (2007) | Zambia | Survey |

| Main findings |
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| Ultimately the scheme has had a positive impact on South Africa. However, the benefits have been inequitable, with large employers benefiting more than SMEs. In addition, bureaucratic and administrative costs have led to difficulties. |
| This study found that payroll levies may be inappropriate for low-income countries with little levy income-generating ability as well as countries with weak administrative or organizational capacity. For the scheme to work, employers must believe in the benefits of training. Over-control of governments could also lead to the schemes failing, as occurred in Hungary and Togo. |
| The TVET systems implemented by African nations must be tailored to their specific needs. Because of the peculiarities of their economies they should not be a recreation of the systems used in other regions. A key element for the TVET scheme to be successful is consultation with domestic industries. |
| The Australian system seems to be more successful that the other systems under consideration. This is because there is strong formal industry leadership and focus on workplace standards, and a strong scheme framework at national, territorial and regional levels. The Australian system is also a highly integrated model of national skills standards. However, the weaknesses exhibited by the Australian system are that the TVET sector is too far removed from the higher education sector, and potential limitations in relation to demand-response and innovation. |
| This report recommends that public providers of training consider more efficient ways to deliver TVET. Overall, there is a need for a greater focus on encouraging demand for TVET via stronger links between lifelong learning and mandatory education. Corporate engagement is also considered a paramount element in the success of TVET schemes. |
| This study found a consensus on the importance of TVET. It also found that training programmes had little impact on wages and employability. The study also found that training had greater impact when it was provided privately rather than publicly. |
| This report emphasizes that a 'smart' design of these schemes can also lead to lower bureaucratic costs. It also suggests that the supply of training may be of concern, although there is likely to be asymmetric information regarding the employer's beliefs in the benefits of training and that of the government. |
| This research found strong support for the creation of construction sector-specific training levies in the Zambian economy. This is because employers do not view the tax negatively since all the benefits of the levy are held. There are fewer bureaucratic expenses associated with cross-sectoral levies. |

| | Reference | Scope | Methodology |
|---|---|---|---|
| 28 | Ok and Tergeist (2003) | OECD countries | Comparative study looking at the outcome of the Continuous Vocational Training Survey (CVTS) |
| 29 | Ra and Shim (2009) | Republic of Korea | Qualitative approach |
| 30 | Rodrigues (2013) | Brazil | Qualitative approach |
| 31 | Smith (2001) | Australia | Quantitative approach |
| 32 | Stone (2010) | Several countries | Qualitative approach |
| 33 | Tan (2001) | Malaysia | Panel regression |
| 34 | Torres (2012) | 31 OECD countries, India and South Africa | Qualitative approach |
| 35 | UNESCO (2010) | The design and implementation of TVET schemes. | Discussion paper |
| 36 | UNESCO (2012) | Countries from all major global regions | Qualitative approach |

| Main findings |
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| This report assesses the impact that continuous learning can have on worker performance and some other policy issues. This study found little evidence to indicate that in fact employees co-financed training through wage cuts. |
| In the Republic of Korea, investment in training was driven by demand for skilled workers and not by the investment of training by the Korean government. Initially the Korean government invested heavily in training; however, over time private investment increased. The Korean example shows how differing levels of economic development influence the optimal financing of the training schemes. |
| This paper concentrates on how TVET affected political stability in Brazil. |
| This study highlights that training investment leads to high returns across a number of sectors. These returns could be identified in a number of forms (not just higher productivity) such as higher levels of value-added activities and great ability to innovate. The success of TVET relies on a continual evaluation to improve the organization of the schemes. |
| This study lists the barriers that small firms face when deciding to invest in training, such as the lack of information on which type of training is available, and risks of high-skilled employees being poached. It also recommends encouraging investment in training within smaller firms, for instance through the creation of outreach programmes. Further details on different training instruments and methods to encourage small firms to increase their investment in training are also provided. |
| This study highlights the positive impact of the Human Resource Development Fund (HRDF) to promote enterprise training, especially in medium-sized companies. However HRDF was found far less effective for small companies. |
| This report suggests that countries aiming to increase human capital should assess the impact of personal tax relief for those undertaking further education. As for lifelong learning, giving individuals deductions in the amount paid for training will increase the private return on training, and subsequently the effectiveness of the system. |
| This report highlights that there is a greater need for TVET schemes to build a more sustainable pattern of human development as a more equitable system. |
| This research reports that the TVET schemes currently implemented are partly successful in developing skills for the young and unemployed. A redesign of the fundamentals via greater integration and a development-sensitive analytical approach are needed to reach a higher share of the population. |

| | Reference | Scope | Methodology |
|---|---|---|---|
| 37 | UNESCO (2015) | Global | Discussion paper |
| 38 | Walther and Uhder (2014) | Benin, Burkina Faso, Côte d'Ivoire, Guinea, Mali, Mauritania | Qualitative analysis, survey |
| 39 | Ziderman (2002) | Sub-Saharan Africa | Qualitative approach |

| Main findings |
| --- |
| This paper highlights that, in the framework of the 2030 education agenda, for all young people and adults to benefit from TVET, there will need to be a 'dramatic increase' in the funds available, and that the role of the private sector is fundamental in this context. The paper suggests that attempts should be made to estimate the private financing that goes or could go into TVET, and emphasizes UNESCO's interest is in developing a general approach that could be applied across many countries. |
| This report highlights the necessity of generating additional revenue to extend and improve the training provided. It emphasizes the role that businesses should play in financing training. |
| Ziderman found that levies enabled a diversified revenue base for training schemes, which is particularly important for countries with a relatively small formal economy. This study also identified a potential threat that revenues created for training are used to subsidize unrelated government expenditure. Another element that could be harmful for the efficiency of the scheme is that employers might shift the additional costs onto employees via lower wages. This study also reported that many firms, especially smaller ones, might not benefit from the scheme. |

# Appendix C: Missions to pilot countries

This appendix lists the meetings that were organized for the purpose of each mission.

## A.1 Mission to the Dominican Republic

**Table A.1** Mission to pilot country I: Dominican Republic

| Institution | Participants |
|---|---|
| 23 November 2015 | |
| Instituto Nacional de Formación Técnico Profesional (INFOTEP) | Ana María Fernández, MEPyD<br><br>Bilma M. Erasme, Ondina Marte, Martha Alcántara and others, INFOTEP<br><br>Ben Gardiner and Ana Gonzalez-Martinez, Cambridge Econometrics |
| Ministerio de Economía Planificación y Desarrollo (MEPyD) | Magdalena Lizardo, Martín Francos, Ana María Fernández and Camila Hernández, MEPyD<br><br>Ben Gardiner and Ana Gonzalez-Martinez, Cambridge Econometrics |
| Confederación Nacional de Unidad Sindical (CNUS) | Julio César García Cruceta, CNUS<br><br>Ben Gardiner and Ana Gonzalez-Martinez, Cambridge Econometrics |
| 24 November 2015 | |
| Ministerio de Trabajo | Deyanira Matrillé, Observatorio del Mercado Laboral Dominicano (OMLAD)<br><br>Maritza García, MEPyD<br><br>Ben Gardiner and Ana Gonzalez-Martinez, Cambridge Econometrics |

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|---|---|
| Confederación Nacional de Trabajadores Dominicanos (CNTD) | Narcizo Cabral, Rafael Félix and Santos Sánchez, CNTD<br><br>Daysi Montero, Superintendecia de Pensiones<br><br>Sol Amantina Delgado, Cooperativa Nacional de Servicios Múltiples de la Unión Nacional de Servicios de Enfermería Dominicana (COOPUNASED)<br><br>Ana María Fernández, MEPyD<br><br>Ben Gardiner and Ana Gonzalez-Martinez, Cambridge Econometrics |
| 25 November 2015 | |
| Confederación Patronal de la República Dominicana (COPARDOM) | Joel Santos and Pedro R. Rodríguez, COPARDOM<br><br>Maritza García and Ana María Fernández, MEPyD<br><br>Ben Gardiner and Ana Gonzalez-Martinez, Cambridge Econometrics |
| Confederación Autónoma Sindical Clasista (CASC)<br><br>Instituto Nacional de Formación Agraria y Sindical (INFAS) | Esperidon Villa and República Dominicana Gregorio, CASC and INFAS<br><br>Maritza García, MEPyD<br><br>Ben Gardiner and Ana Gonzalez-Martinez, Cambridge Econometrics |

## A.2 Mission to Cyprus

**Table A.2** Mission to pilot country II: Cyprus

| Institution | Participants |
|---|---|
| 15 December 2015 | |
| Human Resource Development Authority (HRDA) | Yiannis Mourouzides and Constantina Kyriacou-Liveri, HRDA<br>Ana Gonzalez-Martinez, Cambridge Econometrics |
| Human Resource Development Authority (HRDA) | George Panayides, Yiannis Mourouzides and Constantina Kyriacou-Liveri, HRDA<br>Ana Gonzalez-Martinez, Cambridge Econometrics |
| Human Resource Development Authority (HRDA) | Constantina Kyriacou-Liveri and Andri Constantinuo, HRDA<br>Ana Gonzalez-Martinez, Cambridge Econometrics |
| Cyprus Workers' Confederation (SEK) | Yiannis Mourouzides, HRDA<br>Andreas Ph. Matsas, SEK<br>Ana Gonzalez-Martinez, Cambridge Econometrics |
| 16 December 2015 | |
| Pancyprian Federation of Labour (PEO) | Yiannis Mourouzides and Constantina Kyriacou-Liveri, HRDA<br>Christos Tombazos and Pieris Pieri, PEO<br>Ana Gonzalez-Martinez, Cambridge Econometrics |

| | |
|---|---|
| Cyprus Employers and Industrialists Federation (OEB) | Michalis Antoniou, OEB<br><br>Yiannis Mourouzides and Constantina Kyriacou-Liveri, HRDA<br><br>Ana Gonzalez-Martinez, Cambridge Econometrics |
| Human Resource Development Authority (HRDA) | Yiannis Mourouzides, Constantina Kyriacou-Liveri, Alexis Ioannou, Constandinos Panayiotou and Stelios Mytides, HRDA<br><br>Ana Gonzalez-Martinez, Cambridge Econometrics |
| 17 December 2015 | |
| Human Resource Development Authority (HRDA) | Yiannis Mourouzides and Constantina Kyriacou-Liveri, HRDA<br><br>Ana Gonzalez-Martinez, Cambridge Econometrics |
| Human Resource Development Authority (HRDA) | George Panayides,Yiannis Mourouzides and Constantina Kyriacou-Liveri, HRDA<br><br>Ana Gonzalez-Martinez, Cambridge Econometrics |

## A.3 Mission to Senegal

**Table A.3** Mission to pilot country III: Senegal

| Institution | Participants |
|---|---|
| 15 February 2016 | |
| Fund for Financing Technical and Vocational Training (FFFPT)<br><br>UNESCO Dakar et IIPE/PDK/PEFOP | M. Dame Diop, FFFPT<br><br>Hervé Huot-Marchand, UNESCO Dakar and IIPE/PDK/PEFOP<br><br>Ben Gardiner, Cambridge Econometrics |

| | |
|---|---|
| 16 February 2016 | |
| Fund for Financing Technical and Vocational Training (FFFPT) | Office National de Formation Professionnelle, ONFP<br><br>Ben Gardiner, Cambridge Econometrics |
| National Office for Vocational Training (ONFP) | Sékou Badji, ONFP<br><br>Ben Gardiner, Cambridge Econometrics |
| Union Nationale des Syndicats Autonomes du Sénégal (Union Nationale des Syndicats Autonomes du Sénégal UNSAS)<br><br>National Union of Autonomous Trade Unions of Senegal (UNSAS) | Syndicat, UNSAS<br><br>Ben Gardiner, Cambridge Econometrics |
| 17 February 2016 | |
| Ministry of Economy, Finance and Plan (MEFP) | Oumar Diop MBOW, MEFP<br><br>Ben Gardiner, Cambridge Econometrics |
| Head Office of Legislation (DLEC) | Oumar Diop Diagne, DLEC<br><br>Ben Gardiner, Cambridge Econometrics |
| Central Bureau of Internal Revenue and Statistics, Direction to Recovery | Banta Mangassouba, Bureau of Internal Revenue and Statistics<br><br>Ben Gardiner, Cambridge Econometrics |
| Federation of Employers | MBaye, SAR<br><br>Ben Gardiner, Cambridge Econometrics |
| 18 February 2016 | |
| Fund for Financing Technical and Vocational Training (FFFPT) | M. Dame Diop, FFFPT<br><br>Ben Gardiner, Cambridge Econometrics |

Education Sector

United Nations Educational, Scientific and Cultural Organization

# Funding skills development

## The private sector contribution

The international community has set an ambitious 2030 Agenda for Sustainable Agenda and education and training are central to its achievement. In this context, the international community also adopted a framework for action "Education 2030 Agenda" which devotes considerable attention to technical and vocational skills development, with the aim to improve access, enhance relevance and eliminate gender disparity.

Mobilizing the means for such an ambitious skills agenda is crucial. The use of financial resources must be optimised and additional resources need to be mobilised. *Funding skills development: The private sector contribution* takes stock of recent developments regarding the mobilisation of private sector resources.

The publication begins with an analysis of international trends in financing technical and vocational education and training (TVET) with particular focus on levies schemes and training funds. It then presents a methodology to evaluate the potential of private sector investment in technical and vocational education and training (TVET) in countries that have adopted levies schemes. This approach is then illustrated by three country case studies in Cyprus, the Dominican Republic and Senegal. Finally, the publication demonstrates how the levy base/rate directly impacts upon the amount of revenue able to be raised. The publication also highlights other factors that could influence the outcome achieved by the relevant levy, such as the economic and institutional context and the general conditions of the labour market.

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