Economic aspects of NHS education and training subsidies and employer levies

Barry McCormick | Jonathan White
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Corresponding author(s):

Barry McCormick
Director, Centre for Health Service Economics & Organisation
barry.mccormick@chseo.org.uk

Jonathan White
Project Lead, Centre for Health Service Economics & Organisation
jonathan.white@chseo.org.uk

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Executive summary

It is Government policy (Department of Health, 2010) to consider the introduction of provider levies on the employment of professional healthcare staff. The stated purpose of this policy is to contribute to the funding of education and training, and to ensure that providers are aware of the full marginal social cost of supplying health professional services. This report was commissioned by the Department of Health to study the economic aspects of such a levy, how it might be implemented, and to describe the use of employment levies in other countries.

The concern that providers may not recognise the full marginal social cost of health professionals arises because professional education and training is largely funded by a public subsidy, and not by either the professional or the employer. This subsidy is provided because many students cannot or will not pay for the exceptionally high cost of clinical training; the scale of necessary borrowing is the distinguishing characteristic of this education and training policy problem. If student education is highly subsidised, the public may reasonably expect that clinician wages are set below that paid to clinicians in a system without subsidies, and there is evidence discussed in the Report to support this. However, if clinical wages are set below the marginal social cost of clinicians, which is the wage that self-funded clinicians would require to enter the profession, there is an incentive for providers to train and recruit more clinicians than is socially optimal. Conversely, there is an incentive to employ fewer unskilled staff, and less capital equipment, drugs, and space than would otherwise occur: bargaining a lower clinical wage saves the NHS costs, but also distorts the incentives of providers and increases the cost of providing a given level of services. A provider levy is an instrument to ensure that providers pay the marginal social cost of clinicians, without having to pay a wage to clinicians as high as if professionals paid for their own training. The levy changes the cost of clinicians relative to other inputs, and the revenue raised can be recycled to the NHS without the overall NHS budget being reduced, or the incentive to respond to the levy being removed. This Report is supportive of the introduction of a carefully priced levy.

The current value of the education and training subsidy is analysed in this report, and shown to comprise a substantial fraction of the social cost of health professional services. The subsidy increases the population’s willingness to seek professional training, and although the government has in practice limited the number of training places, there are reasons to suppose that the mechanism used by the NHS to determine numbers trained has not prevented the subsidy from increasing the numbers trained above the socially optimal level.
The reason is straightforward: if wages are below the marginal social cost of clinicians to give a return to the public on the subsidy, the demand by providers for training places will exceed the optimal number, and the NHS determines the quota of training places by adding up the NHS decentralised providers’ demands.

Several related questions arise from analysis of whether this problem can be addressed through the introduction of levies on the employment of professionals. What should be the tax base and value of the levy? How do the distributional consequences of the subsidy, which under broad assumptions, transfers income from taxpayers to clinicians with higher average incomes – and in the case of doctors, considerably higher – affect the levy and the levels of professional employment? How should the levy reflect the cost of the deadweight loss of raising tax revenues to fund a subsidy? How should the levy be set in the independent sector of the health system, or on foreign-trained clinicians working in the private and NHS sectors?

Since mispricing originates from the training subsidy, it might be thought that the optimal levy on professional employment equals the training subsidy, adjusted for the accumulated interest cost of the delay between undertaking training and service provision. However, this intuition is less than accurate. The analysis in the report discusses how the optimal levy value is determined by the structure of the relevant professional labour market – whether it is competitive or whether wages are bargained in a ‘social compact’ – and how this interacts with the contribution of the levy to undo the income inequality introduced by the subsidy. The simple intuition that the levy should equal the public training subsidy is broadly correct in certain contexts – namely those where wages are set in perfectly competitive labour markets, and professionals work a fixed number of hours. However, if wages are set in a ‘social compact’, or if NHS trained professionals will only work for the NHS if paid at high wage rates similar to those in countries where professionals receive smaller subsidies and are closer to being self-funded, this intuition is broadly incorrect. This is because the market wage to which a levy would be added may already be close to the marginal social cost of providing professional services to the NHS. If a levy is added on top of these ‘sticky’ market wages, the sum may exceed the marginal social cost of professionals, and too few workers would be trained.

The optimal levy addresses the mispricing due to the subsidy, but in a way that incorporates (i) the distortions which arise in the markets in which professional wages are set, and (ii) the distributional effect of subsidising individuals who become more highly paid than the average taxpayer. The implications of the willingness of NHS professionals to reduce hours or
migrate, unless paid as if as if self-funded, also bear upon the optimal levy but are discussed more informally.

The optimal levy is shown to be equal to the part of the gain in productivity resulting from training that is not paid in higher wages to the professional, plus an amount to reflect the social cost of the incremental inequality introduced by an additional subsidised professional. In England, it appears more plausible to assume that on average those receiving health training have achieved higher wages as a result, but have not secured all of the productivity gain from training (i.e. they have not fully reached the wage that would be paid in systems with self-funding). The weight placed on the distributional element decreases as the professional wage is set lower to approach the wage in alternative work. The optimal levy best fitting the present wage-fixing environment would appear to be positive but less than the cost of training. It is shown that the tax base should be a proportion of the annuitised training cost, rather than being related directly to salary or a measure of activity, and should differ by professional group. (Evidence is examined in Section 7 which suggests that in countries where government funds a larger part of the training, the health professionals’ wage may be lower relative to the mean national wage, suggesting that not all of the productivity gain from subsidised training is paid to professionals.)

If NHS wages are determined in world markets at the wage of self-funded professionals, workers capture all of the gain in productivity resulting from training, and firms pay the marginal social cost of a professional. In this context, if a levy reduces the demand for NHS employment, the result will be offsetting international migration. The only remaining argument for a levy is that reducing the demand for trainees will reduce the scale of regressive redistribution towards higher-income earners and from taxpayers on lower average incomes; the optimal levy is otherwise zero. Distributional considerations are not minor given the large share of the MPET budget allocated to medical training, whose recipients earn salaries in the order of three times that of the average taxpayer, and who on the basis of ‘A’ level scores, comprise about one quarter of those in the top four per cent ability group. If wages are set at international levels, a policy of subsidised training is difficult to justify in the absence of other complementary policies. For example, writing contracts with those seeking training to ensure several years of post-training services to the NHS at an acceptable wage. If NHS wages are instead set ‘low’ (at a level close to the best alternative wage), redistributional considerations do not arise, but for reasons discussed above, the levy should be set at 100% of the value of the training cost, suitably adjusted for the time delay between training and service provision. Most plausibly the NHS levy should be set in between these extremes in the range of 50-100% of training costs.
Levies applied in the provision of services to NHS patients should be equally applied to both NHS and independent sector providers. Concerning the provision of services to private sector patients, arguments exist for a higher levy rate in the provision of these services, and for the levies raised in the private sector to be paid into the NHS budget. These arguments concern the policy intention behind providing the training subsidy, and whether the funding is intended only to enhance NHS productivity by supporting NHS trainees, or also to fund those training for professional work outside the NHS. If the latter are not intended to be funded, the levy might be set at (or moderately over) 100% of the training cost of those working in the independent sector, to return the subsidy to the NHS and to capture for HM Treasury the marginal excess burden of the incremental taxation required for their unintended training.

Given that probable mispricing is a core economic rationale for an education and training levy, it is important to illustrate the potential impact of a full levy on relative prices. This impact can be estimated using data on the relative size of professional education and training costs for different categories of NHS staff. The resulting cost estimates suggests that annuitised education and training costs represent 9%-22% of the overall cost of employment, without consideration of the cost of risk to self-funding professionals. If providers were to face these costs through a levy, it would significantly alter the cost of professional staff (as a whole) relative to other production inputs (such as non-professional staff, buildings and technology), and probably have a non-negligible impact on factor proportions. This also suggests that non-NHS patients may benefit from taxpayer-funded professional education and training.

Whilst this paper is focused on the economics of why and how to introduce a levy, there is a need to balance its benefits against the potential costs and complexities of implementation. Some implementation issues are briefly discussed in Section 8. These include whether the levy should apply to all trainees or merely new trainees, the incentive to hire foreign and part-time workers, the treatment of charities, the possible need to track individual members of staff, and the suggestion of introducing a levy in a gradual way. Some of these issues highlight the need to avoid unintended impacts on various relative prices. To successfully implement the levy approach to funding the training of health professionals it will also be important to address the perceptions of members of the healthcare labour force and, in particular, the Medical Directors of Hospitals – see the recent report by Ovseiko and Buchan (2013).

It is suggested how a decentralised professional training system might be implemented in which providers are rewarded for training by payments from providers that employ trained
professionals, regulated by DH or an HR agency of DH, and which would have certain similarities with the industrial training models and levies analysed in Section 4.

Section 4 reviews the literature on the use of levies to increase competing firms’ education and training to efficient levels. However, this literature is currently of limited relevance to the NHS; it is concerned to model the decentralised decisions of firms that train by charging a levy on the users of trained labour, and recycling these funds in the form of a premium to those providing trained workers. These models are concerned with the balancing of incentives to ensure that the socially appropriate level of training is provided (as close as is possible given market distortions) in small firms. In the NHS context, the levy on employment is likely to influence the total demand for professionals, and hence the number trained; it is not expected that a levy would influence provider willingness to train, which is controlled using (a demand-determined quota of) funded training places. Furthermore, the nature of training in the NHS is more homogeneous and valuable across many providers than is assumed within this literature, which changes the economics of the levy.

Nonetheless, the literature helps to explain the many existing levy schemes that are in operation in other countries and industries; the details of many of these schemes are summarised by this paper and its annexes. An NHS levy would need to raise more revenues, and possibly be more complex than these existing levies, which tend to have a simple design involving a small percentage of salary. Although healthcare education and training levies are identified in France, Germany and Denmark, only one is exclusively applicable to healthcare, and none are focused on the rationales described above.
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1. Introduction and overview of the issues

This report is intended to inform policy concerning the funding of education and training for healthcare professionals in England. It is Government policy (Department of Health, 2010) to consider the introduction of provider levies on the employment of professional healthcare staff. This is in order to contribute to the funding of education and training, and to better reflect to providers the full marginal social cost of supplying health professional services (which includes public expenditure on education and training). This approach may be contrasted with current policy, in which health professionals’ education and training is funded directly from general taxation, and providers pay only the market wage for professional services.

More specifically, this report was commissioned by the Department of Health to study the economic aspects of a levy and how such a levy might be implemented. It does not address how education and training funds are spent, but rather focuses upon how these funds are raised. To inform the design of a potential NHS levy, the authors of this report were asked to consider widely the existing education and training levies, both in healthcare and outside of healthcare, in the UK and abroad, as well as the underlying economic theory. The report also briefly considers a number of (the many) other issues that an education and training levy would raise.

The questions addressed in this report therefore concern the economic case for, and options available towards the new policy, and include the following. What is the economic basis for a levy and what does this imply for the appropriate ‘tax’ base for the levy? How large a levy is suggested by this framework, and how far does it diverge from the current training cost? How does the way in which health professionals’ wages are set – whether set in a bargaining/social compact context, or in international markets, or in a competitive labour market – alter the value of the optimal levy, and what are the consequences of a levy for training and employment levels? How might the rate vary between professional groups? What issues are raised by the employment of professional services to treat private sector patients? Should a levy be applied to staff trained overseas? Should a levy only be applied to newly trained professional staff, or all staff? How extensive is the use of levies in other countries and industries, and on what tax base are these levies raised? Is there evidence that countries that state-fund training and education have lower health professional wage costs as a result?

To answer some of these questions requires an understanding why health sector training is publicly funded in both the current and proposed policy. Additionally, it is important to consider the relationship of these polices to those adopted towards funding other strands of higher education and in industrial training, and whether the introduction of levies to fund the central training budget may help to integrate the Government’s approach to the funding of higher education across different disciplines.

The budget required to support current training expenditures in England – the Multi-Professional Education and Training (MPET) budget – is substantial: in 2010/11 the MPET budget provided £4.8 billion\(^1\), and accounted for 4.5% of total NHS expenditure. Additionally, the Higher Education Funding Council for England (HEFCE) provides about £360 million\(^2\) to fund the teaching element of undergraduate medical and dental school education, which is supplemented by student fees (these are currently paid by the Department of Health from

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\(^1\) All figures in this introduction for MPET and its constituent parts are taken from Department of Health (2010).

\(^2\) As stated in Higher Education Funding Council for England oral evidence to the Health Select Committee, 29\(^{th}\) November 2011. See http://www.publications.parliament.uk/pa/cm201213/cmselect/cmhealth/6/111129.htm
the fifth year onwards, although the long run situation is unclear\(^3\). To place it in context, the MPET budget is equivalent to about 20% of all university income in England\(^4\), and is almost as large as the universities’ HEFCE grant for 2012/13\(^5\). MPET is currently managed by Strategic Health Authorities and is made up of three main funding streams which flow to education providers, healthcare providers and students (e.g. as student support).

- The Service Increment For Teaching (SIFT, £0.95bn in 2010/11) supports additional service costs incurred in providing placements (within Trusts, PCTs and GP practices) for year 3-5 pre-registration medical and dental students. (As noted above, pre-registration teaching costs are supported by HEFCE funding of around £360 million, student fees and some tuition fee funding from the Department of Health).
- The Medical and Dental Education Levy (MADEL, £1.9bn in 2010/11) supports doctors and dentists in post-registration training. This takes the form of subsidies to employers for the basic salary cost of such doctors and dentists as well as specific educational initiatives.
- The Non-Medical Education and Training budget (NMET, £1.95bn in 2010/11) supports the pre-registration education and training of non-medical professionals and part of their post-registration training. NMET covers a large number of professions including nursing, midwifery, the allied health professions and healthcare scientists.

Although MPET is mostly focused on the education and training of professional staff, some expenditure is nonetheless associated with the induction and development of other staff groups (such as NHS Agenda for Change pay bands 1-4).

The report briefly considers the existing economic theory on levy schemes, which relates to industrial levies. In this literature, decentralised firms provide vocational training, determine the numbers trained, and also recruit and employ trained workers. Levies on the employment of trained workers are aimed at funding part of the costs of training and correcting for the incentives of firms (i) not to train but to ‘poach’ trained workers from firms that do provide training and (ii) to ignore the collective benefits of a more highly-trained workforce. In this way a levy may help to steer the aggregate level of training towards a socially preferred level. If the NHS were to fully decentralise decisions on the number of staff to be trained to local managers – including responsibility for the cost, and this is not presently proposed – these issues concerning the systematic incentive to under-provide training would need to be addressed and the policies discussed in the industrial literature would become directly relevant. Under the present arrangements for determining the numbers in training, these problems do not arise.

The existing literature on levies is not therefore ideally suited to discussing the effects of introducing a levy to replace MPET. It does however raise the question of how far the determination of training numbers could be decentralised with local providers becoming responsible for training levels, perhaps receiving subsidies from providers which train relatively few. This is discussed in Section 5.7.

The report is structured as follows. It begins by setting out in Section 2 the main rationales behind both public funding for health professionals’ education and training, and a healthcare

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\(^3\) As stated in a letter from the Secretary of State for Health on medical and dental student funding and finance, 28\(^{th}\) June 2011. See http://www.dh.gov.uk/en/Publicationsandstatistics/Lettersandcirculars/Dearcolleagueletters/DH_12792

\(^2\) Higher Education Statistics Agency statistics show that University income in England for 2010/11 was £22.8bn. See http://www.hesa.ac.uk/

\(^5\) Higher Education Funding Council for England data shows 2012/13 funding of £5.3 billion, including teaching funding of £3.2 billion. See http://www.hefce.ac.uk/news/newsarchive/2012/name,71998,en.html
education and training levy. In the context of these rationales, Section 3 then summarises international evidence concerning the use of education and training levies, both in healthcare and in other industries. Section 4 discusses the existing literature on industrial education and training levies. Section 5 sets out a theoretical framework for analysing the impact on employment, training and wage levels of employment levies on those who have received publicly funded education and training. Subsequent sections inform the interpretation of this framework: Section 6 summarises estimates of the cost of healthcare education and training and Section 7 presents international data on the pay of healthcare professionals. Lastly, Section 8 discusses the limitations of different possible tax bases alongside other levy design issues. There are also a number of annexes providing further detail. These include information on the funding of healthcare education and training in other countries (Annex A), existing education and training levy schemes (Annexes A to E), and a summary table of tax base options (Annex F).
2. Rationales for (i) the public funding of health professionals’ education and training and (ii) a provider levy on professional employment

This report begins by setting out the main economic rationale for the public funding of health professionals’ education. This section then sets out the main economic rationale (relating to the possible mispricing of professional wages) for using a provider levy rather than a top-sliced budget to fund professional education and training. It also describes five consequent rationales for the levy (all of which follow on from the main rationale). Lastly, issues that are more relevant to healthcare education and training levies in other countries are discussed, as these help explain the foreign healthcare levy schemes described in the next section.

2.1. The rationale for the public funding of health professional education and training

At the present time health professionals contribute to their education in a broadly similar way to other students in higher education (both in form and amount). However, the cost of health professionals’ education and training is many times higher. A recent estimate of the economic cost of training a medical consultant is £555,000, and of a nurse is £70,000 (PSSRU 2011). While the high wages offered to clinicians do incentivise students’ willingness to borrow to fund education and training, the comparative scale of this borrowing is widely believed to discourage many from wishing to train if funding were not publicly provided. The reasons for this include imperfect capital markets which might be reluctant to lend large unsecured sums (particularly against human capital earnings), concern amongst trainees that the training may not prove suitable, and a risk averseness to taking such large financial risks when young and asset poor. These arguments are likely to be even stronger for low income households. The arguments provide a case for government intervention, but in certain markets and countries have not proved sufficient for intervention to occur. Thus, in the United States for example, less support is provided towards medical education.

Successive British Governments have supported a special case being made for medicine relative to other areas where training is costly – for example, training for commercial pilots. This may be due to the expectation that those trained will serve in the NHS, which is considered to have a distinct public service role.

In providing doctors with an expensive education that is valuable internationally, the public must question how it might secure a social return. Presently, this return is expected from the physician providing a service matching that which is provided by the best of others similarly trained in other countries, and at a wage less than would have to be paid in the world market. In the event that domestic wages for health professionals match those in world markets, the public pays British doctors “twice” for their training: first in the direct payment for training, and secondly by paying a wage that equals the wage that self-funded clinicians receive in world markets.

2.2. The main rationale for a provider levy in the NHS

Paying NHS clinicians less than the marginal social cost of producing a clinician has the benefit of securing a return on the NHS investment in their training; however, it introduces an important distortion in that employers pay less than the social cost of professional services, and are incentivised to employ and train more professionals than if wages were set at the full cost of a trained professional. Equilibrium professional employment is therefore increased to a level above that which is socially optimal. This is the key distortion that a levy on professional employment might address. However, there are other distortions: clinicians may
work different hours than would be supplied at the higher social cost of clinicians, and too
few of those trained in the UK may choose to remain in the UK on the ground that wages are
below those obtainable elsewhere.

The key distortion arises because if professional education is subsidised, the wage for
professionals may be expected to address two competing objectives: to incentivise optimal
employment training/hours/migration decisions, and to also provide a return to the taxpayer/
NHS for the public funding of education. The latter requires setting a lower wage, but this
causes the former objective to be compromised; such a lower wage will fail to properly
incentivise socially optimal employment/training/hours/migration decisions. If education were
instead funded by the individual, and wages were competitively set, then the wage would be
equal to the social opportunity cost, and incentivise efficient behaviour. The levy provides an
additional instrument that enables the price for skilled labour to differ from the wage
received, potentially incentivising both optimal employment and providing some return to the
taxpayer.

The levy scheme is able to achieve this by increasing the relative price of health professional
skills relative to other health resources, in order to reflect the actual cost to society of
providing those skills. There is no apparent reason why the price of professional inputs to
health sector providers/employers should be subsidised relative to those of other inputs
required to deliver services. At present the cost of these skills is subsidised from funds
provided by the Treasury, and hence from general taxation. It will be shown that the implied
alteration to professional employment costs relative to other inputs is considerable, so that
in turn the mix of services offered by providers has, in all likelihood, also been changed by
the subsidy towards professionally intensive services.

2.3. Consequent rationales for a provider levy in the NHS

Several additional economic rationales underpin the introduction of this policy change.
Ultimately, each relates to the consequences of ensuring that relative provider input prices
reflect the marginal social costs of each input. They appertain to different aspects of trained
professionals' employment that might be amended if a levy were to incentivise behaviour
closer to the social optimum. The extent to which these rationales might be achieved by
policy depends on the extent to which a change in relative costs is able to promote desirable
changes of behaviour, and how far various market distortions and policy design
imperfections limit the effectiveness of policy.

The five consequent rationales are:

- By aligning the prices paid by health providers for inputs with the societal costs of
  inputs, incentivise NHS allocative and technical efficiency gains and thereby
  improve health outcomes.
  - The cost of professional education and training is currently paid to
    education/training institutions and does not influence the cost to providers of
    employing trained professionals. Consequently, professionals with higher
    education and training costs are underpriced relative to other inputs. This will
    affect the minimum cost combinations of staff employed to deliver various
    NHS services. Other things equal, professionally intensive treatments are
    subsidised relative to treatments that are more intensive in technology,
    pharmaceuticals and less skilled staff.

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6 For example, relative to non-professional staff groups, pharmaceuticals and other technologies. The
subsidy has less impact on the cost of professional staff groups relative to one another.
7 Improved technical efficiency involves producing given health services at least cost. Improved
allocative efficiency involves producing a different, more appropriate, mix of health services.
- To ensure that providers working outside of the NHS contribute to the basic cost of training their staff, and thereby eliminate free-riding.
  - If the cost of funding professional education is viewed as part of the NHS budget, then insofar as NHS trained staff work for private sector patients, the cost of professional training is either contributing to higher salaries than are available in the NHS or to higher profits for private providers than are intended by Government policy towards education and training. Providers working for the NHS (whether public, private or charitable) ‘pay’ for the education and training of professional staff through reduced income (for example, through allocations or tariff payments). This is discussed in Section 5.
  - Additionally, private providers may also face the wrong relative prices, as set out above for NHS providers; professional staff may be underpriced relative to other staff. Allocative and technical efficiency gains are therefore possible.

- To improve information and to make the funding of education and training more explicit to providers.
  - This may lead to providers as a group playing a greater role in determining how (and how many) professional staff are educated and trained. For this to work, employment costs faced by providers (after the levy is imposed) should closely mirror all costs incurred by the employment of professional staff, including the cost of training.

- To use levy revenue to provide an efficient means of funding healthcare education and training.
  - Levies may help to avoid the distortions and commensurate deadweight loss associated with raising further general taxation to fund education and training.

- To help provide equal opportunity access to health sector education and training without increasing income inequality, or deterring entry amongst either the risk averse or those from less advantaged families.

2.4. Factors that may give rise to healthcare education and training levies in other countries

Some other countries have less centralised healthcare systems relative to the UK; for such less-centralised systems, levy schemes can present additional advantages. Firstly, levies provide a means of collecting revenue where it is not possible to top-slice a central budget. This is the case with Germany’s levy scheme, which is summarised in the following section, and set out in further detail in Annex A. Secondly, in such less-centralised systems, a levy administration body could also bring additional benefits from central coordination and economies of scale. It could, for example, exploit buying economies of scale and develop competitive markets for training provision. It could also increase the quality of training through monitoring and sharing of feedback, and increase the relevance of training by researching appropriate training needs and commissioning accordingly (thus avoiding duplication between providers). Lastly, an administration body could develop pre-employment training, and pursue equity goals such as equality of opportunity to disadvantaged groups when they access training.

Certain countries (such as Denmark and France) have an education and training levy that applies to several sectors of the economy. Such schemes can also partly cover healthcare; for example, the Danish scheme levies all workers (including in healthcare), and funds the vocational training of particular non-professional staff groups. Some of these staff ultimately work in the health sector.
2.5. Use of these rationales in this report

The following section considers existing healthcare education and training levies in the context of the rationales set out above, in order to understand their motivations. The theory explaining why individual private firms may under-invest in training (which lies behind economy-wide schemes) is set out in Section 4, as a preamble to the healthcare-specific theory of Section 5. Section 6 considers the scale of the relative price and free-rider rationales. Lastly, Section 8 considers the impact of several NHS levy designs on the relative price, information and free-rider rationales.
3. Training levies in other countries: an overview

Levies are already in use worldwide to fund education and training, both in the healthcare sector as well as in other industries. Because their properties could inform the design of a levy for the English NHS, this section summarises these existing levies, discusses their rationales and highlights their common features.

3.1. Education and training levies in the healthcare sectors of other countries

In order to identify education and training levies that are used in the healthcare sector, ten different Northern European and Commonwealth countries have been identified whose health systems are often compared to the UK. The countries are Australia, Denmark, Finland, France, Germany, Ireland, the Netherlands, Norway, Sweden and Switzerland. Of these, Denmark, France and Germany are already using a levy of some description to finance healthcare education and training. A fuller description of education and training in each country (including those that are not using a levy) is provided in Annex A, and a summary table of those who are using a levy is provided in Annex B.

There is little published information available on the funding of healthcare education and training in other countries, especially in English. The information in this report has therefore been gathered mostly through personal communication with managers in each country (usually in the ministry of health or similar), together with ministry-published online documents. We are most grateful to the contacts listed at the end of Annex A for their help.

The Danish, French and German healthcare education and training levies differ in a number of important ways which are summarised under the following headings.

- **Whether the levy scheme is specific to the healthcare sector.** The Danish and French levies are part of a broader education and training policy that covers many sectors of the economy (the associated theory is presented in Section 4), whereas the German levy is specific to healthcare.

- **Who the levy is charged to.** In Denmark and France, the levy is charged to the healthcare provider, whereas the German levy is added to each patient’s hospital bill and is paid by their social insurer (although in each case, the ultimate incidence of the cost is complex).

- **How the levy is calculated (its tax base).** Here, all three schemes are different. The Danish levy is a fixed amount per employee per year, whereas the French levy is a percentage of the payroll. The German levy is a fixed charge per inpatient or day case. Hence in each case the relationship to the employment structure is different, and in the German case is independent of the share of employment in total costs. In none of these cases is the education tax base closely linked to the education services funded by the levy, nor do they have notable beneficial effects through the information and relative price rationales. However, all three levies are charged regardless of providers’ public, for-profit or not-for-profit status, so the free rider rationale is of more relevance to them. They may also reduce the need for distortive taxation.

- **How important the levy scheme is in overall healthcare education and training.** One way of estimating the scale of each scheme is to calculate how much money they would raise if used in the NHS. The Danish scheme is the smallest, in that if it were implemented in the NHS, it would need to be fourteen times larger to raise the 2010/11 NHS MPET budget of £4.8 billion. The German scheme is second smallest, in that it would need to be around five times larger; the French scheme is largest, but would still need to be two or three times larger to raise the full MPET budget.
• **Who collects the levy.** The Danish levy is collected by the same body that collects state pension contributions, whereas the French levy is collected by training partnership organisations. The German levy is charged by hospitals and in some cases passed to regional training funds.

• **What the levy is used for.** This is of course related to the scale of each levy. The Danish scheme is only used to fund certain categories of initial vocational training, whereas the German scheme funds all initial vocational training (both theoretical and practical) of non-academic healthcare workers in health colleges (including nurses, midwives, physiotherapists and speech therapists). The French scheme covers an even larger range of staff.

Importantly, these three levies are not heavily associated with the main economic rationales set out in the previous section, although the other issues raised in that section are of relevance. Specifically, the German scheme is designed to generate a budget for the education and training of professional staff, which might otherwise be difficult because of the decentralised nature of the system. By contrast, the Danish and French schemes have arisen from broader policies that aim to increase economy-wide levels of education and training towards the efficient level. The schemes also enable a degree of training coordination which might not otherwise have been possible.

In the seven countries that do not use levies (set out in Annex A), most healthcare education and training is funded by the government (although the level of government varies markedly; countries such as Australia and Switzerland have a particularly important role for regional government). Australia and the Netherlands explicitly state that although providers do not contribute directly, they do so by foregoing a share of the overall budget (as in the NHS). In several countries including Switzerland, lower wages for trainees provide an incentive for hospitals to employ them, alongside contributions to support costs incurred by the hospital as part of their training. There is nonetheless a tendency for in-service training to be the responsibility of individual hospitals. Students are required to contribute to the cost of university education in most of these countries, although it is free of charge in Finland, Ireland (except for some small charges) and Sweden. All countries offer student loans on favourable terms to cover living costs and fees if appropriate.

### 3.2. Education and training levies in other UK industries

Three UK industries currently make use of a levy to fund the education and training of their workforce – the construction industry, the engineering construction industry and the film industry. In the first two industries, the levy has a statutory basis and can ultimately be traced back to the Industrial Training Act of 1964. Many similar schemes that were linked to this Act are no longer in operation, partly because of a 1980s law stating that a majority of employer organisations needed to support a levy if it were to continue. Further details of each scheme are set out in Annex C, with a summary table in Annex D.

The ultimate rationale for each of these levies is linked to the economic theory set out in Section 4, whereby individual private firms may fail to provide the (higher) level of education and training that is in their collective interest. The bodies that administer each scheme also facilitate further coordination; for example, the construction industry levy funds a network of Company Development Advisors who visit employers across the country and provide advice on how to get the best from their workforce. The engineering construction industry levy funds central marketing to encourage new workers to enter the industry.

A key common factor between the UK schemes is the support that they receive from the relevant industry in recognition of the benefits that they provide; indeed, this support is the key reason why they have survived to the present day. Furthermore, all three levies are
reasonably simple in their design. Two of the three are payroll levies with just two staff categories, whereas the film levy is a simple fraction of the production budget. In all cases, the percentage levied is small (no greater than 2% of salaries).

Both the construction and engineering construction industries contain measures to remove the burden on the smallest businesses, and on those for whom construction/engineering construction is a minor part of their activity. However, the film levy does not seem to contain any such exemptions; indeed, it favours larger productions, given that the levy amount is capped at £39,500 per production.

3.3. Education and training levies in other industries worldwide

Johanson (2009) provides a detailed review and summary table of education and training levies in 62 developed and developing countries. An earlier and less complete World Bank paper by Dar, Canagarajah and Murphy (2003) also provides an overview of the subject. Johanson (2009) classifies each scheme into four groups, acknowledging that a given scheme can fit into more than one. These groups are summarised below.

- **Revenue-generating.** The funds generated are added to revenues from general taxation. Education and training expenditures are then financed from this taxation.
- **Cost-reimbursement.** Approved training expenditures are reimbursed in part, within the limits of the levy paid by the enterprise.
- **Levy grant.** Grants are offered to enterprises on a case-by-case basis in accordance with agreed criteria. Unlike in a cost-reimbursement scheme, the grants need not reflect an enterprise’s payments; training companies can receive grants far in excess of the amount paid, thus providing incentives for firms to train.
- **Levy rebate / exemption.** Employers can choose to manage their own expenditure on education and training, but if this does not reach a certain minimum level, they are required to contribute the difference to a training fund.

The information in Johanson (2009) has been linked to World Bank country income classifications, with the results presented as a set of tables in Annex E. Clear overall patterns include the simple design of most schemes (usually a percentage of payroll, although in Egypt and Jordan the levy is a fraction of profits, in Botswana the levy is a fraction of turnover, and in countries such as Denmark, the levy is a fixed amount per worker). The levy percentages are also small (almost always below 4%, with most below 2%). Lastly, there is a tendency towards levy grant schemes in the high-income countries but less so in other countries.

CEDEFOP (2008) provides a more qualitatively detailed review of levy schemes operating in Belgium, Spain, Italy, Cyprus, The Netherlands, Denmark, France and the UK. Each country’s scheme is summarised in Annex C, apart from Denmark, France and the UK (which have been considered elsewhere). It is clear from this paper that cooperation between employer and employee organisations is key for the effective and continued operations of such levy schemes. Although it was discussing the international experience of compulsion to increase training of employees (admittedly a broader issue than just levies), the Leitch Review of Skills (2006) reached a similar conclusion. Specifically, it concluded that “the evidence shows that these work only where the training benefits employers, individuals are motivated to improve their skills and the schemes are carefully designed to be flexible”.

Again, these education and training levy schemes are ultimately aimed at increasing the training investment of independent firms towards the efficient level, although raising revenue is also important in some of the less-developed countries (where levies help widen the tax
base, which is advantageous in areas of high corruption). An additional benefit is apparent from CEDEFOP (2008), where in several countries the administration body helps to coordinate education and training and exploit economies of scale. For example, in the Netherlands, training funds engage in research, provide information and organise work placements for young people, instead of individual firms having to conduct these activities.

3.4. The overall features of the schemes considered

The following table illustrates the common factors in the different education and training levy schemes that have been considered by this report.

Table 3A: Which levy scheme features are most common in practice?

<table>
<thead>
<tr>
<th>Types of levy scheme feature</th>
<th>What is commonly observed in practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>The category of tax base (e.g. profits, wages, activity levels).</td>
<td>Wages or employee numbers are the most common tax base, although the German healthcare scheme is based on a measure of activity.</td>
</tr>
<tr>
<td>The complexity of the tax base. For example, a levy scheme in which the levy percentage varies by staff category is more complex than a scheme with a single levy percentage.</td>
<td>The tax base is usually simple, with a single levy percentage or a small number of them.</td>
</tr>
<tr>
<td>Whether the levy is a fixed amount (e.g. per worker) or a percentage.</td>
<td>Percentage levies (whereby higher-paid workers contribute more to the levy) are more common than fixed levies.</td>
</tr>
<tr>
<td>The amount levied.</td>
<td>Levy percentages are usually small – typically 2-3 percentage points or less.</td>
</tr>
<tr>
<td>Whether there are exemptions for small firms or those only loosely involved in the industry.</td>
<td>Such exemptions are present in two of the three UK schemes, but the international picture is less clear.</td>
</tr>
<tr>
<td>Whether the firm is partially exempted if it organises its own training (levy exemption schemes).</td>
<td>This feature is present in some schemes but is by no means universal.</td>
</tr>
<tr>
<td>Degree of cooperation, agreement and flexibility between employees and employers.</td>
<td>Successful schemes tend to have a high degree of cooperation, agreement and flexibility between employees and employers.</td>
</tr>
</tbody>
</table>

The simplicity and limited scale of these levies – both in the UK and abroad, and both inside and outside of the healthcare sector – contrasts with the potential scale and complexity of an NHS levy that could raise the entire MPET budget. This simplicity can come at the cost of having limited impact on the relative price and information rationales from Section 2.

The following section briefly considers the economic theory behind many of the non-healthcare levies that have been summarised above, and discusses its relevance to the NHS context.
4. An overview of the existing theoretical literature on the use of levies to fund education and training

Existing theoretical analysis of the efficient funding of education and training, and the consequences of imposing levies on trained employees to subsidise firms’ education and training expenditures, focuses on the incentives of individuals and decentralised firms to invest in socially appropriate levels of education and vocational training. The conclusions from this work, which has developed in the past few decades, provide some relevant general principles, although it is of limited overall relevance to the NHS context. These principles distinguish between different types of skill according to the scope of their application, in order to explain whether the firm, the worker or both will pay for the training. They also consider the circumstances in which investment in training levels will be socially optimal.

This section first sets out why the models used in the ‘levy’ literature do not readily carry over into the healthcare and education context. It discusses how different strategies for the funding of education and training work with the different categories of skill. It then shows that capital and labour market imperfections can result in insufficient training investment relative to the first-best situation, and illustrates which and how levy schemes can help. This literature can therefore help address the economic rationales behind the non-healthcare levies discussed in the previous section. The NHS context is modelled in the next section.

4.1. Why is the ‘levy’ literature of limited use in designing a provider levy for the NHS?

The largest component of investment in health sector education and training is of a type that economists would conventionally expect individuals, not firms, to purchase at efficient levels for themselves, provided that appropriate access to capital markets and insurance against income risk is available. Although specialist medical, dental and nursing training occurs in hospitals, and might therefore be described as ‘vocational’, it contributes to the production of well-defined and regulated professional skills which are of value to many potential employers. We therefore regard the training funded by MPET as general rather than firm-specific or transferable training, distinctions that are defined below. (Outside of healthcare, examples of general training include certain standardised legal and accountancy skills). The analytical literature surrounding training levies does not focus on such general skills – perhaps since the analytical problems raised by (fully) general training have been regarded as resolved by Becker (1964), as discussed below. For such general investments, governments have been expected to facilitate individual investment and to focus on ensuring access to competitive borrowing opportunities with appropriate loan models.

There is a second important dissimilarity between NHS education and training and the existing levy literature. The current healthcare education and training arrangements, in which training decisions are not decentralised to local providers that train, but rather information from local providers is used to determine the number of training places, does not readily fit the existing analytical framework used to discuss levies. However, for reasons discussed below, governments are (and are likely to remain) involved in the markets for health sector education and training. We outline how the decentralised model discussed in the literature might be developed within the NHS. This is discussed in Section 5.7.

4.2. Training and levies in a perfectly competitive labour market and distortion-free economy

Becker (1964) introduced and showed the importance of a distinction between specific skills (meaning skills that are only of value to a single firm) and general skills (which are argued to
have a productive value in many different firms). For example, an induction programme for new employees imparts specific skills, whereas brick laying is an example of a general skill.

When the market for workers with general skills is perfectly competitive, competition between employers will drive up trained workers' wages to the point where each worker is paid the full value of their extra output (including the value of the output that is added by their training). Workers, not the employers who might pay for general training, therefore capture all the benefits of investments in their own training. If workers are perfectly rational, are certain about the benefits of training, have no constraints on borrowing money and can purchase training at a competitive price – that is, in a first-best world – workers will invest in the optimal amount of training. When workers have paid for their training, it is counterproductive to raise levies from employers of skilled labour; a levy will raise the price of trained labour above the opportunity cost of producing trained labour, and thereby incentivise firms to reduce trained worker employment below the first-best level, thus reducing social welfare.

Several potential difficulties relating to this argument are set out in Section 2.1 above. In healthcare, public funding is adopted primarily because of the scale of borrowing required by trainee clinicians, and the state will typically aim to secure a return on this substantive expenditure by expecting clinicians to work for somewhat less than if self-funded. In so doing, wages are set below the social cost of training a professional, and this in turn creates the incentive to train too many professionals.

If the skills developed are specific to the firm, levies on employers and subsidies on firms that train are also unlikely to be desirable. In the case of specific training, by definition the skill is of value only to one firm and so such skills will not generally influence a worker's marginal product at other firms. Other firms will not benefit if a firm and its employee undertake more or less specific training; unlike in certain circumstances discussed below, there is no 'externality'. It is for skills that are neither perfectly general nor firm-specific that subsidies may play an important role.

4.3. Taking account of imperfect capital markets and imperfect information

If certain market distortions exist, individuals will not invest in the optimal level of training, even when other markets are competitive. These distortions include:

- When capital markets are imperfect, meaning that workers are constrained in borrowing money.
- When the employee faces uncertainties about their suitability to train for, or benefit from, a given skill, and appropriate insurance markets are not available. For example, there are risks that the employee will unable to learn to use the skills effectively, that the skills will become outdated in future, and that the employee will not enjoy working with those skills. The employee therefore risks failing to earn an income sufficient to repay the loan and may underinvest in training, particularly if risk averse.
- When the employee is either not able to observe the quality of training providers, or cannot verify to a court of law that their payment for training was accepted but that the training was inadequately provided. In these complex areas where the problems of poaching and training quality are apparent, intervention to regulate apprentice contracts to optimally incentivise employers to train (by direct regulation or subsidy) can be optimal, with funding potentially being provided by levies on employers of the skilled.

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Separately, and consistently, firms gain nothing from investing in employees' training, so will not do so: they cannot recoup their investment by paying a lower wage, as the newly-trained employee would be free to move to another firm and claim higher wages.
In these situations, subsidies to training firms or trainees (funded by a levy on the employers of skilled labour), or regulation of training levels / the length of the training programme can be efficient. The levy’s details are discussed later on in this section.

4.4. Taking account of imperfect competition for skilled labour: transferable skills

Stevens (1994) argues that there is a broad class of skills for which the market is imperfectly competitive, leading to a different justification for the use of levy schemes. It is argued that some skills are neither perfectly general, nor perfectly specific, nor can they be broken down into perfectly general and perfectly specific parts. Instead, transferable skills are defined, which are of some value to at least one other firm in addition to the firm that decides to train. The state of the labour market for transferable skills is argued by definition to be imperfectly competitive (as such skills are of value only to a limited number of firms, unlike the competitive market for general skills).

In the case of transferable training, the total gains to society may exceed the combined gains to the employee and the training firm. This is because when a training investment is made, there is a probability that the employee will subsequently move to another firm, who will be able to pay them less than their marginal product and therefore capture some benefit from the training. When the training firm decides whether or not to train an employee, they will not take into account this possible benefit to other firms, and will therefore under-invest in training from a societal perspective – something that a levy can potentially correct. This failure to recognise the potential benefit to other firms when investing in workers is an example of an externality (a form of market failure that can justify government intervention). Stevens (1994) argues that the result holds for any source of imperfect competition leading to wages below marginal product, combined with any sort of uncertainty about labour turnover. The externality disappears in the special cases of general and specific training. Greenhalgh (2002) summarises several other ways in which the societal benefit to training can exceed the firm’s private return (such as through an impact on overall economic performance), further supporting the existence of an externality.

4.5. In the presence of capital and labour market imperfections, how can levies increase training in transferable skills towards the optimal level?

Two different types of training levy, one on wages and one on firms’ profits, can be used to increase training towards efficient levels, depending on whether labour and/or capital market imperfections are present.

Stevens (1999) suggests that capital market imperfections could be overcome by using a percentage levy on skilled wages to subsidise the provision of training. Essentially, this provides a means of recouping training costs which is not available to an individual firm; if they were to recoup by paying the worker lower wages, there is a risk that the worker would leave. The efficient level of training expenditure can therefore be reached. The levy avoids the problem of Government making loans directly to potential trainees, which would leave trainees with the risk that their training may be of less benefit than expected.

Labour market imperfections (which accompany transferable skills) are more complex, and cannot be resolved by a levy on wages when the capital market is functioning properly; it would just redistribute income between periods, which workers could achieve (or reverse) by themselves. This can be avoided by instead placing a levy on firms’ profits; unlike with a wage levy, the effect of this cannot be negated by redistributing income across time, and the revenue can be used to fund the efficient level of training. By providing an independent source of funding, such a levy would also help address capital market imperfections.
4.6. How might NHS professional training be transparently organised using levies by a decentralised market of providers that train and employ, as in the vocational training models?

As noted earlier, many of the healthcare skills funded through the MPET budget can be regarded as largely general, rather than specific to a single employer or transferable to only a small number of employers. This is because they are of high value to many different potential healthcare employers, both at home and abroad, which is analogous to the many firms in the general training model. In this context, economic theory suggests that individuals should pay for their own training; their employer would be unable to earn a return on an investment because the worker might subsequently leave and exploit their increased productivity at another firm. However, individuals may not be able or willing to pay for their own training if capital markets are imperfect or if they are risk averse (and therefore reluctant to accept large loans). Because of this, loans with repayments conditional upon income are currently a preferred policy in numerous countries; capital market constraints are avoided when the government provides such loans, and income contingency reduces the risk on the borrower. However, there is a problem with extending a simple policy of income contingent loans to the health sector: the size of the loans would be need to be very large – for medical staff, over £250,000 – and would be seriously disadvantageous to all applicants, especially those from poorer backgrounds who would be unlikely to train. By itself, this solution is therefore unlikely to be acceptable. However, the registration and employment regulation of clinical staff makes it possible to construct a decentralised provider-levy-based system, which avoids the loans problem and gives access to all income groups. It would also address the 'poaching' problem in which hospitals recruit some trained staff from other hospitals in an open labour market rather than train a sufficient number themselves. This model will also give providers the correct relative prices of different inputs and not therefore distort the pattern of treatments towards those that are most medically intensive. This is discussed in Section 5.7.

More broadly, the following section sets out the determinants and effects of a levy in the NHS context.
5. The social cost of health professional education and training and the economics of levies

The training of healthcare professionals is subsidised since trainees are unable or unwilling to access capital markets to borrow the large sums required for clinical education and training. The subsidy is large relative to other higher education subsidies, and creates a considerable demand for places. This demand for training places has been curtailed by quotas, and the level of employment influenced by non-competitive wage determination. This section considers whether an employment levy can address the distortions this creates to the employment of professionals and other inputs. It is concerned with how the optimal levy is influenced by how wages are determined in the professional labour market, how any quota on training places is applied, ameliorating the distributional impact of the subsidy, and clarifying the arguments for different levy rates in the NHS and independent sectors.

The material is more technical than elsewhere in the report and to mitigate this we first summarise the content of this section. A mathematical statement of the economics of a levy is provided in McCormick and Stevens (2013).

5.1. Overview of this section

5.1.1. Conventional intuition

The most basic intuition is that the levy should equal the public subsidy to the training cost. We will show that this is broadly correct in certain types of markets for professional services – namely those where wages are set competitively, and those trained to be professionals work a fixed number of hours. However, these are strong assumptions, and for circumstances where wages are set in imperfect markets – such as with bilateral bargaining – or if NHS trained professionals will only work for the NHS if paid at ‘high’ wage rates (for example, wage rates similar to those in countries where professionals are closer to being self-funded), this intuition is shown to be incorrect. This is because the ‘bargained’ or ‘world’ wage to which a levy is added may already be at, or near to, the marginal social opportunity cost of providing professional services to the NHS. In these circumstances, if a levy equal to the training cost is added to the prevailing wage, the resulting employment and training decisions will be below that which maximises social welfare. In general, the optimal levy requires consideration of how the levy may help improve both the efficiency and distributional dimensions of the outcome. This will therefore incorporate (i) the distortions introduced by bargaining or ‘social agreements’ that create non-competitive labour markets, and (ii) the willingness of NHS trained professionals to migrate or supply fewer hours, if paid a wage below their increased productivity as professionals, following subsidised training.

Conventional intuition regarding the training place quota when training subsidies are present is that it be chosen at the level where the marginal social benefit of extra professionals is estimated to be equal to the marginal social cost. In the absence of a quota, the subsidy may result in excess training. However, it is more realistic to assume that the training ‘quota’ is set in a ‘decentralised’ way by adding the projected demands from local providers to obtain a sense of the (future) shortage of professionals. The NHS has increasingly adopted a decentralised model for such decisions and the policy implications of both of these assumptions are discussed below.
5.1.2. Employment levies in competitive markets

In the sub-sections that follow various different models are explored. It is shown that the optimal levy value is equal to the training cost only under demanding assumptions: (i) labour markets are competitive, (ii) the distributional implications of the tax-funded subsidy are disregarded, and (iii) trained professionals provide a fixed amount of work.

The mechanism that enables the levy to provide an optimum depends upon the nature of the training place ‘quota’. If government intervenes centrally to estimate and set the socially optimal training quota, the levy reduces the demand for professionals to a point where the fixed number trained are employed at a wage equal to that in alternative employment. If the demands of decentralised providers are summed to determine the training quota, the levy again simply reduces the demand for professionals, but now induces the optimal number to seek training at the alternative wage. In both of these models of the quota and optimal levy, the levy recovers the cost of training, and wages are equal to that in alternative untrained employment. The levy increases social welfare, even if the level of training is fixed by quota at the socially optimal level: it reduces the wage inequality that a training subsidy introduces if a professional wage is greater than that of the taxpayer. The levy on employers of professionals in these markets closely resembles an industry-specific graduate employment tax.

5.1.3. Optimal levy with bargained wages

The process of setting wages in the NHS is mostly not competitive and it is more plausible to assume that wages are set in a ‘social compact’ at a level that shares the extra productivity the training has secured between the NHS and the professional. The optimal levy is shown to be equal to the part of the extra productivity resulting from training that is not paid in higher wages, plus an amount reflecting the social cost of the greater income inequality associated with sharing the extra productivity with the professional. This ensures that employers of professionals pay the marginal social cost of their use of professional services. Thus the optimal levy is the training cost only if health professionals agree to a wage equal to that received if not given training. In the absence of a levy, if wages are set in a ‘social compact’, the decentralised model of setting the training quota will result in a socially excessive number of professionals being trained.

If the wage is not ‘fixed’ and the levy exercises a negative influence on wages under bargaining (as in a competitive market), this strengthens the case to increase the levy towards the training cost.

In England, it appears empirically plausible to suppose that those receiving health training achieve higher wages as a result, and that the optimal levy best fitting the present wage-fixing environment would appear to be less than the cost of training. Nevertheless, the evidence discussed in Section 7 suggests that professionals may not secure all of the productivity gain from training.

5.1.4. International markets

If wages are competitive and set in world markets at rates sufficient required to ensure that trainees would self-fund to become professionals, the NHS must pay the ‘world’ price as if there had been no domestic subsidy. In this framework a change in the demand for NHS professionals creates offsetting international migration. The arguments for a levy rest on the social cost of redistribution towards high wage earners that follows from subsidising professional training. These considerations are not insignificant given the cost of clinical
training, and the relative wage of clinicians. In this context, the NHS employs fewer professionals than at a first best with self-funded education and training. The tax funding of training is difficult to justify against other policies.

5.1.5. Levies and the independent sector

Levies applied in the NHS should also be applied in the independent sector, although arguments exist for a higher levy in the private sector. It is plausible that public funding for substantial health education and training is motivated by public concern for the productivity of the NHS, and would not have been provided for trainees not wishing to work for the NHS. It is perhaps worth noting that public subsidies are not provided for other high-cost training occupations, such as airline pilots and barristers. This would suggest that the NHS should not be made worse off by funding training that will provide private services. On this view of why training was publicly tax-funded, the private sector levy would be sufficient to pay for the training of professionals who supply to the private sector. The exception would be GPs who are trained with the intention of service for the NHS. The sum raised by the levy on private sector employers would be paid into the central NHS budget, as repayment of the funds used to train.

Insofar as the training enables professional work in the private sector, and requires marginally higher taxation to fund the NHS budget than otherwise, the excess tax burden of this incremental budget should be met by the private sector. Therefore to incorporate this marginal excess burden, the optimal levy for the private sector might be set at an appropriately higher percentage than in the NHS sector – by about 30% of the training cost – to reflect the cost of using public funding of the training subsidy. This part of levy revenues would be paid to HM Treasury to compensate for the unintended excess tax burden on the general population of funding training for private sector use.

5.1.6. Tax base

The discussion above suggests that the appropriate tax base for a levy is each profession’s annualised training cost, with the levy set at a proportion of this cost. This proportion would be at, or close to, 100% of the training cost if professionals are paid a wage similar to that had training not occurred. If English professionals are instead paid at near to their marginal product and little is ‘gifted’ back to the population in the form of professionals sharing their extra productivity, the levy would reflect only the negative distributional effect of the additional inequality from providing an additional training place with tax funding. Section 7 presents evidence regarding the extent to which pay rates for salaried professionals in England are significantly less than might be expected under self-funding. This suggests that a levy for NHS providers may lie in a range of 50-100% of training costs. In the private sector the added contribution from the excess burden of taxation implies a levy in the range of 80-130% of the training cost.

In view of the need to allow trainee and other resource levels adjust to optimal levels without imposing large adjustment costs, it is suggested that any introduction is gradual.

Finally, it is suggested in Section 5.7 how a decentralised professional training system might be implemented in which providers are rewarded for training by payments from providers

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9 Because it alters relative prices, taxation distorts the economy to a greater extent than the amount raised. This additional distortion is known as the marginal excess burden.

10 In a review of the literature, Bovenberg and Goulder (2002) find US-based estimates of the marginal excess burden of between 20% and 50%.
that employ trained professionals, regulated by DH or an HR agency of DH, and which would have certain similarities with the industrial training models and levies analysed in Section 4.

5.2. The social cost of supplying health professionals

This section aims to build intuition regarding the social cost of providing health professional services, and helps to introduce the analysis in the formal model of Section 5.3.

The cost to society of adding a health professional is the value of social welfare forgone if a health professional is trained and employed. This is the ‘price’ that employers should be charged if the employment of professional groups is to be efficient. Only if providers choose efficient employment levels will the market prompt efficient levels of training. What is value of social welfare forgone by adding one trained professional?

First, there is an (opportunity) cost arising because each professional no longer produces the output in the next best job had professional training not occurred. (For concreteness, for a doctor or dentist this might be a scientist, lecturer, or corporate executive). This is the value of ‘untrained’ worker output, $W_0$.

Secondly, there is the cost of providing training, which we label £$T$ per worker. An important complication in calculating the training cost of an employed professional is that this cost is spent in the case of medical staff, on average about 20 years before being put to use, and about 12 years before use, for nurses. This delay substantially increases the opportunity cost of training professional staff.

Thirdly, insofar as incremental tax revenues are used to fund training, there are the costs due to the distortions to the economy that these taxes impose. The current HM Treasury Green Book does not discuss this cost, but it is usually considered a legitimate economic cost by economists. This paper assumes that government has raised a fixed level of taxation to fund the optimal NHS total budget and that the training subsidy is paid from the NHS budget. Any levies are paid into this budget and any changes to the NHS revenues from a levy policy is balanced by offsetting NHS expenditure. As a result, the total tax raised to fund the NHS (and therefore any associated excess tax burden) is unaltered, and marginal changes in the excess tax burden brought about by levies can be disregarded. (For further details on the distortionary cost of taxation, see Bovenberg and Goulder, 2002).

Finally, the ‘Green Book’ requires that a social cost is added to the assessment of expenditure policies that increase income inequality. This is likely to include a policy of subsidising the training of health professionals, since these workers are likely to earn more than the wage of the average taxpayer. In the model below, each trained worker has wage $W$ and benefits from the training by $(W-W_0)$, which is the re-distribution that occurs in favour of each trainee, and when multiplied by the number of trainees, gives the value redistributed from average to high income households by the subsidy policy. The weight ‘$z$’ on this redistribution is a function of an estimate of the relative marginal utility of income of a taxpayer to the marginal utility of income of a professional. Thus if professionals have the same income as the average taxpayer, $z=0$. The distributional cost of training each professional, $D$, is therefore:

$$D = z x (W-W_0)$$

where $z=0$ if the professional wage $W$ is equal to the wage of the average taxpayer.

Thus the social cost of one extra professional in the NHS is the sum of three components:
Social Cost of a professional = $W_0 + T + z \times (W - W_0)$ \hspace{1cm} (1) \hspace{1cm} (z < 1)

where $z$ is increasing in the relative wage of the professional.

If a publicly funded professional earns more than the average taxpayer, the social cost of a professional therefore exceeds the individual’s productivity in alternative work, $W_0$, by more than the training cost, £$T$. (If trainees fund themselves privately, for example from banks, these additional costs do not arise, the social opportunity cost of training is lower, and the socially optimal number of professionals is correspondingly higher.)

To incentivise providers to employ the socially optimal level of professionals, the levy is chosen to raise the cost of professional services from the bargained wage cost to the social opportunity cost. Thus to determine the optimal value of the levy we need to compare the social cost of a professional to the bargained wage. The higher the wage, the more the bargain reflects the social training cost, but the larger are the distributional costs that arise because the training costs are funded by taxpayers with on average lower incomes than health professionals. In general, the optimal levy will not equal the training cost.

5.3. A basic model of levies with competitive NHS labour markets

In this section the impact of levies is explored in a framework in which the labour market for professionals is assumed to be competitive, so that wages flexibly adjust to balance the demand and supply of labour.

If professional training is tax-subsidised, how do employment levies alter the labour market outcomes that arise? Can a levy instrument help raise welfare if labour markets are competitive? At one level these outcomes include the efficiency of health sector markets, the equal opportunity of access to becoming a professional, and the influence of funding measures on equality of incomes; and at another level on professional wages and employment levels as well as the number of professionals that it is socially optimal to train. In the model that follows these outcomes are also related to those under a simple educational loan model.

The model assumes that:

- The economy has two outputs – healthcare and a second good.
- There are two inputs used to produce healthcare: trained healthcare professionals, and a composite second factor – which may include less skilled staff, buildings, and capital equipment – and is in fixed supply. All professionals are identical and provide a fixed supply of hours each period. The training cost is £$T$ per person, and takes place instantaneously at the beginning of a period. Workers have identical preferences and live for a single period.
- The second output is produced using only the composite input, and training does not raise worker productivity. The wage and productivity of employees is a constant, $W_0$.
- There are many providers/firms in both sectors.
- Taxation is raised to fund the NHS with a socially optimal fixed budget to provide health and care services. The NHS buys training for professionals, and hires professionals and a composite input. The price of healthcare is determined externally to the model (e.g. by a national tariff).
- The training costs are funded by the NHS with either its tax-funded budget, or by levies upon health sector professionals, or some combination of the two.
- The level of training is determined in one of two ways. Either the NHS centre makes an estimate of the marginal social value of professionals and chooses the level of
training to equalise the marginal social cost with the marginal social benefit. Alternatively, the NHS announces a levy, then asks decentralised providers the total number of professionals demanded, and trains this aggregate number. The latter is currently used, although the levy is zero, and has the benefit of requiring only known data and not an estimation of the marginal social product of professionals. The implication of each approach is discussed.

- Initially there is a closed economy and all trainees work for the NHS.

Sections 5.4 and 5.5 will also consider:
- A ‘social compact’ wage for professionals, and international migration to and from the world market for health professionals.
- Professionals’ choice of whether to work in the NHS, and levies on non-NHS employers of health professionals.

5.3.1. A model in which professional training is funded by individual loans

To establish a benchmark, first assume that all workers have access to loans to enable individuals to purchase professional training. The opportunity cost of working as a professional is £(W + T), which is the sum of not working as an untrained person plus the cost of training. In the absence of public intervention, each worker will consider the benefit from investing in training, and will do so provided that the professional wage is at least as great as W + T. The supply of professionals is therefore potentially all the workers in the economy at wage W + T, and given by the horizontal line at that wage in Figure 5A.

The demand for professionals is given by the value of additional health services, or ‘marginal product’ that an extra professional provides. The marginal product of professional services falls with increases in the employment of professionals, giving a downward-sloping ‘demand curve’ for professionals in Figure 5A and subsequent diagrams. Given the demand, no more than N* professional workers can find employment at wage W + T, and hence N* will be incentivised to obtain a loan and invest in training.

The socially optimal number of trainees is the level at which the social cost of supplying a professional, W + T, is equal to the marginal product of NHS professionals. Up to the point N*, adding professionals increases NHS output (by the height of the marginal product curve) more than the cost of forgone output of an untrained worker plus the training cost. Hence with individual funding of training, the number of trainees that decide to train, N*, is also the level that maximises social welfare.

If training is funded by a personal loan, the trained are paid £(W + T), but have a loan to repay equal to £T, giving the same net wage, W, as the untrained. The public receives a net benefit measured by area a.

The arguments for introducing a public subsidy to pay for training (funded from general taxation) are discussed in Section 2, and the equilibrium associated with a subsidy is now considered.

5.3.2. A basic model of professional training with public funding

If training is fully subsidised, the wage for professionals which will just persuade individuals to train is no longer W + T, but simply the wage earned without training, W. This is depicted in Figure 5A, where with a full subsidy the level of professional employment will rise to N, and at this level both the trained and untrained workers have the same wage. The population
is worse off than at the first best since at levels of employment above $N^*$ the social opportunity cost of professionals, $W_0 + T$, is greater than the marginal product of professionals (the value of extra treatments that their employment makes possible).

If government introduces a policy of restricting access to free training, and the implication for income inequality of providing a subsidy to a quota of applicants is disregarded ($z=0$), welfare is maximised by the NHS choosing a quota of $N^*$ trainees. If $N^*$ are trained, and wages are set competitively, the equilibrium wage is $W_0 + T$, which is the \textit{wage under self-funding}. Those securing a quota place to train receive an increase in welfare reflecting the windfall cost of training, £$b$.

In this model, in which the NHS provides subsidised training to the first best level of professional trainees and allows wages to be set competitively, the provision of healthcare may not increase the welfare of those not trained, even if this was the case when training was funded by loans. This is because the net benefit from the treatment – given by area $a$ in Figure 5A - may be less than the tax paid to fund the training. The problem for the public is that it pays twice for the training costs - once when training is undertaken and again within the professional wage of $W_0 + T$.

The higher the average value placed by the public on the work done by professionals relative to the wage, which is the value of the marginal professional, the more likely the net benefit to those not working in the health sector is positive.

The centrally planned quota gives the first best level of training that otherwise does not occur given the subsidised training, but this level of training is now associated with the social costs of producing income inequality.

\textit{Figure 5A The supply and demand for healthcare professionals}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{supply_demand_nhs}
\end{figure}
5.3.3. Competitive labour markets: Can a levy enable the number receiving tax subsidised training to be efficient?

We show that that under certain assumptions, a levy on professional employment can restore the first best employment of professionals and other healthcare inputs, and ensure that those not working in the health sector are net beneficiaries from healthcare after paying for the sector’s training costs.

Assume as in the previous section that training is fully subsidised. Since the productivity of each type of worker and the cost of training are unchanged, the optimal number of trainees remains at $N^*$, provided that no income inequality is generated by the subsidy. In the absence of a quota, it has been shown that $N_1$ workers will undertake free training and work as professionals. If a levy of £$T$ per professional worker is introduced, the demand for professional services is reduced, and only $N^*$ professional jobs are available at wage $W_0$.

A levy equal to £$T$, the training cost, gives the first best outcome: training can be tax funded to give equal opportunity of access to professional jobs, and without the increased income inequality that otherwise arises under ‘tax and subsidise’. Furthermore, unlike the use of a central quota there is no requirement to estimate the marginal revenue product of professionals. Subsidies, under these assumptions, provide temporary loans to trainees that are fully recovered by the levy, which thereby disposes of the problem introduced by the absence of personal borrowing. The levy extracts the windfall subsidy to professionals, so that post-training wage equality prevails, as in the self-funding model. Unlike in a tax funded model without levies, equal opportunity to become a professional no longer comes with the price tag of increased societal income inequality.

In current NHS practice, the training ‘quota’ is determined endogenously from the (decentralised) providers’ combined demand for professionals; this is also the type of ‘quota’ assumed in this model, so that following the introduction of the levy, the offered quota of training places and the equilibrium level of professional employment are both $N^*$.

Figure 5B: The impact of a full levy with flexible wages.
There is, however at least one practical problem with applying this result, even if markets can be assumed to be competitive: professional labour supply is not contracted before the training is given, and may be responsive to the market wage. The 'low' professional wage of $W_0$ may reduce the supply of trained labour, which does not occur in the model with an exogenous quota and the professional wage at $W_0 + T$. Thus, if professional labour supply is wage sensitive, policy makers have a trade-off between (i) an exogenous quota fixed by a planner, which is difficult to estimate and creates wage inequality, but provide incentives for greater labour supply of those trained, and (ii) a levy which is easy to determine, promotes income equality, but may induce a lower labour supply.

We next relax the assumption that wages are set in competitive markets and consider a 'social compact' in which professional wages are set above the alternative wage, but below the social cost of professional services.

5.4. The economics of a levy in a context of bargained wages for health professionals

The main difficulty with using the results from the previous section to begin to construct NHS policy is that NHS professional wages are not competitively determined as the analysis assumes. In that model the taxpayer funds health training and education, but may not recoup the investment: professionals who receive training do not 'gift back' the subsidy, and may even be paid the same wage as those whose training was not subsidised. Furthermore, the subsidy may encourage a socially excessive number of professionals to train. To secure a return for the taxpayer, the most common approach in EU countries is for government to fix or bargain a wage for professionals, and to limit the numbers trained. This section explores how the levy should be set in this more realistic context.

Consider a model in which wages are set in a 'social compact' between the Government and the representatives of health professionals: the NHS provides subsidised training, and those trained agree to work at a wage below that which would just persuade individuals to self-train. We assume that the professionals' wage is fixed independently of the levy, and is based on social and political considerations.

The agreed wage, $W_{0i}$, of professionals who have received subsidised training would be expected to lie in a range between $W_0$ and $W_0 + T$. (See Figure 5C.) That is, not less than the wage of the untrained, but less than the wage that would just incentivise workers to pay for their professional training. (The worker will not acquire professional skills unless paid as much as in unskilled work, and the NHS will not pay more than the wage that would support self-funding, since these do not require a training subsidy.)

The analysis suggests that setting wages in the way that most closely corresponds to reality in the English NHS raises a major problem: because wages are below the social cost of additional professional workers, $W_0 + T$, the demand by providers for trained staff $N_t$, is greater than $N^*$, the first best level of professional employment.

How do quotas enter the problem and influence this outcome? One way thinking of a quota is as resulting from an NHS central planner comparing the social costs and benefits of more training and setting a quota at the optimal level. Such a quota would set professional employment at $N^*$ but leave a problem of excess demand for professionals of $N_t-N^*$. (This might be met by immigration.) Alternatively, a quota for training places may be determined by summing the providers' demand for trainees at the prevailing wage. Thus given wage $W_{0i}$, the quota would be $N_t$ places. NHS practice currently aims to gather trainee demands from the decentralised employers/SHAs and corresponds to the latter approach. The implication is that providers faced with a fixed wage – below the social cost of professional services – ask for a socially excessive number of training places.
Consider now an optimal levy, $L^*$. This would be set at a level that equates the social cost of professionals with the private cost, $W_B + L^*$. The social cost of trainees is given by equation (1) with wage equal to $W_B$.

Hence,

$$W_B + L^* = (W_B + T) + z x (W_B - W_0)$$

Implying that,

$$L^* = (W_B + T - W_B) + z x (W_B - W_0)$$

This expression for $L^*$ comprises $(W_0 + T)$-$W_B$, which is the difference between the social cost of an extra skilled worker and the 'compact' wage, plus an incremental amount to reflect the greater inequality created by adding the subsidy for a health professional's training. A levy of $(W_0 + T)$-$W_B$, less than £$T$ – reduces the workers' marginal product (the demand curve) from $D_1$ to $D_2$ in Figure 5C. This ensures that providers recruiting professionals face a higher overall cost of professional employees $(W_0 + T)$ and just eliminates the excess demand for professionals, assuming that $N^*$ are trained. The inequality generated by the compact wage increases the optimal levy and reduces the optimal number in training below the first best $N^*$.

**Figure 5C: The impact of a partial levy with a higher, bargained wage of $W_B$ (and no international or other domestic markets for healthcare labour)**

A policy of tax-funded training works in the case of ‘bargaining’ to increase income inequality: professionals provided with free public training (in order to circumvent market imperfections, or because of risk aversion that prevents individuals investing in professional education and training) are paid more than taxpayers, and probably more (net of self-funded training costs) than professionals in countries where professionals pay for their own training. Depending on the share of medical places taken by candidates from poor households, the progressivity of general taxation, and the scale of the ‘gift-back’ of the professional’s wage $(W_0 + T - W_B)$ this can be a policy that increases societal inequality despite its primary intention to overcome the prevailing inequality of opportunity.
5.5. Internationally mobile professionals

Suppose now that there is a competitive international market for health professionals and that UK-trained professionals can migrate and earn this international wage if they so wish. We assume that this wage is \( W_0 + T \) and assume that there is a large country in which health professionals pay for their training. These self-funded professionals will only be available in the long run if wages are \( W_0 + T \) or higher, since to earn less would not be sufficient to make paying for training worthwhile, and there would be no self-funded professionals. Economists describe this as an ‘infinitely elastic supply’ of professionals at wage \( W_0 + T \). In such a scenario the NHS is faced with a dilemma. To hire those it trains, it must pay \( W_0 + T \) as otherwise NHS-trained workers will be unwilling to accept NHS jobs; they could instead work internationally at a higher wage. The public training costs are ‘sunk’ and the trained workers capture the public investment (i.e. are paid as if they had self-funded), providing no return to the taxpayer. To not train, and hire professionals on international markets, would provide substantial savings of \( £T \) times \( N^* \), but leave the NHS vulnerable to the criticism that it is ‘poaching’ from other countries – although this would be a weaker criticism where the migrating professionals had funded their training.

To determine the optimal levy, using equation (2) again and setting \( W_B = W_0 + T \), gives:

\[
L^* = z \times (W_B - W_0) = z \times T
\]

The NHS levy is optimally positive if professionals are paid the international wage – due to the negative distributional effects of tax-funding the training. In Figure 5D, if a levy is introduced, the demand for trainees and professionals is reduced to a point such as \( N_1 \), less than \( N^* \). In this scenario, the NHS is paying for training twice – once when it trains, and later as part of the international wage, \( W_0 + T \). But if government is committed to tax-funding the training, and professionals migrate overseas unless paid the international wage, paying twice is unavoidable, unless other policies are considered. It may be necessary to explore other funding models, including conventional loans with repayments forgiven only for those working in the NHS.

With international wages and an optimal levy, the optimal professional employment and training levels are below first best levels, the wage paid is the world wage, and no international migration occurs. This is shown as point \( N_1 \) in Figure 5D.

A policy of government funding professional training is undermined if professionals work overseas unless paid at world rates. Levies and similar policies to persuade tax-funded professionals to share with taxpayers the public investment in their skills are likely to be ineffective. The levy simply ensures that the number trained and employed is consistent with the social cost of training professionals. Insofar as UK doctors are paid OECD level wages, the number trained may have been too great since the wage used to determine training may have been the world wage and not the social cost, which is higher, given an omitted distributional cost.
5.6. Levies in the independent sector

We now consider a non-NHS domestic sector that also employs healthcare professionals. The social cost of training a professional is given by equation (1). The social cost of non-NHS professional jobs is optimally the marginal social cost of an NHS job, plus the loss of resource that arises per trainee if the NHS budget funds training that is subsequently used in private employment, and which the government does not seek to fund. This loss of resource is entirely from the NHS budget, and comprises the training subsidy plus the excess burden of taxation that arises because of the incremental funded training.

For the private sector with wage $W_p$ and levy $L_p$ we therefore have:

$$W_p + L_p^* = W_0 + T + z(W_p-W_0) + (1+c)T$$

where $c$ is the marginal excess burden (of higher tax), and $z$ is the cost of rents to the higher-paid. This may be solved for the optimal non-NHS levy, $L_p^*$. If the private wage is the self-funded (world) wage $W_p=W_0+T$, this implies that the optimal employment levy, $L_p^*$, is given by

$$L_p^* = (1+c+z)T$$

The independent sector levy reduces the non-NHS demand for professionals that are trained by the NHS, but allows all trainees to choose in which sector to work using relative wages, and requires the non-NHS employers to fund the costs of the professional training. If the private sector wishes to continue to employ NHS-trained professionals, not only the subsidy but also the excess tax burden\(^\text{11}\) of the incremental budget should be met by the private sector which receives the services. Therefore, the non-NHS levy is likely to be of the order of

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\(^{11}\) Because it alters relative prices, taxation distorts the economy and imposes a cost on the economy greater than the amount raised. This additional cost is known as the marginal excess burden.
120-150% of the training cost\textsuperscript{12}. The premium in excess of 100% of the subsidy would be paid to the Treasury to compensate for the extra excess tax burden on the general population due to funding through the public budget training that should be privately funded. In view of the evidence on training costs in Section 6, this is unlikely to amount to a levy under 45% of medical private sector earnings.

5.7. A decentralised implementation of a levy model

At present, the ‘centre’ has a large role in training – taking advice on ‘demand’ from providers to set the number of training places, funding places, allocating places to institutions, and possibly introducing a levy and employers of the trained. In the approach discussed below a levy serves as a ‘price’ to balance the demand and supply of professional graduates.

Training institutions would offer training places and charge fees to future employers of its graduates. Employers pay an annual levy to the individual’s training institution at a rate which is common to all in a graduating group and set at the time of graduation. Expensive training places are supported in the market only if the quality of professionals training is sufficiently high. Fees are paid by future employers of professionals over the following T years of employment. The government might intervene to manage the equilibrium with levies and subsidies. In its first decade, to create liquidity for training institutions, a central agency would contribute to the payments to the training providers and enjoy matching revenues from the employers in the future. It would own the asset representing the flow of future levy revenues from the trained professionals, until providers ware sufficiently liquid to hold that entitlement for their graduates.

Those trained would contribute nothing to training costs, so that an imperfect loans market and the absence of income insurance to ameliorate the risk of loan-taking do not affect the outcome. The cost of incentivising a number trained different to that agreed privately by trainers and employers – if any – is met from taxation. This approach offers equal opportunity to would-be health professionals from poor homes who would be reluctant to take loans. Training providers would be incentivised to train those likely to work in the NHS.

It is possible for this policy to work with clinical staff but not with all occupations. This is because it is possible to identify where and when those trained are practicing and hence when the levy might be applied.

Subsequent sections of this report inform the interpretation of the levy framework described in the section above: Section 6 summarises estimates of the cost of healthcare education and training, Section 7 presents international data on the pay of healthcare professionals, and Section 8 discusses the limitations of different possible tax bases alongside other levy design issues.

\textsuperscript{12} In a review of the literature, Bovenberg and Goulder (2002) find US-based estimates of the marginal excess burden of between 20% and 50%.
6. The cost of healthcare education and training and its impact upon relative prices

This section sets out estimates of the size of healthcare education and training costs for different categories of staff, and illustrates how they can be converted into annual costs (annuitised) alongside all other costs of employment. As training costs become larger, their inclusion will have a larger effect on relative prices and there is a stronger case for the introduction of a levy, other things equal.

The direct implications of the cost estimates are:

- They show the scale of impact on relative prices of professional staff if annuitised training costs (which are a fixed amount per annum, linked to staff type and not salary\textsuperscript{13}) were taken into account by providers. There are two main dimensions to the relative price impact, and the distinction between them turns out to be of importance:
  (i) the effect on the overall prices of professional staff relative to other inputs such as non-professional staff, pharmaceuticals and technology, and;
  (ii) the effect on the price of professional staff groups relative to one another.
- The cost estimates also therefore illustrate how much non-NHS providers save through not having to pay for most professional education and training.
- By presenting the costs for different categories of staff, they can be compared with international wage differentials later on in this report, which the previous section showed is insightful to determining the optimal size of a levy.

Importantly, the data below relate to the \textit{overall} cost of professional education and training (excluding Continuing Professional Development), which is broader than the scope of the MPET budget. (For example, the MPET budget does not fund pre-registration teaching costs, as discussed in the introduction). This is due to data availability. A levy that only raises the MPET budget will therefore have a smaller impact on the stated rationales than is illustrated below.

6.1. Theory of converting an upfront investment into an annual cost

The education and training of a professional is an investment in human capital, with upfront costs that lead to a stream of future benefits. To compare the average upfront cost with the average annual wage and other costs of employment, the upfront cost needs to be converted to an equivalent annual cost using a process known as annuitisation. In doing so, two key factors need to be taken into account:

- The number of productive working years that the investment can be expected to provide. This is in turn determined by life expectancy, the probability of illness requiring absence from work, the probability of dropping out, the likelihood of part time working and so on.
- The fact that the benefits are in the future (in some cases, perhaps 35 years into the future), whereas the costs are borne far closer to the present.

The basic formula for calculating annuitised cost estimates is as follows. It takes account of the above points because the annuitisation factor is determined by the number of years of benefit and the discount rate\textsuperscript{14}.

\textsuperscript{13} Other possible levy designs are considered later in this report.

\textsuperscript{14} The discount rate is an economic concept measuring the extent to which a cost or benefit in a future year is worth less than the same cost or benefit today. This is because of (i) an innate preference for the present, (ii) that economic growth will lead to additional wealth in the future, and (iii) the future risk of death.
Annuitised cost = Upfront cost / annuitisation factor

Where annuitisation factor = \( \frac{1}{r} - \frac{1}{r \times (1 + r)^n} \)

\( r = \text{discount rate}, \ n = \text{number of years of benefit} \)

6.2. Applying the theory to the cost of healthcare education and training

Annuitised annual estimates of the cost of professional education and training are presented in Unit Costs of Health and Social Care (Personal Social Services Research Unit, 2011) for various categories of staff. The underlying data in this publication has been significantly revised relative to the previous edition. The estimates are based on an extension of the above formula; the full method is set out by PSSRU contributors Netten and Knight (1999) and key details are summarised below.

- In common with other UK Government cost-benefit analysis, PSSRU use a discount rate \( r \) of 3.5% (HM Treasury 2003; Annex 6).
- PSSRU extend the above formula by dividing the working life into a number of age bands. The number of years worked in each band is estimated using data on the fraction of staff working full and part time, the average hours of part time workers, the probability of death and the fraction of staff who have qualified. The data is obtained from the Census and the Labour Force Survey.
- The overall annuitisation factor is calculated as the sum of multiple components, one for each age band. These components are as follows.
  - Component = \( \left[ \frac{\text{Number of working years in age band}}{\text{Width of age band in years}} \right] \times \text{Discount factor} \times \text{Band annuitisation factor} \)
  - The discount factor of \( \left[ \frac{1}{(1+r)^y} \right] \) is determined by the discount rate \( r \) and the number of years \( y \) between the start of the age band and when the employee’s training started.
  - The band annuitisation factor \( \left[ \frac{1}{r} - \frac{1}{r \times (1 + r)^w} \right] \) is calculated using the discount rate \( r \) and the width of the age band in years \( w \).
- PSSRU also discount the upfront cost by three years to take account of the fact that training costs are spread over time (albeit to a far smaller extent than the benefits). The discounted upfront cost is divided by the overall annuitisation factor to yield the final annuitised cost estimate.
- Because the source data is a cross-section taken from the Census and the Labour Force Survey, it will likely include some foreign-trained staff in each age band. When using the results to judge the expected working life of newly NHS-trained staff, it may not therefore be fully representative if the behaviours of foreign-trained staff are systematically different. Additionally, the estimates do not take account of the fraction of staff who emigrate, although some relevant data is discussed\(^{15}\).

6.3. How large are healthcare education and training costs as a fraction of wages and overall employment costs? How much do providers save?

PSSRU (2011) present the annuitised qualification costs alongside a wage estimate and other costs of employment, including salary on-costs, overheads, annuitised capital overheads, ongoing training and practice expenses (where applicable). The following tables show the results, including annuitised qualification costs both (i) as a percentage of wages and (ii) as a percentage of the overall cost of employment.

\(^{15}\) It is argued that emigration is most common amongst doctors; cohort studies beginning in the 1970s show around 10% of doctors graduating in the UK emigrate within the first 20 years of their career, although this information does not cover their entire career. Lambert, Goldacre and Parkhouse (1997) is cited here.
Table 6A: Wages, qualification costs and other costs of employment (annualised) for hospital staff

<table>
<thead>
<tr>
<th>Wages</th>
<th>Qualifications as % of wage</th>
<th>Qualifications as % of all employment costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scientific and Technical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>£22,700</td>
<td>£4,927</td>
</tr>
<tr>
<td>Occupational therapist</td>
<td>£22,700</td>
<td>£4,911</td>
</tr>
<tr>
<td>Speech and language therapist</td>
<td>£22,700</td>
<td>£5,035</td>
</tr>
<tr>
<td>Dietician</td>
<td>£22,700</td>
<td>£5,095</td>
</tr>
<tr>
<td>Radiographer</td>
<td>£22,700</td>
<td>£5,278</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>£30,500</td>
<td>£6,574</td>
</tr>
<tr>
<td><strong>HCA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical support worker (hospital)</td>
<td>£15,600</td>
<td>£0</td>
</tr>
<tr>
<td><strong>Nursing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital nurse (day ward or 24hr ward)</td>
<td>£25,500</td>
<td>£9,356</td>
</tr>
<tr>
<td>Hospital nurse (team leader)</td>
<td>£32,600</td>
<td>£9,356</td>
</tr>
<tr>
<td>Hospital nurse (team manager)</td>
<td>£38,800</td>
<td>£9,356</td>
</tr>
<tr>
<td><strong>Doctors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foundation Officer 1</td>
<td>£32,200</td>
<td>£19,546</td>
</tr>
<tr>
<td>Foundation Officer 2</td>
<td>£41,200</td>
<td>£21,807</td>
</tr>
<tr>
<td>Medical group</td>
<td>£55,600</td>
<td>£26,325</td>
</tr>
<tr>
<td>Associate specialist</td>
<td>£89,400</td>
<td>£30,008</td>
</tr>
<tr>
<td>Consultant (medical, surgical, psychiatric)</td>
<td>£117,700</td>
<td>£44,827</td>
</tr>
</tbody>
</table>

Table 6B: Wages, qualification costs and other costs of employment (annualised) for community staff

<table>
<thead>
<tr>
<th>Wages</th>
<th>Qualifications as % of wage or net remuneration</th>
<th>Qualifications as % of all employment costs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scientific and Technical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>£22,700</td>
<td>£4,927</td>
</tr>
<tr>
<td>Occupational therapist</td>
<td>£22,700</td>
<td>£4,911</td>
</tr>
<tr>
<td>Speech and language therapist</td>
<td>£22,700</td>
<td>£5,035</td>
</tr>
<tr>
<td>Community pharmacist</td>
<td>£38,000</td>
<td>£7,671</td>
</tr>
<tr>
<td><strong>HCA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical support worker (community)</td>
<td>£15,600</td>
<td>£0</td>
</tr>
<tr>
<td><strong>Nursing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community nurse</td>
<td>£25,500</td>
<td>£9,356</td>
</tr>
<tr>
<td>Nurse (mental health)</td>
<td>£25,500</td>
<td>£9,356</td>
</tr>
<tr>
<td>Nurse specialist (Community)</td>
<td>£32,600</td>
<td>£9,356</td>
</tr>
<tr>
<td>Health visitor</td>
<td>£32,600</td>
<td>£9,356</td>
</tr>
<tr>
<td>Nurse (GP practice)</td>
<td>£25,500</td>
<td>£9,356</td>
</tr>
<tr>
<td>Nurse advanced</td>
<td>£38,800</td>
<td>£9,356</td>
</tr>
<tr>
<td><strong>Doctors</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GP</td>
<td>£109,400</td>
<td>£40,521</td>
</tr>
</tbody>
</table>

The data in Table 6 suggests that annuitised qualification costs are a notable proportion of the wage and overall employment costs. There is also some variation between different staff groups, with the qualification costs of groups (particularly junior doctors) representing a larger share of wages or employment costs than others. The implications of these findings are now considered.
6.4. If these education and training costs were fully taken into account, how would they affect relative prices faced by providers?

The annuitised cost estimates given above have a number of implications for providers:

- Because annuitised qualification costs are significant both in absolute terms and as a percentage of wages and overall employment costs, a levy of the scale indicated by the annuitised qualification costs is likely to make a notable increase in the price of professional staff relative to other inputs (such as non-professional staff and technology).

- Furthermore, annuitised qualification costs vary (between staff groups) as a percentage of wages and overall employment costs. If these costs were charged to providers as part of a levy, it would alter the cost of different professional staff relative to one another. For example, doctors become relatively more expensive than nurses. This effect is considered below.

- The estimates imply that non-NHS providers have a substantial saving through not having to pay for most professional education and training.

- The annuitised education and training cost for GPs is around £4,000 lower than for consultants. If a levy were to reflect this, GPs would become somewhat cheaper relative to consultants. Conversely, the absence of a levy has tended to under-price medical services in a hospital setting relative to primary care.

- The analysis in Section 5 argues that the optimal levy is not equal to the annuitised training cost but a fraction of this amount where this fraction increases with the discount of the professional wage to the wage that self-funding would require, and with the social costs of distributing the training subsidy to the provisional group concerned and away from the typical taxpayer.

The following tables and graphs show the extent to which the prices of different professional staff (relative to one another) would alter if annuitised professional education and training costs were charged to providers. For hospital staff, relative costs are calculated for a given staff category by dividing their total employment costs by the total employment costs of a consultant. For example, a value of 0.19 (a physiotherapist’s cost divided by a consultant’s cost) means that the physiotherapist costs 19% of the cost of a consultant.
Table 6C: Total employment costs (per employee) by staff group for hospital staff, both including and excluding the cost of professional education and training

<table>
<thead>
<tr>
<th>Staff Group</th>
<th>Total employment costs (excluding training)</th>
<th>Total employment costs (including training)</th>
<th>Relative cost (excluding training)</th>
<th>Relative cost (including training)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scientific and Technical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physiotherapist</td>
<td>£49,705</td>
<td>£54,632</td>
<td>0.20</td>
<td>0.19</td>
</tr>
<tr>
<td>Occupational therapist</td>
<td>£49,705</td>
<td>£54,616</td>
<td>0.20</td>
<td>0.19</td>
</tr>
<tr>
<td>Speech and language therapist</td>
<td>£48,629</td>
<td>£53,664</td>
<td>0.20</td>
<td>0.19</td>
</tr>
<tr>
<td>Dietician</td>
<td>£48,699</td>
<td>£53,794</td>
<td>0.20</td>
<td>0.19</td>
</tr>
<tr>
<td>Radiographer</td>
<td>£52,017</td>
<td>£57,295</td>
<td>0.21</td>
<td>0.20</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>£84,998</td>
<td>£71,572</td>
<td>0.27</td>
<td>0.25</td>
</tr>
<tr>
<td><strong>Nursing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HCA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinical support worker</td>
<td>£32,023</td>
<td>£32,023</td>
<td>0.13</td>
<td>0.11</td>
</tr>
<tr>
<td>(hospital)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital nurse (day ward or 24hr</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ward)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital nurse (team leader)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital nurse (team manager)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Doctors</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foundation Officer 1</td>
<td>£70,117</td>
<td>£89,663</td>
<td>0.29</td>
<td>0.31</td>
</tr>
<tr>
<td>Foundation Officer 2</td>
<td>£88,455</td>
<td>£110,262</td>
<td>0.36</td>
<td>0.38</td>
</tr>
<tr>
<td>Registrar group</td>
<td>£117,797</td>
<td>£144,126</td>
<td>0.48</td>
<td>0.50</td>
</tr>
<tr>
<td>Associate specialist</td>
<td>£186,627</td>
<td>£216,635</td>
<td>0.76</td>
<td>0.75</td>
</tr>
<tr>
<td>Consultant (medical, surgical,</td>
<td>£245,008</td>
<td>£289,835</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>psychiatric)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total employment costs also include salary oncosts, overheads, capital overheads and ongoing training.
Overall, Table 6C and Figure 6D above show that the cost of professional staff groups relative to one another do not change substantially once annuitised education and training costs are added in; for any staff category, the two bars are always of a similar height. The effect of an MPET levy on relative prices would be even smaller.

Nonetheless, there are some changes in these relative costs. Relative to consultants, several staff categories become cheaper, including scientific and technical staff, nursing staff, clinical support staff and associate specialists. By comparison, the Foundation groups (junior doctors) and the Registrar group become more expensive, which is to be expected given that their annuitised training costs are not substantially lower than for consultants, although they have a notably lower salary. (This issue arises because the annuitised costs are ultimately a fixed amount per annum for each member of staff, which is noted as a disadvantage of such a levy design in Section 8; it can be avoided with a percentage levy design or by varying the rate for younger professionals).

The same analysis is conducted overleaf for community staff, but relative costs are instead calculated for a given staff category by dividing their total employment costs by the total employment costs of a GP. For example, a value of 0.33 (a community nurse’s cost divided by a GP’s cost) means that the community nurse costs 33% of the cost of a GP.
Table 6E: Total employment costs (per employee) by staff group for community staff, both including and excluding the cost of professional education and training

<table>
<thead>
<tr>
<th>Scientific and Technical</th>
<th>Total employment costs (excluding training)</th>
<th>Total employment costs (including training)</th>
<th>Relative cost (excluding training)</th>
<th>Relative cost (including training)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiotherapist</td>
<td>£47,691</td>
<td>£52,618</td>
<td>0.25</td>
<td>0.23</td>
</tr>
<tr>
<td>Occupational therapist</td>
<td>£47,671</td>
<td>£52,582</td>
<td>0.25</td>
<td>0.23</td>
</tr>
<tr>
<td>Speech and language therapist</td>
<td>£47,691</td>
<td>£52,726</td>
<td>0.25</td>
<td>0.23</td>
</tr>
<tr>
<td>Community pharmacist</td>
<td>£80,280</td>
<td>£87,951</td>
<td>0.42</td>
<td>0.38</td>
</tr>
<tr>
<td>HCA</td>
<td>Clinical support worker (community)</td>
<td>£31,527</td>
<td>0.16</td>
<td>0.14</td>
</tr>
<tr>
<td>Nursing</td>
<td>Community nurse</td>
<td>£67,509</td>
<td>0.35</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Nurse (mental health)</td>
<td>£53,041</td>
<td>0.27</td>
<td>0.27</td>
</tr>
<tr>
<td></td>
<td>Nurse specialist (Community)</td>
<td>£67,509</td>
<td>0.35</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Health visitor</td>
<td>£67,509</td>
<td>0.35</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>Nurse (GP practice)</td>
<td>£55,371</td>
<td>0.29</td>
<td>0.28</td>
</tr>
<tr>
<td></td>
<td>Nurse advanced</td>
<td>£81,354</td>
<td>0.42</td>
<td>0.39</td>
</tr>
<tr>
<td>Doctors</td>
<td>GP</td>
<td>£193,001</td>
<td>1.00</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Total employment costs also include salary oncosts, overheads, capital overheads, ongoing training and practice expenses.

Figure 6F: Total employment costs for community staff relative to GPs, both including and excluding the cost of professional education and training
6.5. Summary

The evidence described in this section shows that the inclusion of qualification costs substantially alters the cost of professional staff as a whole relative to other inputs (such as physical space, non-professional staff or capital equipment). It also implies that non-NHS providers make substantial savings through not having to pay for most professional education and training – particularly for medical staff and specialist nurses. For most categories of staff, education and training costs vary between 10% and 20% of overall annual employment costs or 20-40% of wage costs. These calculations omit the cost of risk accepted by self-funding professionals, in not being capable or willing to participate in the profession for which training is given. The cost of such risk is likely to be high and a substantial addition to the cost estimates given here. Thus, for example, on a risk included basis, the subsidy for clinical staff might exceed 50% of wage costs rather than the 37% of net remuneration given in Table 6B. Given public subsidies for education and training, the cost of risk is accepted by the taxpayer.

There is also evidence that the cost of different professional occupations, relative to each other, is only modestly changed by including education and training costs. The introduction of levies on the employment of health professionals does however alter the relative price of other inputs – including equipment, building space, pharmaceuticals and unskilled staff – to professional groups.

The view that training and education subsidies are sufficiently small relative to wage or total employment costs, such that they may be disregarded in policy to ensure that healthcare providers pay the optimal marginal social cost of labour and hence appropriately choose employment, is not compatible with the training and education cost estimates discussed in this section.

Given their significant size, the following section examines the impact of education and training costs on health professionals’ pay across OECD countries.
7. Variation in remuneration of healthcare professionals across countries

In Section 5, the optimal professional employment levy on NHS providers is shown to be equal to, or moderately greater than, the part of the gain in productivity resulting from training that is not paid in higher wages to the professional, plus an element reflecting the distributional cost of the subsidy that arises because taxpayers have average incomes below those of certain clinical professions.

This section uses international data on health professional wages to consider the extent to which the gain in productivity resulting from training has not all been paid in higher wages for NHS health professionals. Specifically, if NHS wages are significantly less than those in other developed countries where there is notably less state subsidy for the cost of education and training, this is consistent with the view that part of the gain in productivity has not been paid in higher wages to the professional, so a higher levy is optimal (following the statement at the start of this section). By contrast, if NHS wages are similar to those in the aforementioned comparator countries, much of the gain in productivity has likely been paid in higher wages, and a smaller levy is optimal.

In this section, the US is used as the main comparator. US healthcare professionals pay more for their training (largely through loans) when compared to the UK\(^{16}\), although there is government assistance for post-medical-school training through the Graduate Medical Education (GME) programme\(^{17}\). The cost of such training can nonetheless partly be transferred to individuals through lower medical intern pay\(^{18}\). Overall, it is informative to compare NHS pay levels (where training is largely tax-funded) with those in the US (where it is largely borne by individuals). The previous section suggests that education and training costs represent around 20-40% of the annual NHS wage; if the difference between NHS and US pay is significantly smaller than this, it is particularly indicative that public funding of training has not moderated professionals’ pay, meaning that a smaller levy (or none at all) is optimal. This section therefore presents data on the remuneration of general practitioners, specialists and hospital nursing staff across countries, both in absolute terms and relative to each country’s average wage, and then provides the direct comparison with the US.

7.1. Graphs showing remuneration across OECD countries

The following graphs show variation in remuneration using data from OECD Health Data 2011\(^{19}\). The points listed below are important for understanding the data.

- Most data points relate to the year 2008. Where a 2008 data point is not available, the closest point from two years either side is used instead (i.e. from between 2006 and 2010), and the relevant year is noted in brackets next to the country name.

\(^{16}\) The Debt Fact Card issued by the Association of American Medical Colleges (October 2011) cites a mean debt of $161,290 at medical school graduation (median $162,000). See https://www.aamc.org/services/first/. Furthermore, part of their training cost may not have been borrowed (e.g. when families have saved to cover part of the cost of their children’s education), so will not be reflected in these figures.

\(^{17}\) Funding comprises of $9.5bn/year through Medicare, $2bn/year through Medicaid and $1bn/year through the Department of Veterans Affairs. See ‘Critical condition: The call to increase graduate medical education funding’ (American Medical Association) http://www.ama-assn.org/resources/doc/med-ed-products/graduate-medical-education-funding.pdf

\(^{18}\) Hartley (2011) shows that medical interns (residents) earn substantially lower salaries, which have also grown more slowly over the past 25 years relative to fully trained doctors.

\(^{19}\) This data can be extracted from http://stats.oecd.org under Health > Health Care Resources > Remuneration of health professionals.
Because the US is crucial to the analysis, US data has also been included even though the most recent points for doctors are from 2001. No adjustment has been made for inflation when non-2008 data has been used.

- Some country names are followed by a letter or sequence of letters in brackets: (b) denotes that a break in the data series occurred in the stated year, (d) indicates a difference in methodology and (e) indicates an estimate.

- Absolute costs are shown in US Dollars at Purchasing Power Parity (PPP) exchange rates. These exchange rates are set such that a given amount of money has the same spending power (i.e. can buy the same bundle of goods and services) in the different countries concerned. They may therefore differ from market exchange rates, but provide a more accurate view of differences in prices across countries.

It is acknowledged that international income data has limitations, in that data sources and methods can vary between countries, alongside the scope of jobs themselves. OECD (2011) provide the following information on definition and comparability:

*The remuneration of doctors refers to average gross annual income, including social security contributions and income taxes payable by the employee. It should normally include all extra formal payments, such as bonuses and payments for night shifts, on-call and overtime, and exclude practice expenses for self-employed doctors. A number of data limitations contribute to an underestimation of remuneration levels in some countries: 1) payments for overtime work, bonuses, other supplementary income or social security contributions are excluded in some countries (Austria, Ireland for salaried specialists, Italy, New Zealand, Norway, Portugal, the Slovak Republic, Slovenia and Sweden); 2) incomes from private practices for salaried doctors are not included in some countries (e.g. the Czech Republic, Hungary, Iceland and Portugal); 3) informal payments, which may be common in certain countries (e.g. Hungary and Greece), are not included; 4) in Hungary, Mexico, Denmark and the Slovak Republic, data relate only to public sector employees who tend to earn less than those working in the private sector; and 5) in France, the data relate to net income rather than gross income.*

*The data for some countries (Australia, Austria, the Netherlands, the United States, and the United Kingdom for specialists) include part-time workers, while in other countries the data refer only to doctors working full-time. In Ireland, the data for self-employed GPs include practice expenses, resulting in an over-estimation.*

*The income of doctors is compared to the average wage of full-time employees in all sectors in the country, except in Iceland, Mexico and New Zealand where it is compared to the average wage in selected industrial sectors.*

Nonetheless, such data still provides a useful insight into a key issue for a healthcare education and training levy.
Figure 7A: GP salary, in US$ at purchasing power parity, 2008

Figure 7B: GP salary relative to average wage, 2008
Figure 7C: Self-employed GP income, US$ at purchasing power parity, 2008

Figure 7D: Self-employed GP income relative to average wage, 2008
Figure 7E: Specialist salary, US$ at purchasing power parity, 2008

Figure 7F: Specialist salary relative to average wage, 2008
Figure 7G: Self-employed specialist income, US$ at purchasing power parity, 2008

Figure 7H: Self-employed specialist income relative to average wage, 2008
Figure 7I: Hospital nurse salary, US$ at purchasing power parity, 2008

Figure 7J: Hospital nurse salary relative to average wage, 2008
7.2. An overall comparison of countries where healthcare professionals tend to pay for their training with countries where they do not

The graphs show that US pay is often highest, both in absolute and relative terms, which fits with the fact that US healthcare professionals pay for a larger share of their own training. The following table quantifies the difference more precisely by showing the additional percentage premium over UK relative pay that US health professionals earn, expressed as a percentage of UK, EU-15\(^20\) or EU-27 relative pay. (The use of relative pay on both sides of the comparison removes the influence of any economy-wide tendency towards higher pay.)

As discussed earlier, US health professional wages are expected to be up to 20-40% higher relative to the national average given that healthcare professionals usually pay for their education and training, unlike in the UK and the rest of Europe.

Table 7K: A comparison of relative pay for healthcare professionals in the UK, the EU-15 and the EU-27

<table>
<thead>
<tr>
<th>How much higher is the relative pay of US healthcare professionals when compared to...</th>
<th>...the UK</th>
<th>...the EU-15</th>
<th>...the EU-27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaried GP</td>
<td>68.9% higher</td>
<td>54.8% higher</td>
<td>92.3% higher</td>
</tr>
<tr>
<td>Self-employed GP</td>
<td>5.1% higher</td>
<td>28.4% higher</td>
<td>13.0% higher</td>
</tr>
<tr>
<td>Salaried specialist</td>
<td>56.7% higher</td>
<td>44.2% higher</td>
<td>138.2% higher</td>
</tr>
<tr>
<td>Self-employed specialist</td>
<td>No data</td>
<td>18.3% higher</td>
<td>66.7% higher</td>
</tr>
<tr>
<td>Salaried nurse</td>
<td>21.3% higher</td>
<td>16.3% higher</td>
<td>50.0% higher</td>
</tr>
</tbody>
</table>

The findings in Table 7K suggest that those salaried – both specialists and GPs – are paid in the order of 60% more in the US relative to the national average. In contrast, US self-employed GP pay is not substantially higher than in the UK, implying that UK self-employed GP pay is already close to an ‘international wage’ that reflects GP training costs, despite the fact that these costs are not borne by UK GPs. In contrast, nursing pay is higher in the US by a similar level to the training cost (so it is harder to argue that UK nursing salaries are close to an international wage that reflects their training cost), and salaried GP and specialist pay is substantially higher in the US (so is far from such an international wage).

7.3. The implications of Sections 6 and 7 for the levy

Healthcare professionals in the US bear a larger share of their education and training costs than their counterparts in the UK and the rest of Europe. One symptom of this is that their indebtedness levels are also substantially higher after completing their education, and average $180,000 per clinician. OECD data is consistent with the expectation that American health professionals who borrow to self-fund are paid as a result notably higher wage rates than their European counterparts, relative to mean national wages. However, the differential varies considerably by occupational group and is much smaller for independent practitioners than for salaried employees. It is difficult to explain these large wage differentials without reference to the higher European education and training subsidies, together with the reduced individual risk of either not enjoying, or not being skilled in, clinical practice.

If the higher relative pay of the US gives an idea of the wages required in England if health professional training were not subsidised, an indication can be made of the willingness of UK

professionals to return the subsidy in the form of comparatively low professional wages. The evidence supports the view that far from all of the extra productivity created by training and education in the UK is paid to a clinician, for otherwise the UK/European healthcare professional wages relative to the national mean would more closely approach American levels. Exactly how far agreed wages in Europe are close to the alternative wage that health professionals would enjoy if not in receipt of health care training and education is less clear. Only those in self-employed practice appear to obtain substantially more than half of the extra productivity created by healthcare education and training. In the case of salaried doctors, the wage may be close to returning to the NHS all of the extra productivity from training, in the form of lower wages than would apply if training were not subsidised. This suggests that the optimal levy would not be less than 50% of training costs for salaried NHS clinicians. As indicated in Section 5, the levy would be higher in the independent sector.

The following (and final) section considers other factors that affect the optimal size, tax base and other significant details of a healthcare education and training levy.
8. A suitable tax base and other issues

There are many possible ways in which a levy scheme – a charge on providers for their employees’ training costs – could be implemented. We show in Section 5 that a levy tax base of the annuitised training cost, with the levy proportion determined by the difference between market wages and the world wage for that skill, will restore a first-best use of professional labour. This section considers two separate groups of issues. Firstly, it discusses distortions arising when alternative (and potentially administratively less complex) tax bases are used in place of the first-best solution. A more detailed table evaluating various tax base options against the relative price, information and free rider rationales is presented in Annex F. Secondly, this section considers several other issues to be resolved aside from the tax base.

8.1. The tax base suggested by the modelling in Section 5

The modelling in Section 5 suggests that the levy should be a proportion of the employee’s annuitised training cost, with the levy proportion determined by the difference between market wages and the world wage for that skill. The resulting relative prices of professional staff would therefore correctly represent differences in the cost of training and would communicate this information to providers. Additionally, the free-rider problem could be reduced if this levy were implemented in the private sector. All three of these rationales can therefore be met.

Such a levy could be implemented as a flat duty per professionally-trained employee, which varies by staff group depending on that group’s annuitised training cost. Using a larger number of groups would enable a closer match with each individual’s training cost, at a cost of higher administrative complexity. Because this approach only requires data on staff numbers by staff group, it can be implemented consistently in both the public and private sectors.

Such a tax base nonetheless risks increasing the relative price of younger staff, as their training costs represent a larger fraction of their salary (creating a disincentive to employ them). This could potentially be resolved by differentiating the levy by stage of career. As is discussed below, a levy that is a fraction of salary (with the fraction differing by staff group) would also avoid this problem, but would have other notable disadvantages (such as charging the highest levy on the highest earners, irrespective of whether their training costs were actually higher).

8.2. Consideration of other tax bases against the three stated rationales

Other tax bases may present less administrative complexity than the option outlined above. Possible tax bases can be divided into two categories: those related to activity (such as hospital episodes or bed days) and those related to employment (such as payroll or employee counts). Both categories have been observed in practice, both inside and outside of healthcare – for example, in Section 3 the German healthcare levy is activity-based, whereas the Danish and French levies are employment-based – although payroll levies are most common in other sectors.

The other tax base options include:
- Simpler activity-based levies
  - Percentage of purchaser income (does not vary by purchaser)
Flat duty per hospital activity (spell/episode/admission/bed day) (does not vary by activity)

Employment-based levies

Simpler options:
- Flat duty per professionally-trained employee (does not vary by staff group)
- Percentage payroll tax per professionally-trained employee (does not vary by staff group)

More complex option:
- Percentage payroll tax per employee (varies by staff group in line with cost of training)

Many of these tax bases fail to achieve some of the relative price, information and free-rider rationales, particularly relating to information provision and relative prices between different categories of professional staff, although they are more effective at reducing free-riding by non-NHS providers. These failures all stem from the fact that these tax bases do not have a hard link to the underlying analysis of funding the training cost.

- **Percentage of purchaser income (does not vary by purchaser)**: This would not obviously alter any relative prices or differ from the current top-slicing system. It would also be difficult to apply to non-NHS employers, and would provide no new information on the cost of training.

- **Flat duty per hospital activity (spell/episode/admission/bed day) (does not vary by activity)**: This would encourage providers to specialise in high-value activities, where the flat levy represents a smaller percentage of income for each activity. The impact on relative prices of staff is therefore unclear. Additionally, the chosen activity metric is unlikely to be relevant outside of NHS secondary care, very little new information is communicated and there is potential for administrative complexity.

- **Flat duty per professionally-trained employee (does not vary by staff group)**: Although this seems similar to the main option set out in Section 8.1, it would in fact move relative prices between professional staff in the wrong direction because it does not reflect differences in training cost between different staff types. Reflecting these differences is therefore crucial in this regard. Specifically, the simpler levy would represent a smaller percentage increase in cost for more expensive staff, making (for example) nurses more expensive relative to consultants, when the reverse should be true. It therefore provides little new information, and for the reasons set out, the information that it does provide is potentially misleading. As with the main option, this simpler version also increases the relative price of more junior staff (as a fixed levy represents a larger proportion of their pay).

- **Percentage payroll tax per professionally-trained employee (does not vary by staff group)**: Because this does not vary by staff group, it does not at all alter the price of different categories of professional staff relative to one other. (If two salaries are changed by the same percentage, their relative sizes do not change). Such a levy design would nonetheless charge a higher absolute amount to higher earners, including the non-NHS sector (e.g. where private earnings are higher than NHS earnings), which may be disproportionate to training costs. It may also be difficult to calculate for GP partners (who do not have a specific salary) and communicates very little new information to providers, as it is just a simple fraction of the professional payroll.

- **Percentage payroll tax per employee (varies by staff group in line with cost of training)**: This option varies by staff group, so more closely matches the costs of initial education and training. However, similar to the simpler payroll tax, it imposes a disproportionate absolute cost for higher earners within each staff category, even though their initial education and training costs are unlikely to be disproportionately

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21 Because consultants’ training costs are proportionately higher than for nurses, if a levy accurately reflected training costs, it would instead make consultants more expensive relative to nurses.
higher. (Training costs are ultimately related to staff type, not salary). It will also charge more to non-NHS providers (e.g. where private earnings are higher than in the NHS) and may be difficult to calculate where professionals do not have a specific salary (e.g. with GP partners). Furthermore, gathering payroll information by staff type will have a notable administrative cost.

Levies that vary only by provider type carry many of the disadvantages noted above of using a single rate or a single percentage across all providers and staff. This is because the levy rate does not vary within providers, despite significant variation in the training cost of provider staff.

8.3. Other issues to be resolved aside from the tax base

There remain various other options to consider in addition to the tax base. As should be evident from the following table, these options affect crucial issues such as the incentives to hire temporary, foreign-trained or part-time staff, and the possibility of exempting small organisations from which the costs of collection may be high.

**Table 8A: Key options aside from the tax base**

<table>
<thead>
<tr>
<th>Option</th>
<th>Alternative Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply the levy to foreign-trained staff</td>
<td>Do not apply the levy to foreign-trained staff</td>
</tr>
<tr>
<td>Apply the levy to temporary staff</td>
<td>Do not apply the levy to temporary staff</td>
</tr>
<tr>
<td>Apply the levy at a reduced rate for part-time staff</td>
<td>Do not apply the levy at a reduced rate for part-time staff</td>
</tr>
<tr>
<td>Apply the levy at different rates for different stages in a professional’s career</td>
<td>Do not apply the levy at different rates for different stages in a professional’s career</td>
</tr>
<tr>
<td>Exemption of certain types of private employers</td>
<td>Do not exempt any private employers</td>
</tr>
<tr>
<td>Exemption of charitable employers</td>
<td>Do not exempt charitable employers</td>
</tr>
<tr>
<td>Raise only the funds to cover a part of MPET</td>
<td>Raise the funds needed to cover all MPET training costs</td>
</tr>
<tr>
<td>Introduce the levy in a graduated way to ease the impact on high-skill providers who may lose out from the levy scheme</td>
<td>Do not introduce the levy in a graduated way</td>
</tr>
<tr>
<td>Apply the levy only to new staff</td>
<td>Apply the levy to both new and existing staff</td>
</tr>
<tr>
<td>Create a central top-up fund</td>
<td>Do not create a central top-up fund</td>
</tr>
<tr>
<td>Track individual staff</td>
<td>Do not track individual staff</td>
</tr>
</tbody>
</table>

8.3.1. Foreign-trained staff

Clearly, the cost of professional education and training for foreign-trained staff is not borne by the NHS or the taxpayer, so exempting them from the levy would also most closely match their relative cost to this country.

However, such an incentive for providers to hire foreign-trained staff (as they would now be relatively cheaper) would be at the expense of other countries’ healthcare systems, may reduce future control over professional education and training and may not be in the best interests of patient care.

As well as avoiding these problems, if the levy were charged to all professionally trained staff (regardless of where they were trained), it would also help to capture the loss from UK-trained staff that subsequently practise abroad.
8.3.2. Temporary staff

The professional education of temporary staff costs the same as for permanent staff, other things equal. It is therefore hard to justify treating the two groups differently with regard to a levy.

8.3.3. Part time staff

Ultimately, part time and full time staff have the same upfront cost for their professional education and training. If this were reflected in a levy, the relative cost of part time staff would increase because the education and training costs form a larger share of their (part time) pay and overall employment cost. If two providers had the same number of FTEs within a given staff category, but one had a higher share of part time staff, that provider would pay a higher amount of levy.

However, this incentive (although consistent with allocating an optimal amount of scarce resource) may be seen as inequitable and discriminatory. For this reason, the levy might be pro-rated for part time staff.

8.3.4. Different rates at different stages of careers

As a worker’s salary increases as they move through their career, the annuitised cost of their professional education and training falls as a fraction of their wage (or overall employment costs). A fixed levy will therefore increase the relative cost of workers who are earlier in their career. This would enhance retention of experienced staff but would also have negative consequences for junior recruitment. A potential solution is to reduce the levy rate on more junior staff.

8.3.5. Exemption of certain types of private employers

Section 5 shows that including the non-NHS healthcare sector within a levy’s coverage can be beneficial, in that it increases the number of staff available to the NHS (relative to a situation where non-NHS employers were exempted) as well as raising revenue to contribute to the cost of training. If NHS prices already exclude the cost of education and training (as it has been top-sliced), providers that work for the NHS already ‘pay’ for education and training to some extent; a levy on providers that do not work for the NHS will then help to level the playing field.

Section 5 also suggests that if the policy intention of tax-funded training is to provide staff for the NHS, a private sector levy should additionally incorporate the marginal excess burden of taxation.

However, it can be difficult to identify the extent to which non-NHS healthcare professionals (or their employer) are benefitting from their training. For example, some staff may leave the medical profession altogether and work in another sector of the economy. Imposing levies on these employers may not be cost-effective, given that it would involve charging a relatively small share of overall levy income to a large number of diverse employers. This issue deserves further analysis.
8.3.6. **Exemption of charitable employers**

Besides NHS and private sector organisations, charities also make use of professional healthcare staff who have been trained using public funds. Because charities by definition exist for the public benefit, often provide services that are free at the point of use, and might require additional NHS expenditure if their services were not provided, it is difficult to argue that they should face the marginal excess burden of taxation.

This leaves the question of whether charities should face the same levy as NHS providers, or whether they should be exempted altogether. It might be argued that exempting charities from levy payments could result in them facing the wrong relative prices and, to the extent that charitable providers are in competition with NHS and private providers, could distort such competition. However, charities are already exempted from general taxation despite the fact that this exemption may have similar effects to those described above – a clear precedent. The application of levy payments to charities might also be seen as unreasonable and inequitable.

8.3.7. **Raising only a part of MPET through a levy**

Section 5 shows that if healthcare professionals’ wages are influenced by healthcare wages in other countries where healthcare professionals pay for their own training, a partial levy is optimal. The international pay data from Section 7 shows that this scenario is realistic, as pay for some categories of NHS staff (particularly self-employed GPs) is close to the US equivalent.

8.3.8. **Introducing the levy in a graduated way**

If a levy is introduced in a graduated way, this will give providers more opportunity to adjust to the new relative prices and financial environment and will help maintain stability. It would also provide an early warning of future financial problems associated with levy payment.

It may nonetheless delay the benefits associated with the levy, yet is unlikely to reduce administrative cost (as the data requirements for calculating the levy are likely to be unchanged).

8.3.9. **Applying the levy to new staff, or to new and existing staff**

If a levy were only applied to newly-trained professional staff, it would make them more expensive relative to existing staff. It would therefore discourage the hiring of newly trained staff despite the fact that existing staff have also received costly training. It would also take many years for such a levy to reach a ‘steady state’ where many employees are covered and revenues are sufficient to offset the training costs that the levy is designed to fund. Nonetheless, it would expose providers gradually to the change in relative prices, reducing the impact of transition. Such problems could be avoided if a levy were to cover all existing staff, and were introduced gradually (as discussed elsewhere in this section).

8.3.10. **Central top-up fund**

Because of changes in the levy base from year to year as well as recent increases in the numbers trained, there is a risk of a shortfall between levy revenues and the training expenditures that it is designed to fund. It is first important to recognise that an optimal levy
will contain an adjustment for the fact that training costs are incurred many years before the benefits are received. The annuitised estimates in Section 6 already adjust for this. The additional revenue associated with such an adjustment reduces the likelihood of any shortfall.

It would nonetheless be possible to create a central top-up fund to make up for shortfalls. Such a fund would only need to be a fraction of the size of the current MPET budget.

**8.3.11. Tracking individual staff**

If a levy were to track individual staff, this would clearly come at a significant administrative cost. It might nonetheless facilitate a true ‘repayment’ scheme rather than a pay-as-you-go scheme where levy payments of those currently employed fund the cost of training today’s trainees. Such a ‘tracking’ scheme could ensure that no staff are charged more than the cost of their training, although this risks reducing the relative price of those who are late in their career. Relative prices in such a scheme may also reflect changes over time in the cost of training. A ‘tracking’ scheme would also facilitate the charging of levy payments to those who move abroad or ultimately work in a different sector (although enforcement problems may remain).

**8.4. Overall findings relating to the tax base and other options**

The above discussion demonstrates that the design of a levy’s tax base is crucial in meeting the rationales of optimising relative prices, reducing free-riding of the non-NHS sector and offering better information on training costs to providers. The modelling in Section 5 suggests that the levy should ultimately be a function of the annuitised training cost, with the levy proportion dependent on whether wages are high or low and the underlying market structure. Many other levy designs fail to fully achieve one or more of the stated rationales. The importance of various other design options is also highlighted, leading to possible permutations of levy design.
9. References


Annex A: The funding of healthcare education and training in ten countries that are commonly compared with the UK

As part of this project, the funding of healthcare education and training was investigated in ten different Northern European and Commonwealth countries. Denmark, France and Germany were identified as using a levy and are discussed below, followed by the remaining seven countries. The information is summarised in Section 3 and the three healthcare levies are summarised in a table in Annex B.

Because there is little published information available on the funding of healthcare education and training in other countries (especially in English), the information has mostly been gathered through personal communication with managers in each country (usually in the ministry of health or similar), together with ministry-published online documents. We are most grateful to the contacts listed at the end of this annex for their help.

Countries that are using a levy scheme to fund healthcare education and training

To facilitate comparison, the following description of the Danish, French and German levy schemes is organised under five consistent headings:

- Overview of the levy scheme
- Which employees are covered by the levy and how is it calculated?
- What is the levy funding used for?
- How important is the levy in the overall funding of healthcare education and training?
- Who is it collected by?

**Denmark (economy-wide levy)**

Central government funding is the largest contributor to healthcare education and training in Denmark. However, an economy-wide levy scheme known as the Arbejdsgivernes Elevrefusion (AER) impacts on the healthcare sector to a limited extent, and is described in the headings below.

**Overview of the levy scheme**

The Arbejdsgivernes Elevrefusion (AER) scheme has been operating in Denmark since 1977 in all sectors of the economy. Employers are charged a fixed levy on all of their employees (including healthcare employees), with the resulting funding then made available for certain categories of initial vocational training. Only a limited number of healthcare staff categories have their training financed through the scheme, such as healthcare assistants.

**Which employees are covered by the levy and how is it calculated?**

All employers – including healthcare providers – are required to pay the levy for all employees. The levy is a fixed contribution of DKK 2,459 (circa £290 at £1=DKK 8.5) per full-time member of staff per annum, excluding each firm’s first employee, every 50th employee and trainees.

**What is the levy funding used for?**

The levy funds initial vocational training but only a limited number of staff groups are eligible; the main healthcare staff types educated within the vocational training system are social and health care assistants and medical secretaries, plus some support staff (such as kitchen
The majority of the revenue created by the AER levy goes to two schemes: (i) salary reimbursements to employers of eligible trainees while the trainees attend school, and (ii) partial subsidy for the salary of new eligible trainees. There is also provision for subsidised public transport costs, rewards for increasing a firm’s number of trainee days relative to previous years, and financial support for postings abroad. The scheme therefore provides an incentive for employers to create apprenticeships by reducing the net costs per trainee. Because the funding is not ring-fenced for the health sector, cross-subsidisation may occur with the health sector receiving either more or less than it pays in. (The public sector as a whole makes a net contribution to the scheme, although it is not possible to say whether this remains true for the healthcare sector).

**How important is the levy in the overall funding of healthcare education and training?**

Such a £290 levy on all 1.19 million NHS Full Time Equivalent staff\(^{22}\) would raise £345 million per annum; almost fourteen times this amount would be needed to raise the 2010/11 NHS MPET budget of £4.8 billion. This reflects the fact that the Danish levy only funds certain categories of initial vocational training.

**Who is it collected by?**

In order to minimise administrative costs for employers, the AER is collected by Arbejdsmarkedets Tillægspension (ATP), the body that manages Danish state pension contributions. ATP collects pension contributions, other mandatory social insurance contributions (Finansieringsbidrag) and the AER on the same paying-in slip, thus reducing the employer’s administrative burden at the margin. Payments must be made quarterly and several payment options (including automatic options like Direct Debit) are offered to further minimise the burden on employers. The central administration of the scheme costs around DKK 80 million (circa £9.5 million) per annum, covering approximately 24,000 employers and 89,000 trainees, although it will also place an administrative burden on employers and educational institutions.

**How is the rest of the healthcare education and training system funded?**

All initial education and student placements of healthcare professionals (including medical and dental professionals, nurses, midwives and allied health professionals) are funded through central government taxation. Some of this funding is indirect, e.g. student places for nurses and radiologists are financed by their employers (primarily the Danish regions, which are ultimately funded by the government). Additional expenses imposed on the Danish regions (e.g. by new legislation) are also compensated by the government.

Across the whole economy, approximately half of the cost of adult vocational training is funded by the government, with the AER scheme making up part of the remainder.

A system of grants and loans is available to students in tertiary education.

If publicly trained staff subsequently work in the private sector, abroad or in another area of the economy, the cost of their training is not recouped from the individuals or their employers.

**France (economy-wide levy)**

An economy-wide training levy system impacts on the healthcare system to a greater extent than in Denmark.

**Overview of the levy scheme**

A 1971 law established Organismes Paritaires Collecteurs Agréés (OPCAs), which are training funds specific to particular industries and regions. There is also an OPCA representing Small and Medium-sized Enterprises with its own regional presence. All employers are required to spend a minimum percentage of their total payroll on training, and can choose to spend this amount themselves – and prove this at the end of the financial year – or contribute all or part to an OPCA that will then help them resolve their training needs.

There are three OPCAs in the healthcare sector. The Association Nationale pour la Formation Permanente du Personnel Hospitalier (ANFH) is the OPCA for public hospitals, rest homes and other public healthcare facilities. UNIFAF is the OPCA for the private not-for-profit sector, with FORMAHP in the private for-profit sector. The funds raised by each OPCA are summarised in the following sections, alongside the activities that they fund.

**Which employees are covered by the levy and how is it calculated?**

The levy is calculated as a percentage of an employer's total payroll, so all employees are covered. The percentage differs as follows between the three healthcare OPCAs.

Contributions to ANFH (OPCA for the public healthcare sector) total approximately 500 million Euros and cover around 800,000 staff. Contributions are set at 2.9% of total payroll, broken down as follows. Further explanation of the activities (e.g. ‘training plan’) are included in the subsequent section.

- 2.1% to finance the training plan.
- 0.2% for individual training leave.
- 0.6% for financing professional studies.

Contributions to FORMAHP (OPCA for the private for-profit healthcare sector) equal 1.82% of payroll for companies with more than 20 employees:

- 1.12% for the training plan and part of the individual training right.
- 0.5% for professionalisation contracts, professionalisation periods and part of the individual training right.
- 0.2% for individual training leave.

For companies with 10-19 employees, the total is 1.27% of payroll:

- 1.12% for the training plan and part of the individual training right.
- 0.15% for professionalisation contracts, professionalisation periods and part of the individual training right.

Lastly, for companies with less than 10 employees, the total is 0.55% of payroll:

- 0.4% for the training plan and part of the individual training right
- 0.15% for professionalisation contracts, professionalisation periods and part of the individual training right.

Additionally, there is a charge (regardless of company size) of 1% of the payroll of staff with fixed-term contracts, in order to fund their individual training leave.

Contributions to UNIFAF (OPCA for the private not-for-profit healthcare sector) are 2.3% of the payroll for organisations with 20 or more staff:
• 1.6% for the training plan, also including some elements of: individual training leave, the individual training right, professionalisation contract, professionalisation period, and competencies assessment.
• 0.5% for professionalisation, also including some elements of the individual training right.
• 0.2% for individual training leave for permanent staff.
For organisations with fewer than 20 staff, contributions are 1.75% of the payroll:
• 1.6% for the training plan, also including some elements of: individual training leave, the individual training right, professionalisation contract, professionalisation period and competencies assessment.
• 0.15% for professionalisation, also including some elements of the individual training right.
Again, regardless of organisational size, an additional payment equal to 1% of the payroll of staff with fixed-term contracts is required to fund their individual training leave.

What is the levy funding used for?

CEDEFOP (2008) sets out the types of training activity financed by the OPCAs. These are categorised and summarised as follows:
• Plan de formation (training plan). This is an annual plan of an employer’s training activities. Employers can choose to develop and finance this themselves or seek financial and other help from the relevant OPCA. Employees are required to participate and are limited to 80 hours training per year.
• Contrat de professionalisation (professionalisation contract). These are designed to help young people aged 16-26 to obtain a professional qualification. It is also open to unemployed jobseekers who are over the age of 26.
• Période de professionnalisation (professionalisation period). This is designed to help certain types of employee to keep their job, particularly those aged over 45 or who have been working for at least 20 years. It can be financed either by the employer’s training plan resources or the employee’s individual training leave resources.
• Droit individuel à la formation (individual training right). All employees with a permanent contract are allocated 20 hours per year of ‘training account’ activity, which can build up to a maximum of 120 hours. Both the employer and employee need to agree together on how to allocate these hours. The training is funded either as part of the training plan or from funds dedicated to sector priority actions.
• Congé individuel de formation (individual training leave). This can be requested by the employee, and is a long training period (e.g. 12 months or 1,200 hours) aimed at enabling the employee to change job or profession. Employees are paid their wages during the training period; not all requests are granted because of the expense.
  o Bilan de compétences (competencies assessment). Funded as part of individual training leave, this enables employees to analyse their professional and personal competencies to define a new professional career.
  o Validation des acquis de l’expérience (validation of experience). Also funded as part of individual training leave, this is available to employees who have been working for at least three years, and is a way of having employee competencies officially recognised by a diploma or qualification certificate. The activity takes place during work hours.

How important is the levy in the overall funding of healthcare education and training?

A levy of 2-3% on the NHS wage bill would raise around £1.3 billion to £2 billion per annum. Around two to three times this amount would be needed to raise the 2010/11 NHS MPET budget of £4.8 billion, so the surcharge is clearly not of the same scope as NHS education and training expenditure.
Who is it collected by?

The training levy is collected by the Organismes Paritaires Collecteurs Agréés (OPCAs), although employers can instead choose to conduct their own education and training instead of contributing to the OPCA. OPCAs are created through collective bargaining and are managed by a board composed of an equal number of trade union and employer representatives; once the social partners reach an agreement, the state then grants the right to operate.

Germany (healthcare-specific levy)

In Germany, the training of healthcare professionals is funded mostly by local regions (the Länder) and includes a specialised healthcare levy component for non-academic training.

Overview of the levy scheme

Non-academic training (excluding physicians, dentists, psychology-based psychotherapists and chemists) is partly funded by the regions (Länder) and partly funded by a surcharge on inpatient and day-patient stays.

Which employees are covered by the levy and how is it calculated?

The surcharge is levied on inpatient and day-patient stays and is charged to the patient or to their social insurer. The employer may still bear some incidence of the surcharge even though they are not a direct contributor. The non-academic training budget is annually renegotiated and the level of the surcharge is calibrated to achieve this budget (given expected volumes of inpatient and day-patient stays, the Länd contribution and so on).

What is the levy funding used for?

The funding is used for the initial training (both theoretical and practical) of non-academic healthcare workers in health colleges. Specifically, it fully funds this cost for nurses, midwives, physiotherapists, speech therapists and other non-academic professional groups who undergo training in hospitals. There are other non-academic professions (including geriatric nursing) whose education and training is not paid for by the surcharge.

How important is the levy in the overall funding of healthcare education and training?

In the Länder with training funds, the average surcharge is 72 Euros per hospital case (circa £65 at £1=€1.1). Centrally collected data on education and training spend is not available, so it is not possible to express this as an exact fraction of education and training funding. However, given that there were 14.5 million Finished Admission Episodes in 2009/10 (Hospital Episode Statistics), a surcharge of £65 in the English NHS would raise just under £1bn per annum. Just under 5 times this amount would be needed to raise the 2010/11 NHS MPET budget of £4.8 billion.

Who is it collected by?

Regional Hospital Associations are groups of entities running licensed hospitals within the Länder. In some Länder, RHAs have established training funds that are partly financed by the Länd and partly financed by the surcharge.

In areas without training funds (Bremen, Hamburg, Mecklenburg-Western Pomerania, Saxony and Saxony-Anhalt), educational budgets are set through negotiation between
health insurance funds and hospital associations. The Länder can set statutory ordinances to ensure that hospitals that do not train are required to contribute to the cost of training; these ordinances regulate how the payments should be calculated and made.

Administrative costs are kept to a minimum because the surcharge is added to the hospital’s existing bill for each patient.

**How is the rest of the healthcare education and training system funded?**

Academic training (physicians, dentists, psychology-based psychotherapists and chemists) takes place at universities and medical schools and is funded by the budgets of the regions. Courses vary from institution to institution but all follow the frameworks set out by federal regulations. A clinical year is included at a university hospital during which students are not paid.

During specialist training, physicians receive remunerations that have been collectively agreed. Agreements differ between the Länder and between different hospitals.

Individuals are currently charged some tuition fees in 11 out of 16 Länder (ranging from 1,000 to 1,700 Euros per year), but several Länder intend to repeal the fees following student protests. Individuals are also required to fund their cost of living. Some financial assistance is offered to students in the form of means-tested payments that must be partially repaid, in addition to long-term loans with favourable rates.

Some non-academic professions (including geriatric nursing) are catered for by public schools that are subject to Länd sovereignty in cultural and educational matters. These schools receive some Länd funding but also charge tuition fees of 200-370 Euros per month. Geriatric nursing is also partly funded by surcharges levied in long term care nursing homes, which are often paid by patients or social welfare agencies because they are not covered by long term care insurance.

**Countries that are not using a levy scheme to fund healthcare education and training**

The following descriptions relate to countries that are not using a levy scheme to fund healthcare education and training. There are nonetheless some clear patterns, including an overall tendency for government funding (although students are expected to contribute to the cost of their education and training in several countries).

**Australia**

Most of the education of healthcare professionals in Australia is funded by the government. In overall governmental healthcare expenditure, the states, territories and local governments play a significant role, controlling one third of the budget.

For Commonwealth-supported students (i.e. those supported by central government), tuition fees are charged but the majority of the cost is still borne by the government. Private students receive no such subsidy. Students have access to a loan through the HELP scheme with an interest rate that is tied to the Consumer Price Index. Scholarships are also made available. Since 2009, nursing graduates who subsequently work in nursing or midwifery are able to claim a loan repayment discount. Recently qualified medical professionals are required to work an internship of at least one year, usually at a public hospital or community setting. Providers therefore benefit from this cheaper labour source.
Part of the service delivery budget is dedicated to the funding of postgraduate training, so healthcare providers implicitly pay through lower available budgets.

**Finland**

Most of the education of healthcare professionals in Finland is funded by central government, local government and the Social Insurance Institution.

University education is free of charge with the Social Insurance Institution (called Kela) providing financial aid for living costs. The education of nurses and other healthcare personnel is also free of charge. Physicians are trained at five publicly-funded (but autonomous) universities for six years, with responsibility held by the Ministry of Education and Culture. University budgets are set by agreement with the Ministry where a parameter is the number of students; 64% of funding is directly from government and other sources (mostly targeted at research) include business, the EU and other public bodies. Separately, polytechnics provide education for nurses, who receive training in general nursing as well as in a specialty of their choice. Polytechnics are municipal or private institutions funded partly by central government, partly by local government and partly from other sources. Polytechnic provision is governed by agreements between government, the polytechnics themselves and other stakeholders. Universities are focused on scientific research and education whereas polytechnics are more vocationally oriented.

Financial aid for students includes study grants, housing supplements and government guarantees for student loans. Students in upper secondary school, in vocational education or at a higher education institution can all claim, although the level of eligibility depends on age, the type of school, income, parental income and other factors.

Health service providers (mostly university hospitals) receive earmarked grants from the central government for teaching and research activities. Specialisation for physicians and dentists lasts five to six years and begins with the resident working as a junior doctor in a central or district hospital under the supervision of an experienced physician. This is followed by at least one or two years working at a university hospital in addition to a structured training programme which is required for most medical specialties.

Employers are legally required to arrange in-service education for their staff and allocate a share of their budgets for this purpose. It is recommended that 3–11 days training per year is undertaken, depending on the type of profession. Individual staff can also contribute to the cost of some in-service training courses.

If publicly trained staff subsequently work in the private sector, abroad or in another area of the economy, the cost of their training is not recouped from the individuals or their employers.

**Ireland**

Most education and training of healthcare professionals (including medical and dental professionals, nurses, midwives and allied health professionals) is funded through central taxation from the Department of Education budget.

Healthcare providers are not funded for providing student placements and do not support undergraduate programmes for nurses, doctors or health and care professionals. However, they do support ongoing training for nurses and doctors, and do have some specific schemes for public health nurses and support staff.
Higher education is generally free of charge to first time students and some are eligible for an income-based cost of living grant, although medical students are required to pay a registration fee to the appropriate College.

If publicly trained staff subsequently work in the private sector, abroad or in another area of the economy, the cost of their training is not recouped from the individuals or their employers.

**The Netherlands**

Most of the education and training of healthcare professionals is funded by the government through health and education budgets.

University education is subsidised by the government although individuals are required to pay tuition fees. A system of grants and subsidised loans is available.

Government funding is provided to most healthcare providers to finance the cost of education and training. For nurses, nursing assistants and allied healthcare professionals, the total budget is divided by the overall number of trainees. The budget for medical specialists is predetermined at the start of each year alongside the number required. Hospitals are funded for their trainees, with adjustments made at the end of the year to account for the number who were actually trained.

Although providers do not directly finance the cost of education and training, they do so indirectly by foregoing a share of the overall budget.

In some professions, individuals may be asked by their employer to contribute to the costs of their education.

**Norway**

Most of the education of healthcare professionals in Norway is funded by the government, partly through general granting of the educational sector.

Healthcare employers are responsible for providing student placements for different groups of students. Regional health authorities and healthcare providers receive some government funding for these placements (particularly physicians). In-service training is the joint responsibility of individual staff and their employer.

Individuals contribute towards tuition fees and general costs of living, but loans and grants are available from the Statens Lånekasse (the Norwegian State Educational Loan Fund). These cover all tuition fees and part of the costs of living.

If publicly trained staff subsequently work in the private sector, abroad or in another area of the economy, the cost of their training is not recouped from the individuals or their employers.

**Sweden**

Medical education in Sweden is heavily financed by the government, with free tuition, subsidies to healthcare providers for student places and so on.
Healthcare providers pay medical students during their 1 year / 18 month training prior to applying for their license. If universities do not offer a particular course, providers can finance the course and choose its participants, which are typically the provider's own staff.

Individuals do not have to pay tuition fees and receive a universal government grant. A governmental student loan is also available with long repayment periods and a (low) interest rate that is tied to government borrowing costs.

Private providers are not required to finance the cost of education and training in general, although they are also able to finance specific courses (as described above).

**Switzerland**

Most education of healthcare professionals in Switzerland is funded by government, with a strong role for regional government and some residual role for healthcare providers.

Universities are the responsibility of the Cantons (regions) who support their costs. This is supplemented by funding from the federal government, which is determined by the number of students as well as particular research activities, investments and specific projects. Universities of applied sciences (providing initial education in nursing, midwifery, physiotherapy etc.) are also the responsibility of the Cantons, with the federal government supporting one third of their costs.

Employers have an incentive to offer postgraduate training because of trainees' lower salary and financial contributions from the Cantons (although these contributions are focused on physicians and providers that are in deficit).

Vocational and professional education and training is governed by the regions together with labour market organisations. The federal government pays a per capita lump sum alongside additional contributions for specific projects and professional exams, with the Cantons supporting most of the cost (the federal contribution is at most 25%). Providers are reimbursed for the services that they provide.

Students pay fees (usually less than CHF 2,000 / circa £1,500 per year), contribute to the cost of their exams and receive a lower salary when working as a trainee. Some student loans and scholarships are available at the federal and Canton level.

**Sources of information**

We are most grateful to the people listed below for their help in assembling this information. Useful websites are also listed below.

**Contacts**

Australia:
- Jane Hall, Centre for Health Economics Research and Evaluation

Denmark:
- Erich Erichsen, Centre for Health Economics, Ministry of Interior and Health
- Henrik Grosen Nielsen, Ministry of Interior and Health
Finland:
- Raimo Jämsén, Ministry of Social Affairs and Health

Germany:
- Dr Margot Fälker, Federal Ministry of Health
- Dr Joachim Müller, Federal Ministry of Health

Ireland:
- Simonetta Ryan, Department of Health and Children

Netherlands:
- Pieter Havelaar, Ministry of Health, Welfare and Sport
- Theo van Uum, Ministry of Health, Welfare and Sport

Norway:
- Cathrine Meland, Ministry of Health and Care Services
- Anne-Mette Ullahammer, Ministry of Health and Care Services

Sweden:
- Anders Ekholm, Ministry of Health and Social Affairs
- Barbro Emriksdotter, Swedish Association of Local Authorities and Regions
- Pontus Johansson, Ministry of Health and Social Affairs

Switzerland:
- Stefan Spycher, Federal Office of Public Health
- Nadine Facchinetti, Federal Office of Public Health

**Websites**

France:
- Websites of the Organismes Paritaires Collecteurs Agréés (in French):

Denmark:
- Website of the organization that administers the levy (in Danish, but with some English content): http://www.atp.dk

Germany:
- Legislation that covers the levy scheme (in German):
  http://www.buzer.de/gesetz/6105/a84250.htm (Article 17a, Finanzierung von Ausbildungskosten)
- Central guidance on costing for the levy scheme (in German): http://www.g-drg.de/cms/Kalkulation2/Ausbildungskosten_17a_KHG/Ausbildungskosten_17a_KHG/(language)/ger-DE
## Annex B: Summary table of healthcare education and training levies in Denmark, France and Germany

<table>
<thead>
<tr>
<th></th>
<th>Denmark</th>
<th>France</th>
<th>Germany</th>
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<tbody>
<tr>
<td><strong>How the levy is calculated in the healthcare sector</strong></td>
<td>Employment-based levy (fixed rate): The levy is charged at a fixed rate of DKK 2,459 (circa £290 at £1=DKK 8.5) per full time member of staff per annum.</td>
<td>Employment-based levy (percentage of salary): The levy varies depending on employer type (public/for-profit/not-for-profit) and the employer's number of staff. Contributions are 2.9% of total payroll for the public healthcare sector.</td>
<td>Activity-based levy (a fixed rate per bed day): The average rate across regions is 72 Euros per hospital case (circa £65 at £1=€1.1).</td>
</tr>
<tr>
<td><strong>Is this an economy-wide or healthcare-specific levy?</strong></td>
<td>Economy-wide</td>
<td>Economy-wide</td>
<td>Healthcare-specific</td>
</tr>
<tr>
<td><strong>Are there exemptions or lower rates for particular organisations?</strong></td>
<td>The levy is not applied to each firm’s first employee (so is not applied to sole proprietors), nor is it applied to every 50th employee and trainees.</td>
<td>Rates are 1.82%/1.27%/0.55% in the for-profit healthcare sector, depending on whether the company has 20 or more staff, 10-19 staff, or fewer than 10 staff. Rates in the not-for-profit sector are either 2.3% (20 or more staff) or 1.75% (fewer than 20 staff).</td>
<td>The rate varies by region.</td>
</tr>
<tr>
<td><strong>What the levy is used for</strong></td>
<td>Funds initial vocational training for a limited number of staff groups; in healthcare, this includes social and health care assistants and medical secretaries, plus some support staff (such as kitchen assistants, service assistants etc.)</td>
<td>A wide variety of training activities including through training plans, training accounts, retraining and training leave.</td>
<td>Funds the initial training (both theoretical and practical) of nurses, midwives, physiotherapists, speech therapists and other non-academic professional groups who undergo training in hospitals.</td>
</tr>
<tr>
<td>Who collects the levy</td>
<td>Denmark</td>
<td>France</td>
<td>Germany</td>
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<tr>
<td>In order to minimise administrative burden, the levy is collected alongside state pension contributions by the body that manages those contributions, Arbejdsmarkedets Tillægspension (ATP).</td>
<td>The levy is collected by organisations called Organismes Paritaires Collecteurs Agréés (OPCAs) that commission and coordinate training. There is one OPCA for the public healthcare sector (ANFH), one for the for-profit healthcare sector (FORMAHP) and one for the not-for-profit healthcare sector (UNIFAF). Employers can choose to conduct their own training instead of contributing to the OPCA.</td>
<td>The levy is charged by the provider to the purchaser. In some regions, the levy is managed through training funds. For areas that do not have these, the levy is set through negotiation between health insurance funds and hospital associations.</td>
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<tr>
<th>How much of the MPET budget would this levy raise in the NHS? (Further details in Annex A)</th>
<th>Denmark</th>
<th>France</th>
<th>Germany</th>
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<tbody>
<tr>
<td>Such a £290 levy on all 1.19 million NHS Full Time Equivalent staff would raise £345 million per annum; almost fourteen times this amount would be needed to raise the 2010/11 NHS MPET budget of £4.8 billion.</td>
<td>A levy of 2-3% on the NHS wage bill would raise around £1.3 billion to £2 billion per annum. Around two to three times this amount would be needed to raise the 2010/11 NHS MPET budget of £4.8 billion.</td>
<td>Given that there were 14.5 million Finished Admission Episodes in 2009/10 (Hospital Episode Statistics), a surcharge of £65 in the English NHS would raise just under £1bn per annum. Just under 5 times this amount would be needed to raise the 2010/11 NHS MPET budget of £4.8 billion.</td>
<td></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Websites for organisations that collect the training levy</th>
<th>Denmark</th>
<th>France</th>
<th>Germany</th>
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</table>
Annex C: Education and training levies in non-healthcare sectors

Although education and training levies in non-healthcare sectors appear less directly relevant, there are many in operation and important conclusions can be drawn. The following annex considers the three UK schemes first, followed by a worldwide overview and some more specific details of particular European schemes. The findings are summarised in Section 3; Annex D and E present tables of the UK and worldwide schemes respectively. Section 4 of the main paper illustrates the economic theory underlying the use of these levies.

Non-healthcare education and training levies in the United Kingdom

Three schemes are currently in operation in the UK, in the construction, engineering construction and film industries.

The construction and engineering construction industry levies both stem directly from the Industrial Training Act (1964). The history of this system is described by Greenhalgh (1999). Specifically, the Act established Industrial Training Boards (ITBs) which administered levy/grant systems to compel firms to spend more on employee training. Firms were required to contribute to the relevant board, which then made training funds collectively available. Given its desire for less state intervention, the Thatcher Government’s Industrial Training Act (1982) substantially reduced the number of boards to seven, although these still covered around one quarter of the industrial workforce. The number of boards fell further over time because of a new rolling requirement (in the 1982 Act) to demonstrate that each levy was supported by a majority of industry federations. Contemporary discussion of the levies includes a 1989 survey report by the Training Agency (cited by Greenhalgh 1999), which criticised the boards for failing to increase provision of transferable training, for merely shifting the cost of firm-specific training between firms, and for perpetuating an outdated system of apprenticeships.

The construction and engineering construction industry levies are the only ones remaining from this system; the film industry levy was established more recently (in 1999) and does not currently have a statutory basis.

Construction industry

The construction industry levy\(^{23}\) is the largest of the three schemes, with 22,637 employers claiming £169m of public funding in the most recent available year. It is a payroll levy, requiring 0.5% of payments to directly employed personnel and 1.5% of gross payments to labour-only sub-contractors. The latter rate is higher because firms with directly employed personnel are thought to conduct more training, so have less need for a levy.

The levy is administered by a body named ConstructionSkills, a Sector Skills Council and registered charity which is a partnership between CITB-ConstructionSkills, Construction Industry Training Board (Northern Ireland) and the Construction Industry Council Limited, and current legislation is set out in the Industrial Training Levy (Construction Industry Training Board) Order 2009.

A system of exemptions is in place to minimise the burden on small businesses and those with for whom construction is a small part of their activity. For example, the levy is not

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\(^{23}\) Unless otherwise stated, the information in this section is taken from [http://www.cskills.org/levy-grant/](http://www.cskills.org/levy-grant/). Accessed 1\(^{st}\) August 2011.
payable by businesses with a wage bill of below £80,000 (40% of businesses in the sector\textsuperscript{24}), and staff who work for less than 8 hours per week are not counted. To minimise the administrative burden on those firms that are required to pay the levy, returns can be submitted online and payments can be made in instalments and via Direct Debit. A helpline is also available.

The money raised is spent on the provision of training grants and a network of Company Development Advisors who visit employers across the country and provide advice on how to get the best from their workforce\textsuperscript{25}. ConstructionSkills also have a broader role as a Sector Skills Council, which entails development of professional standards, apprenticeships, further and higher education programmes and other activities.

In October 2010, the ConstructionSkills website reports that 69% of consensus federations (representing employers from across the industry) are supportive of the levy\textsuperscript{26}. The time-limited nature of the legislation (the 2009 Order covers three years) means that such support is required if the levy scheme is to continue.

\textit{Engineering construction industry}

Although the structure of this levy (and the legislation behind it) are similar to the construction industry levy described above, the scale here is far smaller, with £12.8m raised from the levy in 2007. The engineering construction industry levy\textsuperscript{27} is also a function of the gross wage bill; in this case, 1.5% of gross payments made to employees and labour-only personnel working mainly on clients’ sites in Great Britain or its offshore waters. In addition, the levy covers 0.18% of gross payments to all other employees and labour-only staff working in Great Britain (i.e. off-site staff). The latter figure is lower because off-site workers have less need for industry-specific training.

The levy is administered by the Engineering Construction Industry Training Board, a registered charity. Relevant legislation is set out in the Industrial Training Levy (Engineering Construction Industry Training Board) Order 2009.

Again, smaller businesses are exempted from contributing the levy; here, the contribution thresholds are £275,000 for on-site staff and £1million for off-site staff. Compared to the construction industry levy, fewer technological measures are in place to minimise the administrative burden, although this is perhaps to be expected given that this levy raises a far smaller amount of money. Printable forms are nonetheless available online and there is a telephone and email contact.

The money raised is spent on grants to cover the cost of training, accreditation of almost 200 course providers, setting industry standards for competence and health & safety, recruitment events and so on\textsuperscript{28}.

\textsuperscript{24} See \url{http://www.publications.parliament.uk/pa/cm200809/cmgeneral/deleg2/090225/90225s01.htm}
\textsuperscript{25} See \url{http://www.cskills.org/aboutus/trainingboard/index.aspx}. Accessed 22nd July 2011.
\textsuperscript{26} See \url{http://www.cskills.org/aboutus/newsandevents/news/levy.aspx}. Accessed 22nd July 2011.
\textsuperscript{27} Unless otherwise stated, the information in this section is taken from \url{http://www.ecitb.org.uk/LevyScope/}. Accessed 1\textsuperscript{st} August 2011.
\textsuperscript{28} See \url{http://www.ecitb.org.uk/AboutECITB/TheECITB/}. Accessed 22\textsuperscript{nd} July 2011.
**Film industry**

The film industry levy\(^{29}\) is different from the other two in that it does not have a statutory basis, although this has been a topic of recent discussion. The levy is instead enforced by linking it to the receipt of funding from UK public bodies (including the National Lottery). Compared to the statutory levies, the amount of money raised is far smaller - £7.3 million in total for 660 productions between 1999 and 2010 (an average of just above £11,000 per production)\(^ {30}\).

The levy is collected by Skillset, the Sector Skills Council for creative media.

The levy is 0.5% of the total film production budget, up to a limit of £39,500, for productions that are based in the UK. There do not appear to be any exemptions for smaller productions, although they of course pay less in absolute terms given how the levy is calculated. The production questionnaire (upon which the levy is based) can be downloaded from the Skillset website, which also provides telephone and email contact details.

Skillset funds existing training schemes, run bursaries for freelancers and create their own schemes to fill perceived gaps in existing training provision\(^ {31}\).

**Non-healthcare education and training levies in other countries**

Clearly, there are only a small number of UK schemes remaining, illustrating the importance of cooperation between employers, employees and government. There are a larger number of non-healthcare schemes in operation in other countries, which are considered below. This section provides both a worldwide overview and further detail on specific European schemes.

**Worldwide overview**

Annex E provides several summary tables of the national training funds considered by Johanson (2009), covering 62 different countries. Each table presents the results for a different World Bank income classification, so patterns can be identified from high-income countries (which are most comparable to the UK). An earlier and less complete World Bank paper by Dar, Canagarajah and Murphy (2003) also provides an overview of the subject, but its information is not used here.

Following Johanson (2009), the following categories of scheme are used in the summary tables:

- **Revenue-generating.** The funds generated are added to revenues from general taxation. Education and training expenditures are then financed from this taxation.
- **Cost-reimbursement.** Approved training expenditures are reimbursed in part, within the limits of the levy paid by the enterprise.
- **Levy grant.** Grants are offered to enterprises on a case-by-case basis in accordance with agreed criteria. Unlike in a cost-reimbursement scheme, the grants need not reflect an enterprise’s payments; training companies can receive grants far in excess of the amount paid, thus providing incentives for firms to train.

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\(^{29}\) Unless otherwise stated, the information in this section is taken from [http://www.skillset.org/film/sif/](http://www.skillset.org/film/sif/). Accessed 1\(^{st}\) August 2011.


• **Levy rebate / exemption.** Employers can choose to manage their own expenditure on education and training, but if this does not reach a certain minimum level, they are required to contribute the difference to a training fund.

**Specific European schemes**

A paper by the European Centre for the Development of Vocational Training (CEDEFOP, 2008) provides further detail on training funds in Belgium, Spain, Italy, Cyprus and the Netherlands. These are summarised below. The paper also discusses Denmark and France, but these have already been covered in Annex A.

- **Belgium (CEDEFOP, 2008):**
  - Belgian employers and employee organisations agreed in 1988 to spend 0.18% of the gross wage of all wage and income earners on training and employment support initiatives for specific risk groups. The funds were to be collected by the National Office of Social Security, and spent by Sectoral Training Funds (where they existed; several new ones were created in response to the agreement, although they remain of varying size and geographical coverage). STF boards have an equal number of employer and employee representatives. Contribution rates have since been allowed to vary between sectors and range between 0.1% to 0.6%.
  - Training is usually sector-specific in nature and is focused on particular groups, such as the low-skilled, young or long-term unemployed.
  - There is little collated data on STF activities, their structure, and the effectiveness of the activities that they fund. As a result, Eurostat estimates that Belgian vocational training levels remain notably below the EU average.

- **Spain (CEDEFOP, 2008):**
  - The Fundación tripartita para la formación en el empleo (Tripartite foundation for training in employment) was established in the mid 1990s and is managed by the state, key employer organisations and labour unions. Four consecutive national agreements on continuing training have shaped the development of the scheme. The levy was 0.42% of total wages in 2005 and 8.55% of the employed population were covered in 2006. Additional funds are made available at the regional level.
  - Training provision previously only covered current employees, but has recently been extended to the unemployed. Activities include training organised by firms (or groups of firms, perhaps with an external provider) for their workers, which are part-funded by a discount in social security contributions, with smaller business receiving a larger discount. Employees can also take individual training leave. Additional activities are available from the Foundation without the involvement of a person’s employer and are usually carried out outside of working time: training plans for existing employees and training activities (resulting in official qualifications) that are targeted at the unemployed.
  - CEDEFOP (2008) argues that the Foundation has had a positive effect on the provision of vocational training in Spain, although it has been administratively inefficient, unstable due to repeated changes, and there is some duplication amongst regional organisations. Better statistical evaluation is also recommended.

- **Italy (CEDEFOP, 2008):**
  - Fondi paritetici interprofessionali per la formazione continua (joint interprofessional funds for continuing training) are the Italian equivalent of Sectoral Training Funds. 14 have been founded and relate to specific sector(s) or occupational groups; each is a partnership between employer
groups and unions with an equal number of representatives from each. Since 2005, a previously existing levy of 0.3% of workers' payroll has been directed towards an employer’s chosen STF. (They have a free choice of STF each year; if they do not choose an STF, the money is instead split between the Ministry of Labour and Social Policies and the Ministry of Economy and Finance). Employer involvement with STFs varies by industry and varies even more strongly by region, with a national average of 42%.

- Each fund issues periodic announcements presenting proposals for training plans, and enterprises (sometimes in groups, and sometimes together with external organisations such as universities) apply for particular projects, some of which are then funded in line with pre-approved guidelines.
- The establishment of an observatory to oversee and evaluate the Sectoral Training Funds is a legal obligation but has not yet been established. Nonetheless, those interviewed by CEDEFOP (2008) felt that the STFs had a positive influence; they have been expanding, reducing their costs and enabling administration to be carried out more quickly. They are nonetheless disproportionately focused on certain groups, notably men, those in middle age and those working in large enterprises.

**Cyprus (CEDEFOP, 2008):**
- The Human Resource Development Authority (HRDA) is a semi-governmental organisation that approves and subsidises training programmes implemented by public and private sector enterprises and institutions. Employer associations and unions are involved in designing the HRDA’s training schemes and research activities, and the vast majority of its funding comes from a payroll levy of 0.5% from each participating enterprise. A wide range of training activities are funded, including training of new employees/graduates, apprenticeship schemes and schemes covering several companies, with some training taking place abroad.
- CEDEFOP (2008) argues that the HRDA has helped create a highly competitive training market with a mix of private and public sector providers. However, it criticises the lack of qualifications available and the absence of assessment and certification of training providers. It is also not sector-specific, although it is recognised that Cyprus is only a small country.

**Netherlands (CEDEFOP, 2008)**
- Sectoral Training Funds in the Netherlands are known as Scholingsfondsen (training funds) and Opleidingsfondsen (educational funds). The former are funded by a levy on individual companies’ wage bills and are focused on the employed, whereas the latter have resulted from collaboration between different sectors and are focused on indirect promotion of training. The funds are set up by employer organisations and unions (rather than through legislation) and the levy percentage varies by sector; an average of 0.67% is cited for 2005 although it can grow to 2.5% of the total payroll. Training is generally requested by employers rather than individual employees. Funds also engage in research, provision of information, targeting particular groups, organising work placements for young people and other areas linked to training. Overall, 38% of employees were covered by a training fund in 2000, although this varied markedly between sectors.

CEDEFOP (2008) argues that there is a positive association between sectoral involvement in STFs and the availability of training, and that the system is sensitive to particular sectoral needs. There is nonetheless a relative lack of access to training activity for smaller firms.
### Annex D: Summary table of non-healthcare education and training levies currently in operation in the UK

<table>
<thead>
<tr>
<th></th>
<th>Construction industry</th>
<th>Engineering construction industry</th>
<th>Film industry</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How the levy is calculated</strong></td>
<td>0.5% of gross payments to directly employed personnel <strong>plus</strong> 1.5% of gross payments to labour-only sub-contractors Firms with directly employed personnel are thought to conduct more training.</td>
<td>1.5% on total gross payments to employees and labour-only personnel working mainly on clients’ sites in Great Britain or its offshore waters <strong>plus</strong> 0.18% on total gross payments to all other employees and labour-only personnel working in Great Britain (i.e. off-site employees)</td>
<td>0.5% of the total film production budget, up to a ceiling of £39,500, for films in receipt of UK public or lottery funding.</td>
</tr>
<tr>
<td><strong>Key exclusions</strong></td>
<td>No levy payable if an employer’s staff payments (as above) are less than £80,000 in a given levy year, although a return must still be submitted. No levy payable if the organisation is a charity or charitable company. No levy payable if the organisation was engaged in construction for less than half the number of weeks within the levy year. Staff are excluded from the calculation if they: • work less than 8 hours per week (on average) • are employed wholly in agriculture or food and drink • are company directors wholly remunerated by fees.</td>
<td>No levy at the 1.5% rate payable if the employer’s on-site staff payments (as above) total less than £275,000. No levy at the 0.18% rate payable if the employer’s off-site staff payments (as above) total less than £1 million. No levy payable if the organisation is a charity or charitable company. No levy payable if the organisation was engaged in engineering construction for less than half the number of weeks within the levy year. Staff are excluded from the calculation if they are company directors wholly remunerated by fees.</td>
<td>The levy is only made on productions based in the UK, and is only mandatory if the production is in receipt of UK public or lottery funding.</td>
</tr>
<tr>
<td><strong>Are eligible firms required to pay the levy?</strong></td>
<td>Legal requirement. Industrial Training Levy (Construction Industry Training Board) Order 2009.</td>
<td>Legal requirement. Industrial Training Levy (Engineering Construction Industry Training Board) Order 2009.</td>
<td>Projects which are in receipt of public funding are required to pay the levy as a condition of access to this investment.</td>
</tr>
<tr>
<td><strong>Timing</strong></td>
<td>Calculated annually. Based on financial years.</td>
<td>Calculated annually. Based on financial years.</td>
<td>Payment is required prior to the first day of principal photography.</td>
</tr>
<tr>
<td>Administration body</td>
<td>Construction industry</td>
<td>Engineering construction industry</td>
<td>Film industry</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------</td>
<td>-----------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>ConstructionSkills, a registered charity. A partnership between CITB-ConstructionSkills, Construction Industry Training Board (Northern Ireland) and the Construction Industry Council Limited. ConstructionSkills has a broader remit beyond the levy.</td>
<td>Engineering Construction Industry Training Board, a registered charity.</td>
<td>Skillset, the Sector Skills Council for creative media.</td>
</tr>
<tr>
<td>Financial scale</td>
<td>22,637 employers claimed £169m of grant funding from the levy (most recent available year).</td>
<td>£12.8m of funding was raised from the levy in 2007.</td>
<td>£7.3m was raised from 660 productions between 1999 and 2010.</td>
</tr>
<tr>
<td>Administrative burden on member firms</td>
<td>Time spent filling in forms each year to identify the staff costs on which the levy is applied. Time spent applying for grants.</td>
<td>Time spent filling in forms each year to identify the staff costs on which the levy is applied. Time spent applying for grants.</td>
<td>Time spent filling in the production questionnaire prior to filming. Time spent applying for grants through the Skillset website.</td>
</tr>
<tr>
<td>Ways in which burden is managed</td>
<td>Employers can submit their levy returns online or download printable forms. The levy can be paid by Direct Debit and in instalments to ease cash flow. A helpline is available.</td>
<td>Printable forms are available online. Contact phone number and email addresses are available on the ECITB website.</td>
<td>A contact phone number and email address is available on the Skillset website.</td>
</tr>
<tr>
<td>Other details</td>
<td>The owner of a construction establishment at the start of each levy year is treated as the employer of all persons employed at that establishment during the period.</td>
<td>The owner of an engineering construction establishment at the start of each levy year is treated as the employer of all persons employed at that establishment during the period.</td>
<td></td>
</tr>
<tr>
<td>Website of administration body</td>
<td><a href="http://www.ccskills.org">www.ccskills.org</a></td>
<td><a href="http://www.ecitb.org.uk">www.ecitb.org.uk</a></td>
<td><a href="http://www.skillset.org">www.skillset.org</a></td>
</tr>
</tbody>
</table>
Annex E: Summary tables of non-healthcare education and training levies currently in operation in other countries

The following tables are derived from the information in Annex 2.2 of Johanson (World Bank, 2009). They have been newly grouped by World Bank income classification and additional summary statistics have been added to the bottom of each table.

Countries are divided according to 2009 Gross National Income per capita, calculated using the World Bank Atlas method. The groups are: low income, $995 or less; lower middle income, $996 - $3,945; upper middle income, $3,946 - $12,195; and high income, $12,196 or more. The classification was current on 1st August 2011 when obtained from http://data.worldbank.org/about/country-classifications/country-and-lending-groups.

Table E1: Distribution of levy scheme types by World Bank country income classification

<table>
<thead>
<tr>
<th>Income classification</th>
<th>Description</th>
<th>Scheme type</th>
<th>Revenue-generating</th>
<th>Cost reimbursement</th>
<th>Levy grant</th>
<th>Levy rebate / exemption</th>
</tr>
</thead>
<tbody>
<tr>
<td>High income countries</td>
<td>Count of schemes</td>
<td></td>
<td>3</td>
<td>1</td>
<td>12</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>% of schemes with this design</td>
<td></td>
<td>18%</td>
<td>6%</td>
<td>71%</td>
<td>18%</td>
</tr>
<tr>
<td>Upper-middle income countries</td>
<td>Count of schemes</td>
<td></td>
<td>13</td>
<td>1</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>% of schemes with this design</td>
<td></td>
<td>65%</td>
<td>5%</td>
<td>15%</td>
<td>40%</td>
</tr>
<tr>
<td>Lower-middle income countries</td>
<td>Count of schemes</td>
<td></td>
<td>8</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>% of schemes with this design</td>
<td></td>
<td>67%</td>
<td>17%</td>
<td>17%</td>
<td>17%</td>
</tr>
<tr>
<td>Low income countries</td>
<td>Count of schemes</td>
<td></td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>% of schemes with this design</td>
<td></td>
<td>30%</td>
<td>10%</td>
<td>50%</td>
<td>20%</td>
</tr>
</tbody>
</table>

Note: within a given income classification, the percentages can sum to more than 100%. This is because some schemes fall into several categories. When computing these percentages, 'n.a.' entries were excluded from both the numerator and denominator.
<table>
<thead>
<tr>
<th>Country</th>
<th>Organisation</th>
<th>Levy rate</th>
<th>Region</th>
<th>World Bank income classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahrain</td>
<td>TVET Council/NTF</td>
<td>1-3% a</td>
<td>Middle East and North Africa</td>
<td>High-income</td>
</tr>
<tr>
<td>Barbados</td>
<td>TVET Council/NTF</td>
<td>1% (half by employers, half by employees) a</td>
<td>Latin America and Caribbean</td>
<td>High-income</td>
</tr>
<tr>
<td>Belgium</td>
<td>11 Sector Training Funds</td>
<td>0.1-0.6%</td>
<td>Europe</td>
<td>High-income</td>
</tr>
<tr>
<td>Cyprus</td>
<td>HRDA</td>
<td>0.5% a</td>
<td>Europe</td>
<td>High-income</td>
</tr>
<tr>
<td>Denmark</td>
<td>10-15 STFs</td>
<td>Fixed amt. per worker; 0.23% in state sector</td>
<td>Europe</td>
<td>High-income</td>
</tr>
<tr>
<td>France</td>
<td>OPCA</td>
<td>1.5% a</td>
<td>Europe</td>
<td>High-income</td>
</tr>
<tr>
<td>Greece</td>
<td>LAEK</td>
<td>&lt; 0.5% a</td>
<td>Europe</td>
<td>High-income</td>
</tr>
<tr>
<td>Hungary</td>
<td>DTF</td>
<td>1.5% a</td>
<td>Europe</td>
<td>High-income</td>
</tr>
<tr>
<td>Ireland</td>
<td>NTF</td>
<td>0.7% a</td>
<td>Europe</td>
<td>High-income</td>
</tr>
<tr>
<td>Italy</td>
<td>14 sectoral VT funds</td>
<td>0.3% a</td>
<td>Europe</td>
<td>High-income</td>
</tr>
<tr>
<td>Netherlands</td>
<td>89 sectoral training funds (O&amp;O)</td>
<td>Ave. 0.67%, up to 2.5%</td>
<td>Europe</td>
<td>High-income</td>
</tr>
<tr>
<td>New Zealand</td>
<td>n.a.</td>
<td>Varies by sector</td>
<td>Asia and Pacific</td>
<td>High-income</td>
</tr>
<tr>
<td>Poland</td>
<td>n.a.</td>
<td>1% in 2008</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
<tr>
<td>Singapore</td>
<td>SDI</td>
<td>1% on wages of workers earning less than $52000/month</td>
<td>Asia and Pacific</td>
<td>High-income</td>
</tr>
<tr>
<td>Slovenia</td>
<td>n.a.</td>
<td>1% - craft sector</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>
| South Korea | Discontinued          | 0.5% a    | Asia and Pacific | High-income | }
| Spain       | FORCEM                | 0.6-1% a  | Europe            | High-income                     |
| Sweden      | TSL                   | n.a. a    | Europe            | High-income                     |
| Taiwan      | Discontinued          | n.a. a    | Asia and Pacific | High-income |

Count of ticks: 3 1 12 3

Percentages (excluding n.a. from numerator & denominator): 18% 6% 71% 18%
### Table E3: Upper-middle income countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Organisation</th>
<th>Levy rate</th>
<th>Revenue-generating</th>
<th>Cost reimbursement</th>
<th>Levy grant</th>
<th>Levy rebate / exemption</th>
<th>Type</th>
<th>Region</th>
<th>World Bank income classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algeria</td>
<td>FNAC</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Middle East and North Africa</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Botswana</td>
<td>BOTA</td>
<td>0.2% of turnover, new</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Sub-Saharan Africa</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Brazil</td>
<td>SENAI</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Brazil</td>
<td>SENAC</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Brazil</td>
<td>SENAR</td>
<td>Value of prod.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Brazil</td>
<td>SENAT</td>
<td>1.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Columbia</td>
<td>SENA</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>INA</td>
<td>1.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>INFOTEP</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Ecuador</td>
<td>SECAP</td>
<td>0.6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Heart Trust/NTA</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Jordan</td>
<td>TVET Support Fund</td>
<td>1% company profits tax</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Middle East and North Africa</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Malaysia</td>
<td>HRDF</td>
<td>1%, with 0.5% for small businesses (optional)</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>Asia and Pacific</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Mauritius</td>
<td>HRDC/NTF</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Sub-Saharan Africa</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Namibia</td>
<td>NTF</td>
<td>1%, new</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Sub-Saharan Africa</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Panama</td>
<td>INADEH</td>
<td>15% of soc. sec. fund</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>SENCICO</td>
<td>0.0025 of spending on labour, materials</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
<td></td>
</tr>
<tr>
<td>Peru</td>
<td>SENATI</td>
<td>0.75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>South Africa</td>
<td>NSF + 23 sectoral funds (SETAs)</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>Sub-Saharan Africa</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Tunisia</td>
<td>FOPROFA</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Middle East and North Africa</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Turkey</td>
<td>N.A</td>
<td>N.A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Middle East and North Africa</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Uruguay</td>
<td>CONET</td>
<td>0.25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
<tr>
<td>Venezuela</td>
<td>INCES</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Upper-middle-income</td>
</tr>
</tbody>
</table>

**Count of ticks**: 13 1 3 8

**Percentages (excluding n.a. from numerator & denominator)**: 65% 5% 15% 40%
### Table E4: Lower-middle income countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Organisation</th>
<th>Levy rate</th>
<th>Revenue-generating</th>
<th>Type</th>
<th>Levy grant</th>
<th>Levy rebate / exemption</th>
<th>Region</th>
<th>World Bank income classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia</td>
<td>INFOCAL</td>
<td>1% (voluntary)</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
<td>Latin America and Caribbean</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Cote d'Ivoire</td>
<td>FDIP</td>
<td>0.4%-1.2%</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>Sub-Saharan Africa</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Egypt</td>
<td>N.A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Middle East and North Africa</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>El Salvador</td>
<td>INSAPORP</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Fiji</td>
<td>TPAF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Asia and Pacific</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Guatemala</td>
<td>INTECAP</td>
<td>0.98%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Honduras</td>
<td>INFOP</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Marshall Islands</td>
<td>NTF under NTU</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td>Asia and Pacific</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Morocco</td>
<td>OPPFT</td>
<td>1.6%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Middle East and North Africa</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>INATEC</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Nigeria</td>
<td>ITF</td>
<td>1.25%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Sub-Saharan Africa</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Paraguay</td>
<td>VETA</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Latin America and Caribbean</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td>Senegal</td>
<td>CNIPF</td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Sub-Saharan Africa</td>
<td>Lower-middle-income</td>
</tr>
<tr>
<td><strong>Count of ticks</strong></td>
<td><strong>8</strong></td>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percentages (excluding n.a. from numerator & denominator) 67% 17% 17% 17%

### Table E5: Low income countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Organisation</th>
<th>Levy rate</th>
<th>Revenue-generating</th>
<th>Type</th>
<th>Levy grant</th>
<th>Levy rebate / exemption</th>
<th>Region</th>
<th>World Bank income classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benin</td>
<td>FODEFCA</td>
<td>2%</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>FAPPA</td>
<td>4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td>Congo</td>
<td>NITC</td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td>Kenya</td>
<td>NITC</td>
<td>Sectoral</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td>Malawi</td>
<td>YEVEITA</td>
<td>1%</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td>Mali</td>
<td>FAPPA</td>
<td>0.5%</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td>Tanzania</td>
<td>VETA</td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td>The Gambia</td>
<td>NTA</td>
<td>0.25%</td>
<td>replaced by fixed payment</td>
<td>✓</td>
<td></td>
<td></td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td>Togo</td>
<td></td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>ZIMDEF</td>
<td>1%</td>
<td></td>
<td>✓</td>
<td>✓</td>
<td></td>
<td>Sub-Saharan Africa</td>
<td>Low income</td>
</tr>
<tr>
<td><strong>Count of ticks</strong></td>
<td><strong>3</strong></td>
<td><strong>1</strong></td>
<td><strong>5</strong></td>
<td><strong>2</strong></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Percentages (excluding n.a. from numerator & denominator) 30% 10% 50% 20%
Annex F: Summary table to analyse tax base options

We show in Section 5 that a levy tax base of the annuitised training cost, with the levy proportion determined by the difference between market wages and the world wage for that skill, will restore a first-best use of professional labour. Section 8 discusses distortions arising when alternative (and potentially administratively less complex) tax bases are used in place of the first-best solution. This Annex provides further detail on the extent to which each tax base is able to achieve the relative price, information and free rider rationales. The first-best case is presented in the first row of the table as a point of reference.

The table assumes that the stated tax base is applied to all providers, thus avoiding any further distortion of relative prices between different provider types. It does not consider levy designs that vary only by provider type (as opposed to by staff type); because these do not vary within each provider, they carry many of the disadvantages of ‘fixed’ levies (where the same rate is charged on all professional staff). The disadvantages of such ‘fixed’ levies are nonetheless discussed within the table.

‘Professional staff’ denotes staff such as doctors and nurses who have substantial initial education and training financed by the NHS.

<table>
<thead>
<tr>
<th>Tax base option implied by the theory in Section 5</th>
<th>Relative price rationales. Does the tax base better reflect relative prices?</th>
<th>Free-rider rationale. If the levy is charged to private non-NHS providers, does it level the playing field?</th>
<th>Information rationale. Does the tax base make training spend more transparent to hospitals?</th>
<th>Administrative complexity?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat duty per employee (varies by staff group proportionately to cost of training)</td>
<td><strong>POSITIVE EFFECT WITH POTENTIAL PROBLEM</strong> relative to the current system. The levy will increase the relative price of staff groups with larger professional education and training costs; staff groups with the most expensive education and training will see the largest relative price increase. However, it risks particularly increasing the relative cost of junior professional staff, whose large training costs represent a higher fraction of salary than for more senior equivalents. Levy rates could therefore be differentiated by stage of career.</td>
<td><strong>POSITIVE EFFECT WITH POTENTIAL PROBLEM</strong>. Similarly, the levy will increase the price of professional staff relative to other inputs, and staff groups with the most expensive education and training will see the largest relative price increase. However, the cost of junior professional staff relative to other inputs will increase disproportionately unless levy rates are differentiated by stage of career.</td>
<td><strong>POSITIVE EFFECT WITH POTENTIAL PROBLEM</strong>. All healthcare providers will contribute in the same way, which reflects the cost of training their staff. However, the cost of junior professional staff will increase disproportionately unless levy rates are differentiated by stage of career.</td>
<td><strong>INCREASED</strong>, particularly if new data needs to be gathered on the number of staff in each staff group (including in the private sector).</td>
</tr>
</tbody>
</table>

<p>| Tax base type: Employment-based, more complex | <strong>POSITIVE EFFECT WITH POTENTIAL PROBLEM</strong>. The levy can closely reflect the economic cost of education and training for a provider’s skill mix. However, the cost of junior professional staff will be reflected disproportionately unless levy rates are differentiated by stage of career. | <strong>INCREASED</strong>, particularly if new data needs to be gathered on the number of staff in each staff group (including in the private sector). |</p>
<table>
<thead>
<tr>
<th>Relative price rationales. Does the tax base better reflect relative prices?</th>
<th>Free-rider rationale. If the levy is charged to private non-NHS providers, does it reduce free-riding?</th>
<th>Information rationale. Does the tax base make training spend more transparent to hospitals?</th>
<th>Administrative complexity?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between different categories of professionally trained staff</td>
<td>Between professionally trained staff and other inputs (such as non-professional staff, buildings and technology)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Other tax base options**

<p>| Flat duty per hospital activity (spell/episode/admission/bed day) (does not vary by activity) | NO EFFECT relative to current system. Holding the distribution of CCG allocations constant, if the MPET budget were included in allocations and then recovered as a fixed percentage of each CCG’s income, CCG income would not change. Relative prices of different professionally trained staff would not therefore change. | NO EFFECT relative to current system. Again, holding the distribution of CCG allocations constant, if the MPET budget were included in allocations and then recovered as a fixed percentage of each CCG’s income, CCG income would not change. The price of professionally trained staff relative to other inputs would not therefore change. | DIFFICULT TO IMPLEMENT. Although non-NHS providers would be required to contribute, a universal levy would be hard to fairly define across provider types. It would also be ill-suited to their varying skill mix / degrees of involvement in health care. It would therefore be hard to create a level playing field. |
| <strong>Tax base type:</strong> <strong>Activity-based, simpler</strong> | <strong>COMPLEX EFFECTS IN BOTH DIRECTIONS</strong> as activities can be composed of a mix of professionally trained staff and other inputs. Providers will be encouraged towards high-remuneration activities as they attract proportionately less levy, regardless of the professional skill mix used in these activities. | <strong>COMPLEX EFFECTS IN BOTH DIRECTIONS</strong> as the chosen activity measure may not exist in these providers. This makes it very difficult to create an objectively level playing field. | NO EFFECT. This levy would not be seen by providers. Even if it were, a provider’s levy amount will be unrelated to human capital choices and would simply be a fraction of turnover – a poor and highly indirect indicator of training cost that would communicate no real new information. |
| Other tax base options | | | <strong>INCREASED</strong>, particularly for non-NHS providers. |
| A percentage of purchaser (e.g. CCG) income (does not vary by purchaser) | NO EFFECT relative to current system. Holding the distribution of CCG allocations constant, if the MPET budget were included in allocations and then recovered as a fixed percentage of each CCG’s income, CCG income would not change. Relative prices of different professionally trained staff would not therefore change. | NO EFFECT relative to current system. Again, holding the distribution of CCG allocations constant, if the MPET budget were included in allocations and then recovered as a fixed percentage of each CCG’s income, CCG income would not change. The price of professionally trained staff relative to other inputs would not therefore change. | <strong>DIFFICULT TO IMPLEMENT</strong>. Although non-NHS providers would be required to contribute, a universal levy would be hard to fairly define across provider types. It would also be ill-suited to their varying skill mix / degrees of involvement in health care. It would therefore be hard to create a level playing field. |
| <strong>Tax base type:</strong> <strong>Activity-based, simpler</strong> | <strong>COMPLEX EFFECTS IN BOTH DIRECTIONS</strong> as activities can be composed of a mix of professionally trained staff and other inputs. Providers will be encouraged towards high-remuneration activities as they attract proportionately less levy, regardless of the professional skill mix used in these activities. | <strong>COMPLEX EFFECTS IN BOTH DIRECTIONS</strong> as the chosen activity measure may not exist in these providers. This makes it very difficult to create an objectively level playing field. | <strong>VERY LITTLE EFFECT</strong>. A provider’s levy amount will be unrelated to human capital choices and will simply be a multiple of the chosen activity measure. It will therefore communicate no real new information and is a poor, highly indirect indicator of training cost. |
| | | | <strong>INCREASED</strong>, particularly for non-hospital providers (as it is unclear how the levy could be applied to them; there is not a common currency to use as a tax base). Furthermore, providers may be able to game/manipulate statistical constructs such as hospital episodes if the levy were applied to those. |</p>
<table>
<thead>
<tr>
<th>Relative price rationales. Does the tax base better reflect relative prices?</th>
<th>Between different categories of professionally trained staff</th>
<th>Between professionally trained staff and other inputs (such as non-professional staff, buildings and technology)</th>
<th>Free-rider rationale. If the levy is charged to private non-NHS providers, does it reduce free-riding?</th>
<th>Information rationale. Does the tax base make training spend more transparent to hospitals?</th>
<th>Administrative complexity?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flat duty per professionally trained employee (does not vary by staff group)</td>
<td>NEGATIVE EFFECT relative to the current system. A flat rate would make doctors relatively cheaper (as it would be a smaller percentage of their salary), when in fact they should be made relatively more expensive (as their training costs are a larger percentage of salary than for other groups). It would also make junior staff relatively more expensive.</td>
<td>MIX OF POSITIVE AND NEGATIVE EFFECTS. This kind of levy does make professional staff more expensive relative to other inputs (as is the case with actual training costs), but as it represents a lower fraction of salary for high-paid staff, it perversely reflects the cost of training for particular categories of professional staff relative to other inputs.</td>
<td>MIX OF POSITIVE AND NEGATIVE EFFECTS. Although private non-NHS providers will contribute, the flat rate makes their doctors relatively cheaper, when in fact their training costs mean that doctors are relatively more expensive. It would also make junior staff more expensive. (The levy therefore distorts private sector incentives in the wrong direction).</td>
<td>LIMITED AND POTENTIALLY MISLEADING EFFECT. A provider's levy amount will only be linked to headcount or FTEs, so will be a basic measure of human capital that conveys very little new information. It also misleadingly alters relative prices in favour of doctors (whose high training costs disproportionately cost relative to other inputs), as well as making junior staff relatively more expensive.</td>
<td>INCREASED. Only FTEs or headcount need to be measured.</td>
</tr>
<tr>
<td>Percentage payroll tax per professionally trained employee (does not vary by staff group)</td>
<td>MIX OF NO EFFECT AND NEGATIVE EFFECT relative to the current system. A fixed percentage levy applied to all professional staff has mathematically zero impact on the cost of different professional staff groups relative to one another. Additionally, education and training costs are ultimately not a function of salary, so this levy will charge more in absolute terms to higher-paid staff, even if their education and training costs are not higher.</td>
<td>MIX OF POSITIVE EFFECT, NO EFFECT AND NEGATIVE EFFECT. The levy will increase the cost of professional staff relative to other inputs, which fits with the higher education and training costs of professional staff. However, it does not account for variation in the relative cost between particular professional staff and other inputs. Also, the cost of highly-paid staff relative to other inputs may increase disproportionately to their training cost.</td>
<td>MIX OF POSITIVE EFFECT, NO EFFECT AND NEGATIVE EFFECT. Although private non-NHS providers will contribute, the contributions will not reflect the relative costs of different types of staff (as a universal percentage levy has no impact on the relative prices of professional staff categories). Additionally, highly-paid staff will attract a disproportionate cost relative to their training cost. If private earnings are higher than in the NHS (e.g. private work by consultants), more levy is paid than in the NHS. (The levy therefore has no positive effect on private sector professional staff choices).</td>
<td>LIMITED AND POTENTIALLY MISLEADING EFFECT. It does not reflect the differing costs of training different types of staff. All it really tells hospitals is the size of their wage bill, which they know already. Highly-paid staff within a given levy category attract a disproportionate cost, which is misleading if their underlying training cost is unrelated to salary.</td>
<td>INCREASED. Only salaries need to be measured, but healthcare professionals such as GP partners do not have a clear wage (they share in the profit from their business); this could pose difficulties.</td>
</tr>
</tbody>
</table>

**Tax base type:** Employment-based, simpler
<table>
<thead>
<tr>
<th>Relative price rationales. Does the tax base better reflect relative prices?</th>
<th>Free-rider rationale. If the levy is charged to private non-NHS providers, does it reduce free-riding?</th>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

**Tax base type: Employment-based, more complex**

**Percentage payroll tax per employee (varies by staff group in line with cost of training)**

**POSTIVE EFFECT WITH NOTABLE PROBLEM.** The levy will increase the relative price of staff groups with larger professional education and training costs as a percentage of salary. However, professional education and training costs are ultimately not a function of salary, so this levy would impose a disproportionate cost for highly-paid (i.e. senior) staff within each staff category.

**POSTIVE EFFECT WITH NOTABLE PROBLEM.** The levy will increase the price of professional staff relative to other inputs; staff groups with the most expensive education and training will see the largest price increase. However, the cost of highly-paid staff relative to other inputs will increase disproportionately.

**POSTIVE EFFECT WITH NOTABLE PROBLEM.** All healthcare providers will contribute in the same way, which reflects the cost of training their staff, although highly-paid staff within a given levy category attract a disproportionate cost.

If private earnings are higher than in the NHS (e.g. private work by consultants), more levy is paid than in the NHS.

**POSTIVE EFFECT WITH NOTABLE PROBLEM.** The levy can closely reflect the economic cost of education and training for a hospital’s skill mix, although highly-paid staff within a given levy category attract a disproportionate cost.

**INCREASED, particularly if new salary and categorisation data needs to be gathered (including in the private sector). Additionally, staff such as GP partners do not have a clear wage (they share in the profit from their business); this could pose difficulties.**