Department for Business Innovation & Skills

RESEARCH

ADULT FURTHER EDUCATION LEARNERS

Matched Data Earnings Analysis: Executive Summary

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Executive Summary

New measures of FE learner outcomes

The ILR-WPLS matched dataset provides detail for several factors of interest

As part of the move towards greater understanding and use of learner outcomes, BIS is developing measures of learner destinations, progression and earnings. In January 2014 BIS published a new earnings measure, derived from the ILR-WPLS matched administrative dataset, which has the potential to provide a fuller picture of Further Education (FE) learner outcomes. The emerging results published by BIS in January 2014 were aggregated by type of provision, level of qualification, Sector Subject Area (SSA) and Local Enterprise Partnership (LEP) Area, indicating how the dataset can, for the first time, identify in some detail many important factors that impact on earnings outcomes for individuals.

In addition to providing details about the nature of the education/training undertaken by individuals, there are other advantages to using such administrative data compared with using survey-based data. The individual-level data on earnings should be *accurate* and have *wide coverage* given that it is administrative data collected through the tax and benefit system; the estimates should therefore be a 'true' estimate of the outcomes (earnings and employment) of the individuals post learning. Another advantage is that the data for each individual are available for more than one period, so changes over time can be analysed – a marked improvement over cross-sectional data (either administrative or survey based).

Limitations of the ILR-WPLS matched dataset

The ILR-WPLS matched dataset does, however, have some inherent shortcomings that have the potential to bias results and/or impinge on how the results should be interpreted. The dataset does not include all workers whose income is below the tax threshold or self-employed workers. Nor does it contain a clear indication of hours worked and so it is not possible to identify part-time and full-time workers. These two issues are perhaps the most important limitations for the use of the earnings measure in the ILR-WPLS matched dataset. However, we recommend that, with suitable guidance and caveats, the data can be used for the purposes discussed below; further work by BIS and partners to overcome some of the dataset's shortcomings will extend the range of purposes for which the data are valid.

This study presents recommendations on how BIS' new earnings measure is best presented and interpreted for different purposes

The new earnings measure therefore has the potential to enable a wide range of new and insightful analyses - so long as results are presented and interpreted in a way that is informed by a clear understanding of the strengths and limitations of the ILR-WPLS matched dataset.

This study, carried out by Cambridge Econometrics (CE) and the Warwick Institute for Employment Research (IER), has reviewed existing literature and undertaken analysis of the ILR-WPLS matched dataset and alternative sources of employment and income

data. It has considered to what extent, and by which dimensions (to take account of the observable characteristics of learners), the earnings measure can and should be disaggregated to best avoid biased estimates. Our findings inform the recommendations on how BIS' new earnings measure is best presented and interpreted for different purposes, taking into account potential biases and issues of disclosure and robustness of the results. Our review has focussed primarily on the *annualised average earnings* measure, but we comment also on the use of the *sustained employment rate* derived from the same ILR-WPLS matched dataset.

Recommendations: disclosure and population size

In order to reduce the risk of data for one particular disaggregation/year not being representative of the usual population for that category, and to avoid any risk of disclosure issues, we recommend publishing results only for populations with sizes substantially higher than theoretically required.

It is not possible to propose a statistically-based rule to cover every eventuality, and decisions on the population-size thresholds to put on published data should be made on a case-by-case basis. They should consider how representative of the usual population a particular subset of the data is, and the implications (in terms of disclosure issues) for future breakdowns that could be published. However, as a general guideline we recommend a minimum population size of 200 individuals for average earnings data, and a minimum size of 30 individuals for employment rate data.

Recommendations: present data for a longer time period

Presenting information on average earnings and employment rates for the financial year immediately following achievement of a qualification provides useful information for most of the various purposes discussed in this study. However, such a short timescale may not provide an entirely accurate picture of the expected earnings associated with a given qualification in the longer term, for a variety of reasons (e.g. job-search activities and efforts; individuals may take a lower-paying job whilst looking for a longer-term, better-paid opportunity; personal circumstances; etc.). Previous analysis of earnings over a longer time period after completion of a qualification (e.g. London Economics (2011)[1]) has concluded that there are strong positive and persistent returns to completing a qualification at a given level and that, in some cases, the returns actually increase over time. In the first months or even years after leaving education, there may be a number of processes or factors besides the individual's attained qualification which affect the type of job and related rate of pay they obtain (e.g. financial pressures, limited opportunities in local labour market, etc.).

We therefore recommend that, as well as publishing information for the financial year after achievement (which in some cases is in fact less than twelve months), results are

[1] London Economics (2011) 'The Long Term Effect of Vocational Qualifications on Labour Market Outcomes'. BIS Research Paper Number 47.

also published for a longer period (the average over three years, say) following achievement. The data for the first twelve months would give a more timely indication of earnings immediately after achievement, while the three-year average would give a more stable indication of earnings as achievers settle into their career paths.

Recommendations: Remove individuals who are still in FE or HE

The ILR-WPLS matched dataset includes a number of individuals who are in employment but are still in FE or have moved into Higher Education (HE). Such individuals are likely to be working part-time, but also the reasons for them working in a particular job may not necessarily reflect the returns to their previous FE qualification(s). For financial and/or social purposes, some learners may take up work in an occupation that is not tied to their longer-term career intentions and thus their earnings whilst working and learning will be unlikely to reflect the actual returns to or skills gained through their qualification. Including these learners in the published results is likely to bias the earnings measure downwards. Similarly, the published employment measure should reflect the outcome for individuals who are no longer in FE/HE. We therefore recommend that individuals who have gone on to further learning are excluded from the published figures. At present, this can be done to some extent by excluding individuals recorded as having achieved an 'Access to HE' course. However, we understand that a more robust variable, which records whether an individual has gone on to further learning (be that FE or HE) is being added to subsequent versions of the ILR-WPLS matched dataset, and will be used to show learning outcomes in BIS's July publication. When available, this variable should be used instead.

Recommendations: Remove individuals whose previous highest qualification is higher than the one just achieved

According to the 'prior attainment' field in the ILR-WPLS matched dataset, a large number of learners achieving an aim at a particular level already have a qualification at a higher level. Although the prior attainment field in the ILR-WPLS matched dataset is currently unreliable, and work is being undertaken to improve it, the earnings of these individuals are likely to reflect the higher qualification rather than the one recently achieved. If a reliable prior attainment variable becomes available, we would recommend that individuals whose previous highest qualification is higher than the one recently achieved are removed from the published figures to improve the estimate in terms of the link between training and earnings.

Recommendations: presentation of results for different purposes

Assessing the use of BIS' new earnings measure for different purposes

This study has assessed the use of the new earnings measure for a number of different purposes, taking into account the challenges that exist when showing earnings for a range of specific groups of learners. The relevant groups of learners are identified for each purpose, by disaggregating the earnings estimates (for example, by provider/institution, Sector Skills Area or gender) to account for the heterogeneity of learners in the FE system and the factors that may affect earnings. Table 1 lists the different intended uses of the earnings measures, the corresponding users/audiences

and dimensions/factors of interest, and then summarises the recommendations for the use of the new measures. The following text discusses the recommendations in more detail.

Table 1: The use of BIS' new earnings measure for different purposes

Use	Users	Dimensions of interest	Recommendations for use of ILR-WPLS-based measures
Informing choice	Careers advisor Learner BIS and other govt. agencies Provider/institution	Gender	Gender must be distinguished, in part to take account of the larger share of women who work part time.
		We recommend that for this purpose the results could be further disaggregated by one or more of the following categories	
		Provision type	Type of provision (Skills courses/Apprenticeships) should be disaggregated, as in BIS (2014)[2]
		Level of study	Level of study should also be distinguished. As in BIS (2014) we recommend restricting this to Full Level 2 and Full Level 3.
		Sector Subject Area (tier 1 or 2) and/or qualification	SSA and qualification can be presented where population sizes permit.
		Provider/institution	Average earnings by provider could be

[2] Department for Business, Innovation & Skills (2014) *Further Education Learners: Average Earnings - Initial outputs of emerging results from earnings analysis of matched data*. Department for Business, Innovation & Skills, London.

Use	Users	Dimensions of interest	Recommendations for use of ILR-WPLS-based measures
			misinterpreted if other important dimensions were not also distinguished, but insufficient population sizes restrict the ability to take account of these dimensions. We recommend that average earnings are not published by provider without allowing for this. We recommend that employment rates could be published by provider (although additional breakdowns would be limited), along with suitable caveats. Employment rates for a wider geographical area (e.g. LEP) could also be published, for comparison.
Assessment/ discussion of institutional performance	BIS and other govt. agencies Provider/institution and other stakeholders – e.g. Association of Colleges (AOC)		We do not recommend that these simple measures of average earnings or employment rates from the ILR-WPLS matched dataset be used rigidly as part of formal funding criteria or other strict rules by which institutions are assessed - there are too many complex factors influencing the outcomes of these measures that need to be taken into account. However, the measures, especially at a more disaggregated level, do provide useful information on how particular factors affect outcomes, and so are useful for a general overview and discussion of institutional performance.

Use	Users	Dimensions of interest	Recommendations for use of ILR-WPLS-based measures
		Provider/institution	Average earnings could be published to the same level as recommended for 'informing choice' above (i.e. not by provider). Employment rates can be published by provider, where population sizes permit.
		We recommend that results could be further disaggregated by one of the categories below, to give an indication of some of the reasons for variation in employment rates between providers, but not by all further categories at the same time.	
		Provision type	Type of provision (Skills courses/Apprenticeships) should be disaggregated, as in BIS (2014).
		Level of study	Level of study should also be distinguished. As in BIS (2014) we recommend restricting this to Full Level 2 and Full Level 3.
		SSA/qualification	SSA could be presented where population sizes permit. Population sizes are likely to be too small to publish by provider *and* qualification.
		Gender	Employment rates could be published by gender.

Use	Users	Dimensions of interest	Recommendations for use of ILR-WPLS-based measures
		LEP	Employment rates could be published by LEP for benchmarking/comparison
Indicate value of qualifications	BIS and other govt. agencies		We recommend that average earnings and employment rates from the ILR-WPLS matched dataset are not published specifically for this purpose, but that the dataset continues to be used for research on employment and earnings premia.
Transparency and public interest	General public		The data above will be available in the public domain. Additional requests for new breakdowns should be considered on a case by case basis.

Tool for informing choice

The ILR-WPLS matched dataset provides a detailed picture of labour market outcomes for FE learners. It complements other sources of information (such as that available from 'LMI for All'[3]) and, where appropriate, should be presented alongside these sources as a valuable tool to inform learner and employer choice. Trends in the earnings measure from the ILR-WPLS matched dataset are broadly comparable with those from LFS or ASHE, but those datasets include people at any stage of their career, no matter when they achieved any qualifications that they hold (which could have been many years ago and no longer relevant). The earnings measure and sustained employment rate from the ILR-WPLS matched dataset analysed in this study is for the year following achievement. This therefore gives a better idea of potential earnings immediately following achievement but not necessarily of the longer-term returns or prospects.

To best inform the careers and learning decisions of individuals, they and careers advisors are likely to be interested to have information disaggregated by: provision type; level of study; Sector Subject Area (SSA) and/or qualification; and provider.

This study has shown that it is essential to distinguish gender in the published estimates of average earnings from the ILR-WPLS matched dataset, in part to take account of the larger share of women who work part-time, which cannot currently be disaggregated in this data. We consider that age is a less critical dimension to distinguish: a clear distribution of earnings by age persists and is not dissimilar across many disaggregations, such as gender and level of qualification, therefore the estimates can be interpreted as indicating the relative returns to these disaggregations.

Analyses of other sources of employment and earnings data show that interactions between sector and level of qualification play an important role in determining earnings. This is illustrated in BIS' (2014) publication of earnings and employment estimates which are disaggregated by type of provision (Apprenticeships; Skills Courses), level of qualification (Full Level 2; Full Level 3) and (15) SSAs. We recommend that the same disaggregations be used for careers advice, with an additional breakdown by gender where population size permits.

There are around 750 separate qualification aims (excluding 'Access to HE') identified in the ILR-WPLS matched dataset used for this study, reflecting the extensive variety of FE learning. Some qualifications are pursued by only a few learners, and it would not be informative for careers advice to publish average earnings figures or even employment rates for these cases. Some further cross-tabulation by qualification could, however, be made for qualifications pursued by larger numbers of learners (where population sizes permit), at least for employment rates, but potentially also for average earnings. In the version of the ILR-WPLS matched dataset used for this study, 234 qualification aims have a population of more than 200 learners (our guideline threshold for publishing average earnings data) while 485 qualification aims have a population of more than 30 learners (our guideline threshold for publishing employment rates).

[3] http://www.lmiforall.org.uk/

However, further disaggregating by gender as we recommend would reduce the number of qualification aims with a population of more than 200 to around 100. Further disaggregation will of course reduce population size further.

Any average earnings and employment rate estimates must be caveated[4] to ensure valid interpretation and to highlight those estimates that are more likely to be biased (and, where possible, indicate in which direction) due to the specific characteristics of the ILR-WPLS matched dataset (e.g. it does not currently account for part-time versus full-time employment, income below the tax threshold, self-assessment, and it identifies 'sector of study' not necessarily 'sector of employment').

We recommend that for informing choice, additional care is required to publish useful average earnings estimates by provider that reflect the limitations of population size encountered when drilling down to the level of the provider. If estimates are published by provider, then they must be caveated appropriately to ensure they are not liable to misinterpretation because of the complexity of FE (the wide range, type and length of courses offered), and the many factors that influence average earnings by provider, some measurable, some not, such as: the mix of qualifications and subjects provided; the quality of provision; the characteristics of the local labour market; and the likelihood that some learners in the ILS-WPLS dataset are participating in labour markets elsewhere to the provider.

We recommend that employment rates could be published by provider (but additional breakdowns would be limited as population sizes quickly start to become too small), but the results would need to include specific caveats, to ensure the user is aware that there are a wide range of factors impacting on employment rates at this level (e.g. gender, level, qualification, etc). In the version of the ILR-WPLS matched dataset used for this study, around 850 providers (out of a total of 1,432 in the database) have a population of more than 30 learners on skills courses broken down to Full Level 2 or Full Level 3, and about 500 providers have a population of more than 30 learners on apprenticeship courses broken down to Full Level 2 or Full Level 3. Thus, employment rates could potentially be published for a large number of providers. We also recommend that, as is BIS' intention, employment rates for learners in a relevant sub-national area, such as LEP, are also published for comparison, to take into account factors specific to the local area (e.g. the local labour market).

Assessment/discussion of institutional performance

Given the large number of complex factors impacting on outcomes which are largely beyond the control of any FE provider, and the wide variation in outcomes, we do not recommend that these measures of average earnings or employment rates from the ILR-WPLS matched dataset be used rigidly as part of formal funding criteria or other strict rules by which institutions are assessed.

[4] As is done under the heading "Limitations of the estimates" in BIS (2014).

However, the measures, especially at a more disaggregated level, do provide useful information on how particular factors affect outcomes, and so are useful for a general overview and discussion of institutional performance.

For this purpose, average earnings could be published to the same level as recommended for 'informing choice' above (i.e. not by provider).

Employment rates are impacted by a similar range of factors, but there is much less variation in the result – people are either employed or they are not. This outcome of FE learning (whether someone is employed or not) will still depend to a certain extent on factors that cannot easily be measured (such as ability) or are not taken into account in the ILR-WPLS matched dataset (e.g. labour market conditions), making it difficult to measure the 'value added' of a particular institution. Employment rates may nevertheless be used to measure one aspect of provider performance. We recommend that employment rates can be published by provider (with suitable caveats), but not by any further disaggregation.

Discussions between policy makers and institutions would be amongst individuals with the capacity to interpret more detailed data (with associated caveats), so we recommend that more disaggregated results could be used for this purpose to give an indication of some of the reasons for variation in employment rates between providers. We recommend that aggregate employment rates by provider are made available, with separate breakdowns (but not for more than one additional breakdown at the same time) by gender, provision type, level and SSA (which will give an indication of the underlying reasons for differences between aggregate employment rates), and similar results for each LEP or local authority (for benchmarking/ comparison).

Indicate value of qualifications

Indicators to measure the value of qualifications should take into account as many of the relevant factors discussed in this report as possible (e.g. ability/prior attainment), and should report the *value added* generated through the attainment of particular qualifications. This is best measured through earnings and employment 'premia', which in turn are best calculated using econometric methods rather than the comparison of simple averages.

Compared with other sources of data often used in analysis of the value of qualifications, the ILR-WPLS matched dataset provides detailed information on the qualifications achieved. One of the main drawbacks of LFS and ASHE data for this type of analysis is their lack of information in this area. The ILR-WPLS matched dataset is less strong on information about the type of employment (e.g. occupation, sector, full-time/ part-time) but work can and is being done to overcome these weaknesses.

We recommend (with caveats) that the ILR-WPLS matched dataset provides an excellent resource for such econometric analysis to estimate the returns to learning (and has been used for that purpose in several studies[5] already), and it is these

5 Frontier Economics/IFS (June 2011) and London Economics (2011).

methods that should remain the primary measure of value added. The average earnings or employment rates should be published secondary to such estimates. We recommend (see below) that a number of improvements are made to address the shortcomings of the dataset and improve the robustness of the results of such analysis (as well as the results for other purposes).

Transparency and public interest

The data published for the purposes of 'informing choice' and 'assessment/discussion of institutional performance' will be put in the public domain and are likely to be sufficient for the purposes of transparency and public interest. Additional requests for new breakdowns should be considered on a case by case basis.

Recommendations: Improvements to the ILR-WPLS matched dataset

As discussed above, the ILR-WPLS matched dataset is a very useful and exciting source of information for various purposes. However, there are currently a number of inherent shortcomings that it would be beneficial to overcome to improve the value of the dataset and the robustness of published measures. The main shortcoming is the lack of information on the actual jobs that people are employed in (i.e. PT/FT, self-employed/employee, occupation and sector). The dataset as it stands is a good resource, but with further enhancement it could be closer to the ideal than any other source of data on the association between FE qualifications and earnings.

As well as adding information on the type of employment, there are a number of other additions to the dataset that would greatly enhance its value. These include:

- improving the robustness of the prior attainment variable
- providing a more complete record of the individual's path through education (for instance, by linking to data relating to the individual's entry to and exit from HE)
- adding to the dataset to allow for additional counterfactuals alongside 'non-completers' (e.g. adding/matching information from the National Pupil Database with that from the HMRC earnings data, for individuals that are not in the ILR as well as those who are so that the dataset includes individuals who have not been through the FE system).

Conclusion

As discussed above, the ILR-WPLS matched dataset provides an excellent source of data for a wide range of analysis and purposes. The dataset as it stands has some inherent drawbacks, but a number of these can, and are, being overcome, and further improvements over time will increase the range and quality of the analysis that it can be used for.

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