Original Article

Cracking the rankings Part (ii): Understanding the Financial Times European Business Schools rankings

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Abstract This article follows Part (i), in which the workings of the *Financial Times* (FT) rankings of programme areas was discussed, with the MBA given as an example. In this Part (ii) the focus is on the FT's European Business Schools ranking, which is built on schools' performances across most of the individually ranked programmes. No attention has been given to this ranking in the literature hitherto. This reconstruction depends on reconstructions of the underlying programme rankings. However, there are more unavailable data and less detail given about the methodology. Nevertheless, the rankings can be reproduced with a fit nearly as good as that shown in Part (i) for the programme areas. Total activity and average performance across areas are considered, so there is an interesting trade-off for managers to consider. Access to the quantitative scorings also enables researchers to pursue hypotheses and analyses as attempted in the literature for the MBA.
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Introduction

The accompanying paper (Part (i)) considered the methodology used by the *Financial Times* (FT) to produce their annual sets of rankings of business

school programme areas, most prominently the MBA. These are published in an annual cycle, starting with the MBA rankings in January. It was shown that the FT publishes sufficient of the input data used and information about their methodology for the underlying calculations to be reconstructed closely enough to reproduce the published rankings with a high level of fit. It was also demonstrated that these intermediate calculations yield detailed quantitative information about the comparative performances of the schools, which can be of potential value to business school managers and researchers.

Part (i) also summarised the debates in the literature about the validity and consequences of such an approach to assessing business school 'quality', including both the technical robustness and the 'fairness' of the model used, and the potential normative and dysfunctional responses. It was also emphasised that, despite these issues, these rankings are regarded as very influential.

Each December, the end of the annual cycle, the FT publishes a ranking of European business schools, derived from the data used to calculate (most of) the programme rankings. This aggregate ranking is the focus of this follow-up article.

The purpose of this article (Part (ii)) is therefore to:

- demonstrate clearly how the FT's aggregate *European Business Schools* ranking system works;
- examine how closely these rankings can be reconstructed using the (partial) input data sets published by the FT for each programme area (over the course of the year);
- demonstrate how the reconstructed underlying calculations may be useful to:
 - business school managers in understanding the performance of their school in the ranking 'league tables' and therefore investigate strategies to improve their school's position – the situation and strategic decisions facing Manchester Business School (MBS) are taken as an example; and
 - researchers in developing and testing hypotheses about business schools' performance and characteristics.

The European Business Schools Ranking

The *European Business Schools* rankings (published in December) uses data from the following rankings:

- *Global (Full-Time) MBA*, January
- *Executive Education*, May
 - Open Programmes
 - Customised Programmes

- *Masters in Management*, September
- *Executive MBA (EMBA)*, October

(The new *Masters in Finance* rankings probably will not be brought into the European Business School Ranking, at least not for some time.) Table 1 shows for some of the top 75 schools the summary data published.

Reconstruction

The methodology is more complex, and less information about it is published than for the individual programme area rankings discussed in Part (i). The basic approach is to extract the complete set of input data for European schools from the four programme area world rankings listed above, including those schools that 'fell off the bottom' of the published tables; recalculate the five Z-scores (there are two for the *Executive Education* assessments) for these (as demonstrated in Part (i)); convert each to an index; and aggregate the indices by combining the sum and the average of the non-missing programme areas to form a total score (Clarke, 2010). (School information, such as that under the 'Faculty' heading in Table 1, is used *within* each programme area, as for the MBA, not separately.)

Uncertainty arises from the inclusion of a few schools that, as mentioned above, 'fell off the bottom' of the world rankings published for the constituent individual programme (for example, four MBA programmes from the 2010 rankings) and therefore full input data are not available other than school data items (for example, 'faculty') that appear in other tables when a school did 'make the cut' for one of the other rankings. For the few remaining missing data items some 'reasonable guesses' can be made.

There are also several European schools that do appear in published individual programme rankings, but fail to make the top 75 in the *European Business Schools* list. In these cases the input data are available, but the output (the precise *European Business Schools* ranking) is not.

Further complexities arise from several schools being involved with more than one programme in a programme area and/or joint programmes (hence the number of notes with the published table). This means that in some cases only a proportion of the calculated Z-score is awarded to a particular school, or a weighted combination of several Z-scores is used.

Neither information on the method of constructing the indices nor how the sum and average of the scores are combined is provided. Experiments, and informal communications with the FT, suggest that the indexing system is a linear transformation of the Z-scores in each area to a scale running from approximately 30 to 100, with the Executive Education indices halved, then

Table 1: Summary data published for European Business Schools (based on an extract from *Financial Times* (2010, pp. 26–29) with the ranks for each programme area in bold)

Rank 2010	Rank 2009	Rank 2008	3-year average rank	Business School	Country	MBA 2010			EMBA 2010			Masters in Management 2010		Executive education 2010		Faculty		
						Full – time MBA 2010	MBA salary today (\$)	MBA salary increase (%)	Executive MBA 2010	EMBA salary today (\$)	EMBA salary increase (%)	Masters in Management 2010 †	Masters in Management salary today (\$)	Open programmes – Executive Education 2010	Custom programmes – Executive Education 2010	Female Faculty (%)	International Faculty (%)	Faculty with doctorate (%)
45	56	—	—	Politecnico di Milano School of Management	Italy	31	75,224	74	36	91,990	61	58	30 681	—	—	23	3	57
48	47	26	40	Reims Management School	France	—	—	—	—	—	—	19	49 353	—	—	51	46	74
49	27	28	35	Nyenrode Business Universiteit	Netherlands	—	—	—	—	—	—	48	50 678	23	29	33	18	67
49	52	51	51	Rouen Business School	France	—	—	—	—	—	—	21	49 609	—	—	49	37	73
51	34	41	42	WU (Vienna University of Economics and Business)	Austria	—	—	—	—	—	—	22	53 986	—	—	36	15	92
51	52	55	53	Maastricht University	Netherlands	—	—	—	—	—	—	23	58 810	—	—	16	48	76
53	33	44	43	Manchester Business School	UK	15	111 150	91	—	—	—	—	—	—	—	33	38	79

54	54	52	53	Universiteit Antwerpen Management School	Belgium	—	—	—	—	—	—	25	48 643	—	—	24	3	100
54	—	—	—	Skema Business School	France	—	—	—	—	—	—	27	46 846	—	—	45	38	66
56	55	61	57	Bem Bordeaux Management School	France	—	—	—	—	—	—	32	48 057	—	—	29	49	73
56	—	—	—	HEC Lausanne	Switzerland	—	—	—	—	—	—	32	52 026	—	—	26	74	100
58	39	25	41	Henley Business School	UK	—	—	—	—	—	—	—	—	14	22	38	17	83
59	—	—	—	HHL – Leipzig GSM	Germany	—	—	—	—	—	—	35	78 603	—	—	28	3	36
60	59	62	60	University of Cologne, Faculty of Management	Germany	—	—	—	—	—	—	39	63 207	—	—	36	4	63
60	61	—	—	Birmingham Business School	UK	21	90 161	97	—	—	—	—	—	—	—	31	36	77
62	64	36	54	University of Edinburgh Business School	UK	24	98 256	73	—	—	—	—	—	—	—	32	35	84
62	58	47	56	Catholic University of Portugal	Portugal	—	—	—	—	—	—	—	—	25	19	41	27	95
62	66	42	57	Nottingham University Business School	UK	—	—	—	—	—	—	40	41 501	—	—	34	30	85

Bold signifies ranks for each programme.

summed to give a 'merged' index contribution, and that the sum and average of contributions are equally weighted.

So for school j , its index score for programme area i would be:

$$S_{ij} = (100 - 30) \times \left[\frac{Z_{ij} - \text{Min}Z_i}{\text{Max}Z_i - \text{Min}Z_i} \right] + 30$$

where Z_{ij} is the school's Z-score and $\text{Max}Z_i$ and $\text{Min}Z_i$, respectively, are the highest and lowest Z-scores of all the schools for that programme area. If a school was not entered or did not qualify for ranking in a programme area, then the index score is 0.

The floor at an index score of 30 rewards a school for 'taking part', otherwise there could be a strong(er) incentive for a school to submit data only for a smaller number of programme areas in which it is confident of being higher-ranked. Nevertheless, there is still the potential for trade-off decisions (see later).

The aggregation is as follows:

$$\text{Reconstructed Total Score}_j = \text{Average Contribution}_j + \text{Total Contribution}_j$$

$$= \frac{\sum_{i=1}^4 S_{ij}}{\sum_{i=1}^4 Y_{ij}} + \sum_{i=1}^4 S_{ij}$$

where $Y_{ij} = 1$ if $S_{ij} > 0$ (that is, the school is represented in a programme area), otherwise $Y_{ij} = 0$.

An extract of a reconstruction of the scoring is shown in Table 2.

Figure 1 shows the comparative reconstructed versus FT ranks.

The (Spearman) correlation is 0.987, nearly as good as those for the individual programme areas (see Table 6 in Part (i)). Similar to the MBA, there are indications of the actual total scores behind the FT's rankings that can be compared with those from a reconstruction, as shown in Table 3. These are not as close as for the programme areas examined in Part (i), but are fairly close, given how involved the underlying calculations and unknowns are. The mean absolute error is 13 places and the mean absolute error is 2.52 places. As with the MBA in Part (i), the FT's results contain tied ranks.

Value for business schools

The maximum score possible for a school represented in only one programme area would be 200. If present in all four, this would be 400. A 'bottom' position in all four would give a score of 120, corresponding to a rank of approximately 60th. The schools in the top quartile are represented in three or four

Table 2: Reconstructed ranks and contributing scores for *European Business Schools* ranking, 2010

	Country	FT rank	Reconstructed rank	Reconstructed Total Score	Average Contribution	Total Contribution	MBA contribution	EMBA contribution	Masters in Mgmt contribution	EE-open contribution	EE-closed contribution	EE-merged contribution
Politecnico di Milano School of Management	Italy	45	58	128.80	32.20	96.60	35.78	30.82	30.00	—	—	—
IAG-Louvain School of Management	Belgium	45	45	145.78	72.89	72.89	—	—	72.89	—	—	—
Reims Management School	France	48	46	145.41	72.70	72.70	—	—	72.70	—	—	—
Nyenrode Business Universiteit	Netherlands	49	55	130.05	43.35	86.70	—	—	50.37	21.33	15.00	36.33
Rouen Business School	France	49	47	142.22	71.11	71.11	—	—	71.11	—	—	—
WU (Vienna University of Economics and Business)	Austria	51	49	138.54	69.27	69.27	—	—	69.27	—	—	—
Maastricht University	Netherlands	51	50	137.62	68.81	68.81	—	—	68.81	—	—	—
Manchester Business School	UK	53	52	134.76	67.38	67.38	67.38	—	—	—	—	—
Skema	France	54	51	135.19	67.60	67.60	—	—	67.60	—	—	—
Universiteit Antwerpen Management School	Belgium	54	54	133.47	66.74	66.74	—	—	66.74	—	—	—
HEC Lausanne	Switzerland	56	53	133.64	66.82	66.82	—	—	66.82	—	—	—
Bem Bordeaux Management School	France	56	57	129.19	64.60	64.60	—	—	64.60	—	—	—
Henley Business School	UK	58	60	113.70	56.85	56.85	—	—	—	30.22	26.63	56.85
HHL-Leipzig GSM	Germany	59	56	129.79	64.89	64.89	—	—	64.89	—	—	—
Birmingham Business School	UK	60	67	106.23	53.11	53.11	53.11	—	—	—	—	—
University of Cologne, Faculty of Management	Germany	60	59	117.32	58.66	58.66	—	—	58.66	—	—	—
IAE Aix-en-Provence Graduate School of Management	France	62	64	110.42	55.21	55.21	—	—	55.21	—	—	—
University of Edinburgh Business School	UK	62	73	92.53	46.26	46.26	46.26	—	—	—	—	—
Católica Lisbon School of Business and Economics	Portugal	62	71	96.09	48.05	48.05	—	—	—	20.66	27.39	48.05
Nottingham University Business School	UK	62	65	109.18	54.59	54.59	—	—	54.59	—	—	—

Figure 1: Fit of reconstructed ranking with FT ranking, *European Business Schools* ranking for 2010.

Note: The solid line indicates the line of perfect fit.

Table 3: Reported versus reconstructed score intervals, *European Business Schools* 2010, showing reasonable correspondence

	FT	Reconstruction
Range: Top (HEC) – Bottom (Brunel)	275	290.3
Bottom of leading group (Iese) – Top of second group (EM Lyon)	30	35.4

programme areas, whereas those in the bottom half in only one or two. Therefore climbing from a low position is likely to require development of new activity areas, or raising existing activity to a 'quality' level at which submission would be worthwhile.

The nature of the mechanisms in the methodology can be examined to deduce the trade-offs. If, for a particular school, the index score (the contribution) of programme area i is S_i , then:

If the school has 1 programme area recognised in the tables, the reconstructed Total Score would be:

$$\text{Average Contribution} + \text{Total Contribution} = 2S_1$$

If the school has 2 areas recognised, the Total Score would be:

$$\text{Average Contribution} + \text{Total Contribution} = \frac{S_1 + S_2}{2} + (S_1 + S_2) = \frac{3}{2}(S_1 + S_2)$$

Thus the Total Score (and so the ranking) would be improved by entering the second programme area if:

$$\frac{3}{2}(S_1 + S_2) > 2S_1$$

$$\text{that is } S_2 > \frac{S_1}{3}$$

The worst case is that $S_2 = 30$ (from being ranked bottom), and therefore the Total Score would always increase unless $S_1 > 90$, which roughly equates to a rank of fourth in Europe in that programme area.

Adding a third area would increase the total score if:

$$S_3 > \frac{S_1 + S_2}{8}$$

As the maximum of an area index score is 100 and the minimum is 30, then a third area will always increase the Total Score (unless the third area is only one of the two *Exec Education* contributions, in which case S_3 could be as low as 15).

Adding the fourth programme area would be advantageous if:

$$S_4 > \frac{S_1 + S_2 + S_3}{16}$$

Thus, for a school, a threshold can be estimated at which it would be likely to be advantageous to submit additional programmes for ranking.

Of course there are other considerations, including the potential negative perception that might result from a poor showing in one of the underlying programme area rankings appearing earlier in the annual cycle versus the recognition from appearing anywhere in it. This decision making is further complicated by a limit on the number of times a school is permitted to withdraw and rejoin one of the rankings.

The availability of the input data (published with the individual area programme area rankings earlier each year) means that the reconstruction

could be conducted in October (when the last constituent set, the EMBA rankings, is published). So, 'forecasting' of the *European Business Schools* rankings is possible, but of limited value as no actions could be taken, other than 'expectations management'!

Example: Manchester Business School

MBS fared poorly in the 2010 European Business Schools ranking, at 53rd, resulting from only being represented in the MBA area. In 2009, MBS had been 33rd, with the *MBA* and *Masters in Management* both contributing. In 2010, the *Masters in Management* did not qualify as insufficient alumni responded to the FT's questionnaire. *Exec Ed (customised)* activity was not submitted in either year.

A spreadsheet containing a reconstruction of the calculation mechanisms can be used empirically to estimate the outcomes of some 'what-if?' scenarios, as shown in the example in Table 4. The body of the table shows the estimated *European Business Schools* ranking of MBS arising from the actual *MBA* performance (15th in Europe in 2010) plus 'what-if?' scenarios on *Masters in Management* and *Exec Ed (Customised)* performances. The actual 2010 situation is the bottom-right corner. The best outcomes shown are the aspiration to a *European Business Schools* rank of 20. The *Exec Ed* index scores are in the range 15–50 (rather than 30–100) as we are considering *Customised* programmes only (half the potential *Exec Ed* area).

Table 4: Empirical 'what if' positions of MBS in the 2010 *European Business Schools* ranking reconstruction, the bold shows the ranking aspired to(20), the italic shows the actual 2010 ranking (53)

<i>Masters of Mgmt scenario</i>	<i>Exec Ed-Customised</i>	<i>Scenario</i>				2007=64/65	2010=not entered
		World rank	2	51	64	none	
		Eur rank	1	24	30	none	
		Index score	50	25	15	none	
	<i>World rank</i>	<i>Eur rank</i>	<i>Index score</i>				
	5	4	90		20	20	
	10	8	80		20	23	22
2009 position (= 44/50)	44	40	55	20	27	30	30
2010 equivalent (44/50=57/65)	57	52	49	22	28	33	33
worst-case (65/65)	65	58	30	27	39	44	45
2010=not qualified	none	none	none	31	49	58	53

The bold shows the ranking aspired to(20), the italic shows the actual 2010 ranking (53).

Figure 2: Distribution of reconstructed European Business Schools total scores, 2010: A (skewed) bell-shaped curve of quality.

For example the situation in the MBS scenario shown in the second row of Table 4 corresponds (using the relationships in the previous section) to:

$S_3 > [67 \text{ (actual MBA reconstructed index)} + 80 \text{ (scenario assumed index score of the Masters in Mgmt)}] / 8$, where S_3 is the index score of the *Exec Ed (Customised)* area assumed in a scenario.

Therefore the total score of MBS would only increase through entering this third area (*Exec Ed (Customised)*) if $S_3 > 18$ (or approximately 61st out of 65 in the world) as suggested by Table 4: the estimated rank without a contribution from *Exec Ed (Customised)* is overall 22nd European Business School; with the addition of a bottomed-placed *Exec Ed-Customised* programme (30th in Europe, approximately 64th in the world), this would fall to 23rd European Business School. This sort of 'what-if?' analysis can be useful in considering, for example, when to re-enter the *Exec Ed* rankings.

Value for researchers

As for the MBA and other programme rankings (Part (i)), access to the constituent quantitative total and sub-total scores is of value in generating and testing theory. By way of an example, in Part (i) the 'bell-shaped curve of quality' hypothesis (Dichev, 2008) was examined. Applying this also to the reconstructed *European Business Schools* reconstructed total scores again shows a peak towards the centre (Figure 2). However, it is much more skewed than was the case for the MBA total scores. The effect of schools 'missing' from the left-hand end (schools eligible but not making the top 75) is also less (only a couple of schools). This shape is a result of a large number of schools having a presence in

only a few of the four programme areas (31 of the top 75 schools are only represented in a single programme area) and the index score system, which rewards presence with a 'floor' score contribution. Therefore climbing high in the *European Business Schools* ranking is generally much harder than in the programme areas.

Discussion

This pair of papers has demonstrated the construction of the FT's programme-area rankings, which all use the same fundamental methodology, and of the more complex (and more opaque) aggregate overall *European Business Schools* ranking. It has been demonstrated that a close reproduction is possible using the publically available data.

Reconstructing the rankings reveals the contributions to performance and allows comparisons between schools and over time. In addition, at the top-level of the *European Business Schools* ranking methodology is a trade-off between the mass (breadth) of a school's activities and the average performance, which can be investigated quantitatively.

This information can be of value to business school managers. For example, immediate actions at MBS include raising awareness among students of the importance of being contactable and responding to the questionnaires when their turn comes (3 years after graduation), considering when to re-enter the *Exec Ed* rankings, and appreciating the importance of precise measurement and reporting of school-sourced input data.

The availability of these standardised and fairly complete data sets means there is plenty of further fun to be had for researchers of a quantitative bent. Access to the quantitative mechanisms behind the ranks could be used in deductive research to test the sort of hypotheses posited (but often not tested) in the literature about issues such as patterns of volatility, the 'shape' of the 'quality' measures and structural biases. Findings from the early and mid-2000s (for example, about structural differences favouring US schools) could be examined over time. Inductive research using pattern-finding tools and examination of the characteristics of the data sets attempted in the literature could also be conducted in a more statistically robust manner.

Further degrees of 'reverse engineering' may also be possible. For example, Köksalan *et al* (2010) developed a linear programming algorithm to estimate interval values for the input variables for which only ranked input data are published, but only for the schools with complete data (that is, having Doctoral Rank data).

We are currently building an Access database to consolidate all the data, with extract routines to feed Excel analysis templates. This also enables easier longitudinal comparisons and compilation of the data sources for the *European Business Schools* reconstruction. Otherwise matching schools between tables is difficult as rank positions, presence in tables and school/delivery consortium names change. Investigation into the workings of business school rankings produced by other well-respected publications is also underway.

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