University competition, student migration and regional economic differentials in the United Kingdom

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Abstract. University entrance for undergraduate degree courses is highly competitive in the United Kingdom, both among students and universities. A model is proposed of regional competition among the latter, from which a number of indices of their relative competitiveness are derived. These are applied to empirical evidence for groups of neighbouring universities from which a regional pattern of competitiveness emerges in harmony with the national 'north-south' divide. The model is then extended to other aspects of higher education and to the wider space economy. Certain implications are identified, bearing in mind changes in the level and funding of degree course provision now being introduced nationally.

I. University degree education – a competitive regional system

In this paper I consider two important aspects of the geography of university undergraduate recruitment which have scarcely attracted any attention in the academic literature. The first and major theme is the current patterns of competition for university places as viewed spatially, and the likely losers and gainers if that competition increases in the near future. Second, and more tentatively explored, are the wider consequences of such competition for differential regional growth.

Universities compete for the best students, as they perceive them, while students equally compete for the best courses and the best universities. Through the United Kingdom's university admissions system, administered by the Universities Central Council on Admissions (UCCA), students can apply for up to five courses, which can be, and usually are, each in a separate institution. No constraints are imposed on *where* these courses are located. Equally, recruiting universities are free agents concerning their balance of home-based and away-from-home undergraduates. In practice the resulting geographies of application and enrolment are complicated (Desbarats 1977, 1983), and explaining them in any detail is beyond the scope of this paper. But two points are important. First, they are structured geographies, in that there is more than a fair-share chance that students will apply to, and eventually attend, a university in their 'region' of home residence. But second, looked at in *absolute* numbers rather than proportions, the majority of applications are to, and the majority of successful ones accepted by, universities *outside* this region. In 1988 respectively 73% and 65% of applications and acceptances were of this sort. Indeed, one sign of an attractive, competitive university is its ability to attract students from outside its own immediate locality.

Other indicators of university competitiveness will emerge later, but, however measured, higher education enrolments in recent decades have been constrained by

government funding limits on numbers of UK (and EC)-resident students for each university. This both limits popular universities' capacity to accept all they might otherwise wish to recruit, and also thwarts the first preference ambition of many students. Funding changes are under way, even if the precise form they will take is currently (December, 1990) obscure, but assuming governmental desires for expansion in higher education are pursued then this previous constraint will be loosened and competition among universities for good students intensified.

How this might work in practice under these 'old' and 'new' funding regimes is discussed in Section II for a simple two-region model. From this a series of 'markers' of strongly- and weakly-attractive university regions can be identified for testing against the reality of current UK experience.

II. The model

Consider a closed national system with two regions, East and West, operating under the free-competition rules just outlined, and with the following characteristics:

1. Each region has one university, identical in size and menu of degree courses.
2. Each region's resident population of aspirant undergraduates is also equal in size, range of academic ability and course preferences (for simplicity, ability range is considered as spread evenly over a spectrum, although the argument developed applies equally to a more realistic frequency distribution).
3. East University is seen as more attractive to students than the West so that *all* students apply to the East and their first-choice. Furthermore, only Western residents are prepared to study locally at West University if rejected by East.
4. Quotas currently restrict each university to an identical annual student intake level, which we designate as the quantity S1.
5. Each university admits the most able of its applicants.

In the 'now' case, the outcome (Figure 1a) is that East and West differ in four respects:

1. East has the higher entry standard (averaging 90 to West's 60).
2. East has the more competitive entry, with double the applicants for its number of places (S1).
3. East attracts and admits 'outsiders'; West does not.
4. East has the *lower* proportion of its potential home-resident undergraduates accepted for a degree course.

Assume that in the 'then' future of Figure 1b both universities expand their intakes to, say, a level of S2 students annually. These modified circumstances change the percentages under (1) and (4), and the average ability gap between the two intakes widens, from 30 to 45 points. Overall, the effect is to increase the previous East-West disequilibrium, rather than reduce it.
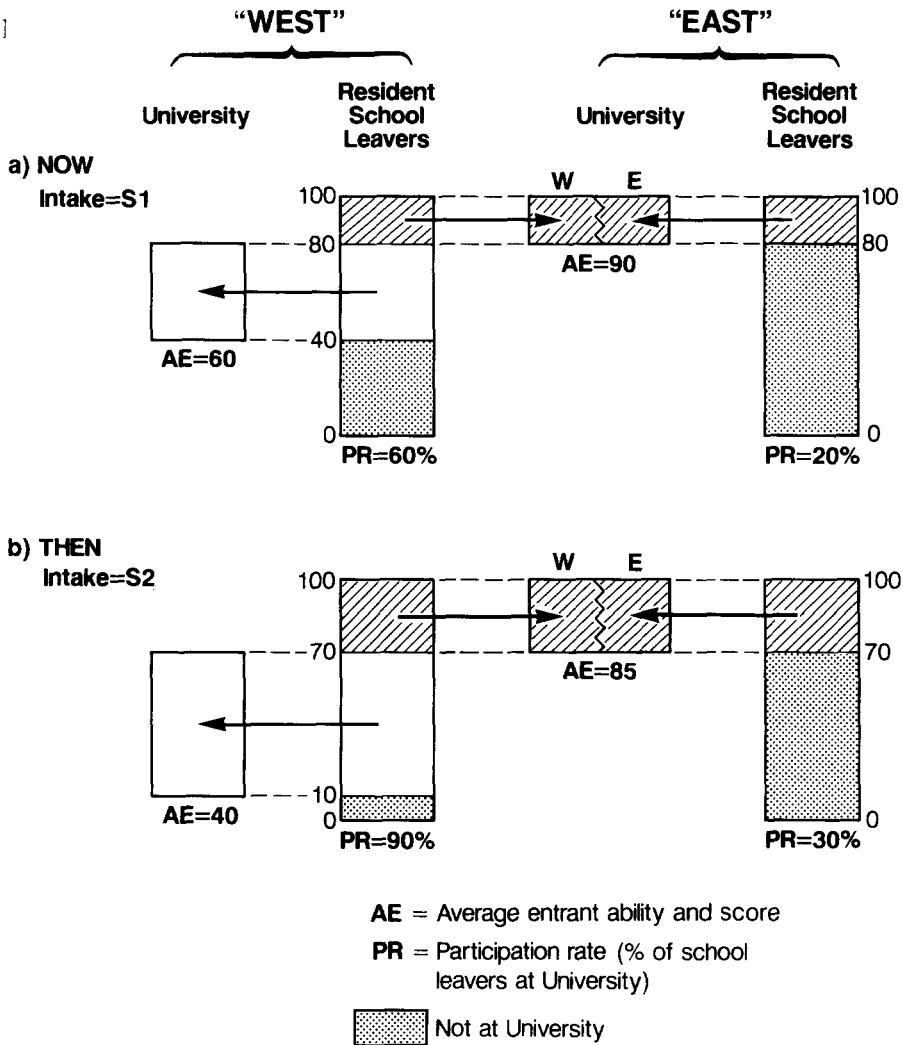
Fig. 1. Two-region model of inter-university competition, (a) now (b) then.

III. Sources and measurement

The search for suitable data to test this model against the contemporary reality of the UK is partly conditioned by available statistics. For reasons of confidentiality, those released publicly by UCCA relate to universities as aggregated regionally (Figure 2) rather than individual institutions. This sets the common scale of reference for other campus-level data too. While this is unavoidable, it might seem to restrict the usefulness of any ensuing analysis. However, any UK institution wishing to replicate the analysis for its *own* case should find this entirely possible in
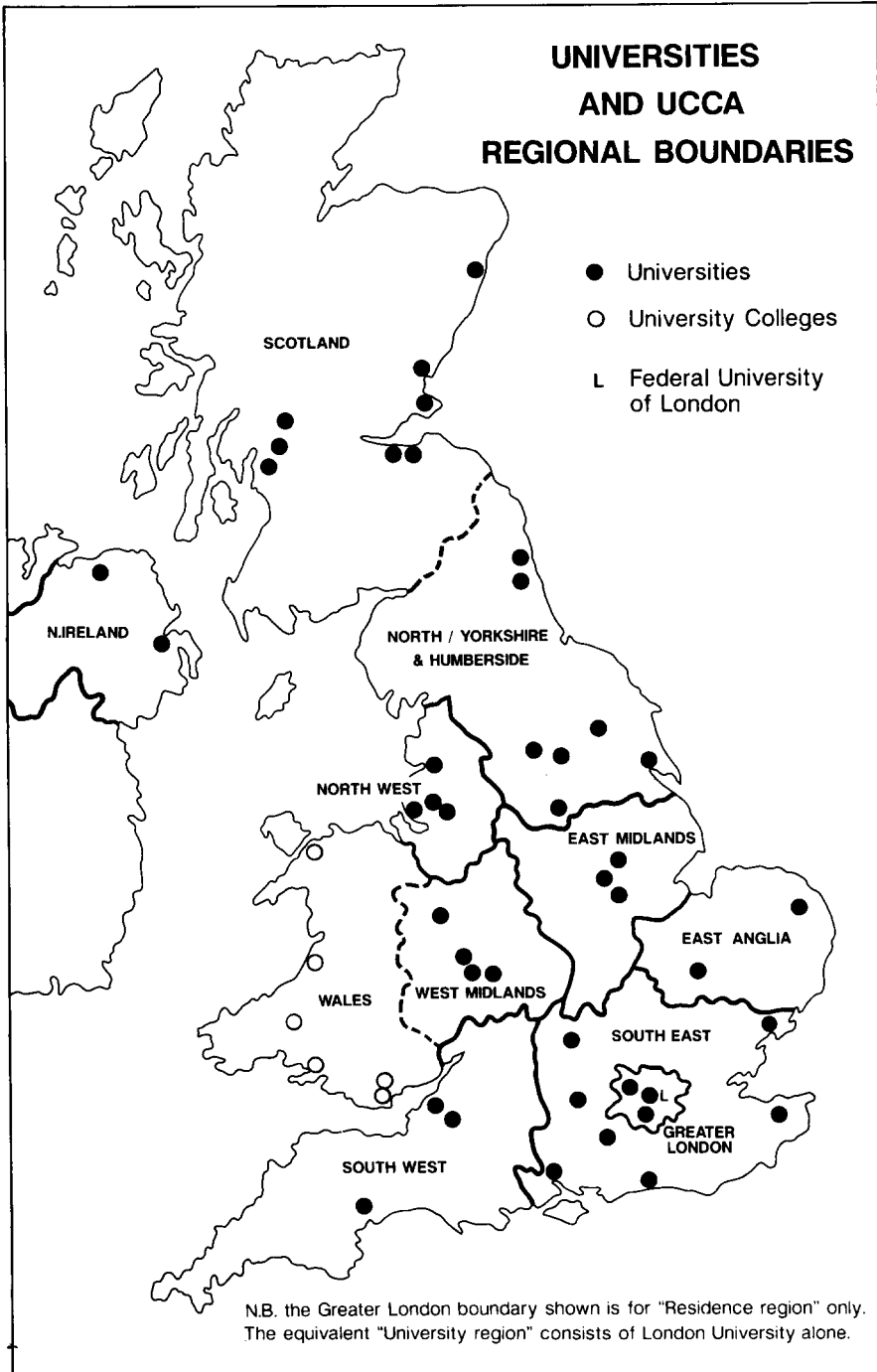
**UNIVERSITIES
AND UCCA
REGIONAL BOUNDARIES**

● Universities

○ University Colleges

L   Federal University
of London

SCOTLAND

N.IRELAND

NORTH / YORKSHIRE
& HUMBERSIDE

NORTH WEST

EAST MIDLANDS

WALES   WEST MIDLANDS

EAST ANGLIA

SOUTH EAST

L

GREATER
LONDON

SOUTH WEST

N.B. the Greater London boundary shown is for "Residence region" only.
The equivalent "University region" consists of London University alone.

Fig. 2. University regions as used in the analysis, based on UCCA records.

terms of data availability. And furthermore, without denying that regional averages sometimes (but not always) disguise wide campus-to-campus variation in the indicators used, differences still emerge at the regional level which are substantial and conform well to a consistent, interpretable pattern. Indeed, regional– rather than local-scale analysis may be the more relevant to model some of the interactions between student homes on the one hand and university applications and enrolments on the other, as well as those between higher education facilities and the geography of socio-economic performance in Britain. Geographical position in the national geography of the supply and demand for degree places, perceptual images of different parts of the country in the minds of students, resolution of the conflicting desires to study away from home, but not *too* far away (Fairweather 1980; Nahkle 1976; Trotman-Dickenson 1989), cost-of-living variations and commercial assessments of universities as a research resource or source of quality labour might all best be handled at this scale. Regional-scale aggregations also reduce the chance of campus-level eccentricities in course menus and admissions practices disturbing the assumption of the East-West model that the 'universities' compared are identical in such respects.

The best practical ways of measuring the four characteristics of the model are these:

1. *Entry standards ('A')*

Even at the regional scale we need to recognise some variation in menus of undergraduate courses offered. As entry standards also vary by academic subject so they should be compared over a set of 'like' courses. To focus upon the most important and widely available ones, 11 UCCA courses were identified, each attracting over 3,000 applicants in recent years, and each also offered somewhere in each university region (see Appendix 1).

Some universities make minimum grade offers of places for the 'A' Levels (the UK pre-university school exams) for otherwise very competitive, high-standard degree courses, while others offer by specifying just 2 'A' Levels rather than the more normal 3. So exam grades *attained* (rather than offered) provide the basis for the preferred index here, measured as the points-score equivalent ($A = 5, B = 4 \dots E = 1$) of the lower limit of the 'range of A Level grades accepted', as reported in the 1990 edition of *University Entrance*. A regional average was determined from all the relevant courses in appropriate institutions. The proportion of entrants at these lower limits is unavailable, as is any weight also given to the subjects taken. Even so, this measure indicates how far down the exam-performance spectrum universities have to reach to fill places over a set of common courses.

2. *Entry competition*

The eagerness of candidates to gain entry to a particular course or university region can be measured in two ways.

a) *The offers/students accepted ratio (O/A)*
Admissions tutors for popular courses should need to make proportionately fewer offers to satisfy their quotas, and a ratio of 'offers' to 'acceptances' was calculated by aggregation of data in *University Entrance* for the 11 selected courses.

b) *Dependence on Clearing/CAP (C/C)*
Less popular universities probably depend more than average on the UCCA's summer Clearing system, and/or mid-year Continuing Application Procedure (CAP) to fill their places. Both allow courses falling short of first-time applicants to contact those whose original applications were unsuccessful (plus last-minute applicants). Unpublished UCCA statistics provide both numbers of 'normal' 1988 entrants to each university region (i.e, those accepted at one of their five UCCA choices) and entrants through Clearing and CAP combined. Neither figure can be disaggregated by university or course but any significant differences in this measure of inter-regional competitiveness are likely to extend over several subjects.

3. *Attraction for 'outside' students (Ia, Ie)*
One conclusion from the earlier discussion is that competitive unversities will attract applications from further afield than less competitive ones. The measure adopted, Ia, allows for the varied number of universities per region (from 9 in the South East to two regions with just 2). For any region, r, it is calculated thus:

$$Ia_r = \frac{R_r / R}{NR_r / NR}$$

When: R_r = Applications from students with home residence in r to universities in r;

R = All applications from students with home residence in r;

NR_r = Applications from students with home residence outside r to universities in r;

NR = All applications from students with home residence outside r.

The wider a region's applications catchment the lower is its Ia value. An equivalent index, Ie, was calculated for enrolments, assuming that popular universities will also sustain the interest of 'distant' students beyond an initial application. The formula merely substitutes 'enrolments' for 'applications'. Both Ie and Ia can be measured from unpublished UCCA tabulations.

4. *Residents studying on university courses*

Two easily measurable consequences of this component of the model are:

a) *Success rates of applications (E/A)*
This can also be measured for any resident region's population of university applicants from the same UCCA statistics, thus:

$$(E/A)_r = \frac{\text{No. of enrolments from residents in region } r\,(1987\text{--}8)}{\text{No. of applications from residents in region } r\,(1987\text{-}8)}$$

b) *University entrants in proportion to resident university-age residents (E/18)*

The proportion of a region's relevant age group gaining a university place is determined from the same UCCA records in conjunction with unpublished population estimates of 18-year olds per region for 1988 supplied by the relevant national Population Census agencies (18 is the modal age for university entrance).

In sum, 7 measures are derived, five relating to regional universities and two to its resident populations. The next Section considers the results and their implications.

IV. Results

Figure 3 plots the indicators defined in the previous section on a uniformly calibrated basis, whereby the most 'eastern' regional score (in terms of previous expectations) is set as 0 and the most 'western' at 10. On most spectra a distinct, small set of western regions is accompanied by a bunching at the eastern end. Not surprisingly, the results are also less than a perfect match to the East-West model. Hence the rank orders of the regions on each measure are not consistent, probably for three reasons. First, compared to a 2-region model the 11-region reality allows more than the Hobson's choice of one unpopular campus for students rejected by a popular local one. Second, the model's premise that all regions generate university applicants at equal levels *pro rata* of the relevant age groups allows no place for geographical variations in other controls on attitudes towards tertiary education
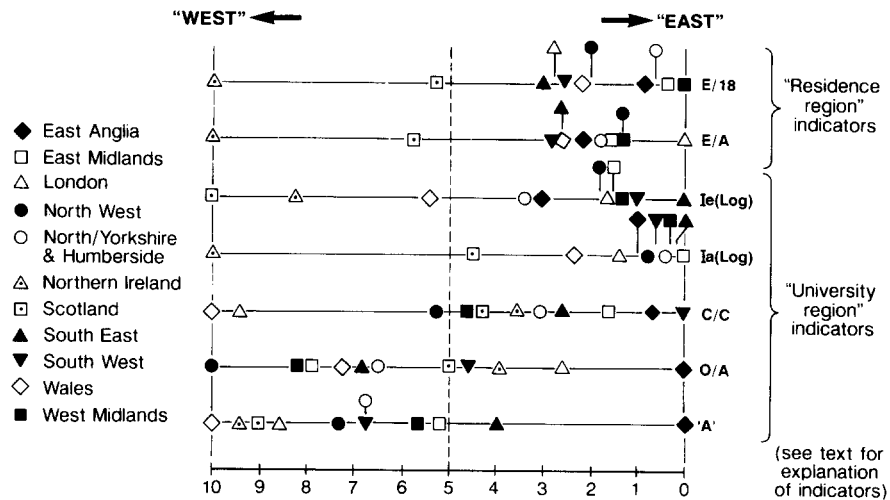

Fig. 3. Spectra of university region competitiveness based on entry performance.

and success in university applications, such as peer group cultures, social class, school type and labour market tightness. Yet these very real pressures make it not surprising that prosperous regions – the South East beyond London, East Anglia and the South West – are *not* among the three most 'eastern' regions on either their E/A or E/18 scores.

Finally, some variables do not behave as suggested in the model. Thus the raw data on UCCA applications show many students from Scotland and Northern Ireland make no application outside their home regions (see below), providing their local universities with something akin to a captive market and maybe reducing the number of offers necessary to attain their quotas (i.e., O/A). Similarly, if unpopular courses are unable to fill their places through Clearing and CAP and start each academic year below strength their C/C scores will be *below* those of rather more popular universities which recruit the requisite numbers through these channels.

This all said, the East-West model does fit creditably with much of the UK experience. In Figure 4 the rank correlations across all pairings of the 7 variables are shown. The majority are positive, and far more are statistically significant than would arise by chance. Negative correlations are confined to pairings involving C/C or O/A where, as shown earlier, the model needs qualifying.

Taking the results together, a three-way division of the 11 UK regions can be suggested based on their competitiveness for undergraduates (Figure 5).

a) *'East' regions*

This, the most competitive group, consists of East Anglia, the South East (ouside London), the South West and the East Midlands, distinguished by high minimum 'A' scores, the lowest four C/C values and wide geographical catchments. Their less consistent E/A, E/18 and O/A results have to be considered against the qualifications noted above.

Within the group, East Anglia is emphatically the most eastern, largely due to its domination by one ultra-competitive university – Cambridge. The only other regional uiversity – UEA – has only some 26% of the region's undergraduate enrolment. The second most competitive region, the South West (comprising Bath, Bristol and Exeter) has no obvious 'weakness' in its profile. Although its O/A score is only slightly more eastern than par, entry standards are second only to East Anglia, its catchment area is far from parochial (despite its peripheral location) and its dependence on Clearing/CAP (2.1%) is the lowest of all 11 regions. The South East is an amalgam of 9 separate universities within which Oxford, with 25% of the regional enrolment, plays a more subordinate role than does Cambridge in East Anglia. Other than a highish O/A ratio its performance is solidly eastern, given the earlier caveats about its E/A and E/18 ratios.

To some the East Midlands may be a surprising 'eastern' region, but earns its place through its consistency, O/A aside. Its universities (Leicester, Loughborough, and Nottingham) attract substantial applications from a widespread catchment (perhaps helped by geographical centrality) and sustain high entry standards and
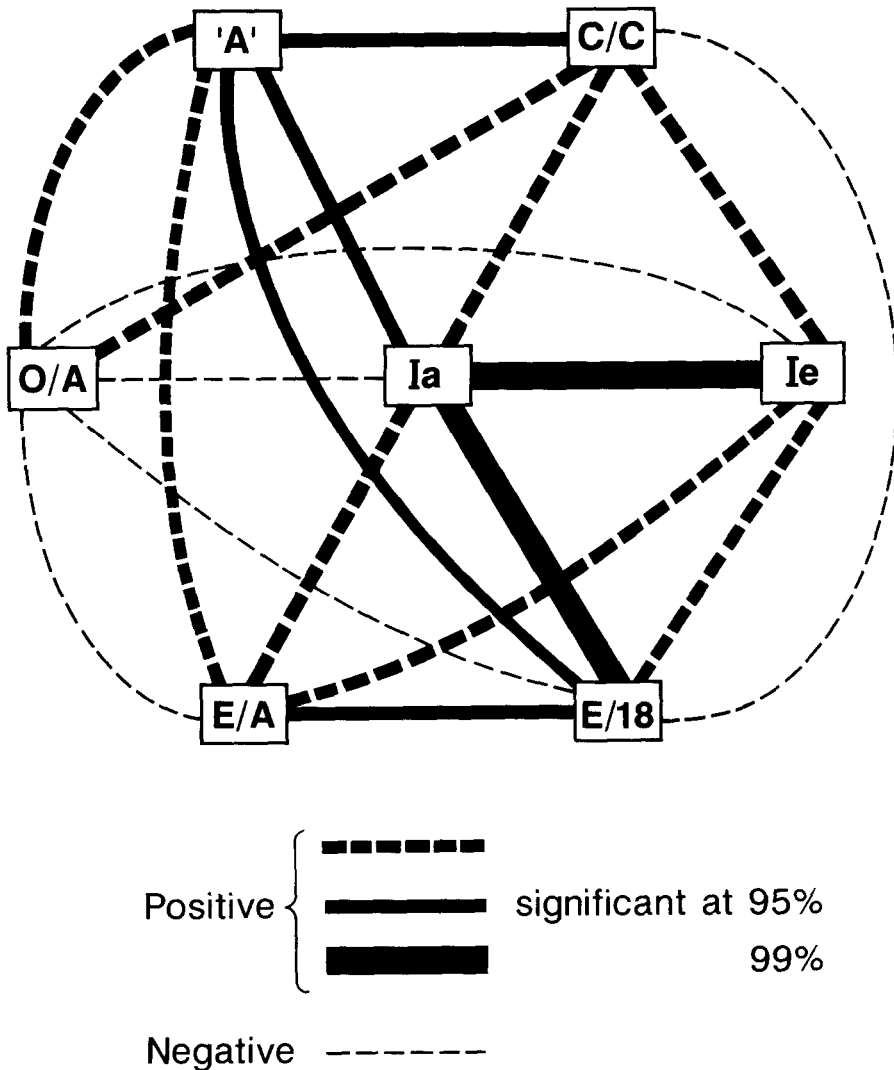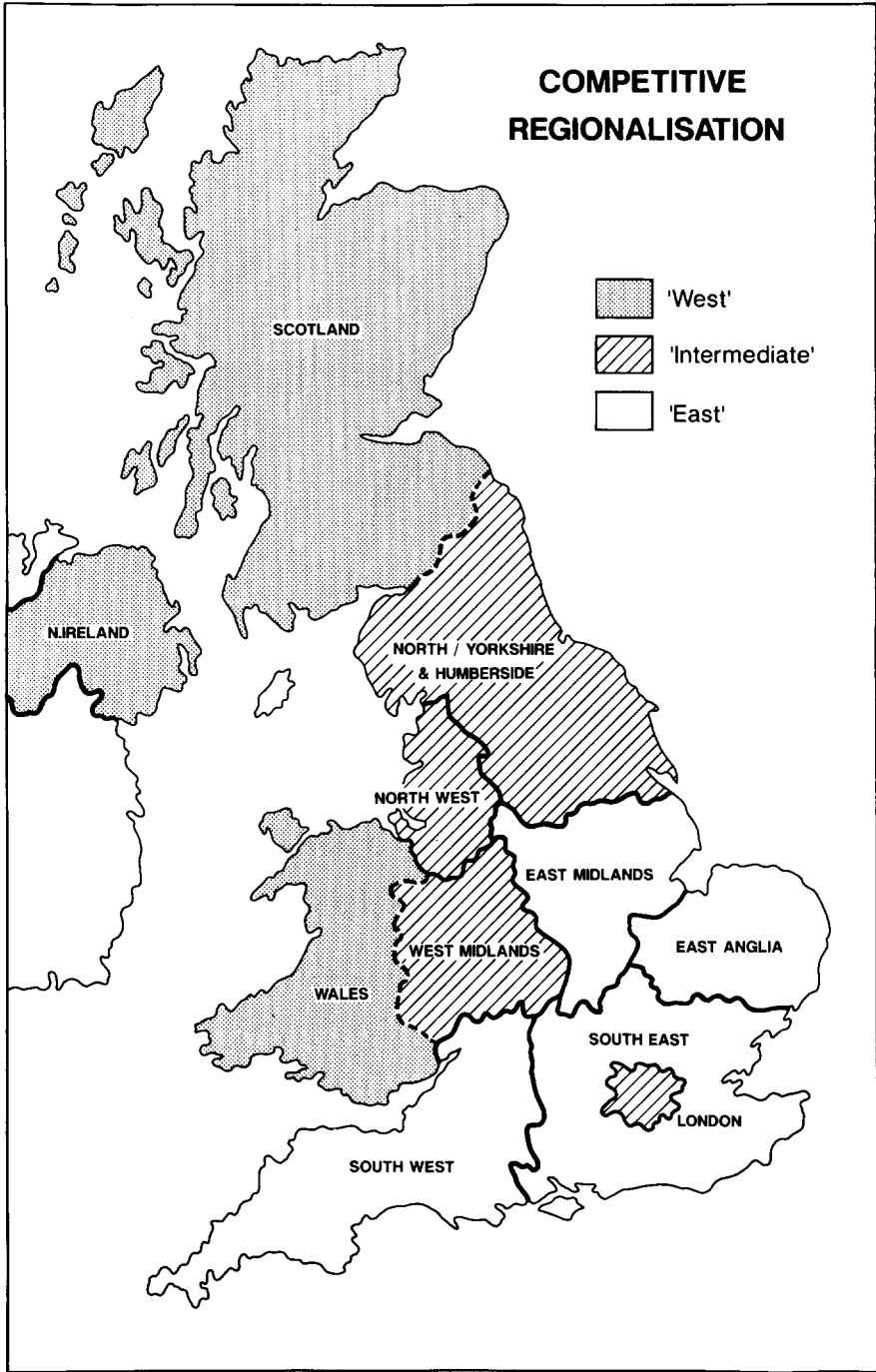
Fig. 4. Rank correlations among pairs of indices.

low Clearing and CAP dependence despite not being many applicants' first-choice, as its high average of 6.7 offers per enrolment implies.

b) *The West*

This is the most distinctive group of all. Northern Ireland, Scotland and Wales are some way more 'western' than other regions and only on O/A does the group not supply *the* most western region. Northern Ireland's internal disorder over the last

COMPETITIVE REGIONALISATION

SCOTLAND

N.IRELAND

'West'

'Intermediate'

'East'

NORTH / YORKSHIRE & HUMBERSIDE

NORTH WEST

EAST MIDLANDS

WEST MIDLANDS

WALES

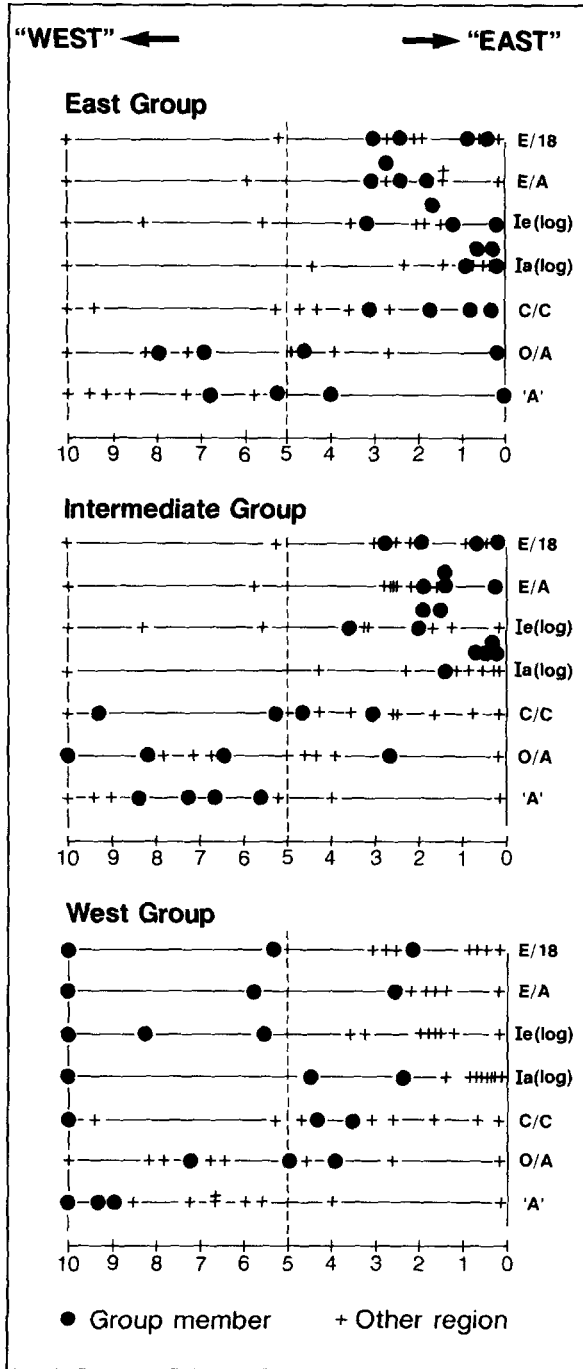EAST ANGLIA

SOUTH EAST

LONDON

SOUTH WEST

Fig. 5. Regional geography of university competitiveness.

two decades may have contributed to its performance but it would be unrealistic to suggest that it would otherwise not still be a relatively uncompetitive region for undergraduate recruitment without this added handicap.

In aggregate, this group is dominated by high mutual dependence between local universities and local students, especially in Northern Ireland and Scotland where, in addition to their high Ie and Ia scores, respectively 55% and 87% of all regionally-originating applications are for local courses. This symbiotic relationship may be multi-causal. Geographical isolation, the present (Scotland) and past (Northern Ireland) distinctive school examination systems to which local universities tailored their 4-year undergraduate degrees, a feeling among Scottish schools that English universities are hostile to their Highers exam system and the existence of regional course specialisms (Northern Irish or Scottish Law, Scottish History, Irish Studies...) all contribute to the tradition of attending the local university. Whether and how this affects the different indices varies from case to case. The tendency to apply locally in all 3 regions may temper the O/A ratios through the lack of external competition for these students, and the low interest from outside in courses in Northern Ireland and Scotland may also reduce their C/C ratios for reasons outlined earlier. Wales, in contrast, has rather lower Ie and Ia ratios and also the greatest C/C value of any region.

Another contributory factor in the low 'A' scores in all three may be that local students of modest ability perceive (or are advised) that local universities represent their best chance of a degree. With few outside applications and an eagerness to fill quotas, regional universities accept many of these local applicants, at the cost of lower entry standards. One consequence would be the resultant high proportion of successful applications and of undergraduates to 18-year olds among the resident populations, which are especially clear in the results for Scotland and Northern Ireland.

Such high university participation rates benefit local school-leavers; weaker students have a better-than-national chance of admission, while stronger ones can win places outside the region. But there is little benefit to the local universities in their consequential reputation for parochialism, modest academic standards and ease of entry. Independent evidence, consistent with this interpretation for Northern Ireland, shows the 'A' Level grades of its school-leavers choosing to study in British universities are superior to those taking degrees at Queen's (Belfast) or Ulster Universities (Osborne and Cormack 1989), just as the East-West model predicts (see Figure 1). Equally, these students do not discriminate sharply between places in universities and polytechnics, often preferring the latter 'over the water' to the former in their home region (Osborne, personal communication). From the regional point of view Northern Ireland certainly enjoys high participation rates (Osborne et al. 1988), though how far this is offset by the loss, perhaps permanently, of its most able sons and daughters is a moot point (see below).

In any expansionist future for higher education more competitive universities elsewhere are likely to cream off the best of students in this group, continuing the trend apparent in the UCCA statistical time series (see Osborne et al. 1984) for local school-leavers to apply outside their home region.

c) *Intermediate*

The remaining four regions – London, the West Midlands, the North West and the North/Yorkshire – are more average in competitiveness, though again with significant intra-group variation. The North/Yorkshire region is especially consistent, being the only region of the 11 never with either of the two most eastern or most western scores on any ranking: it is also more competitive than its group-mate, the North West, on all the 'university-region' criteria. In some respects – notably its O/A ratio, 'A' score and widespread catchments (Ie and Ia) – the West Midlands resembles its eastern neighbour. But if the E/A and E/18 values are ignored, for reasons already outlined, it performs less competitively than the South East and the East Midlands. Its C/C index is exactly double the East Midland's 4.4% dependence level, for example.

London is enigmatic. On the O/A basis it is second only to East Anglia in attracting students, but on 'A' Level grades and its 16.6% Clearing/CAP dependence is emphatically western. By English standards its ability to attract applications from non-Londoners is modest, yet these convert into final enrolments quite successfully. On present evidence the causal processes at work remain unclear. Are its admissions tutors lulled by such take-up rates into making rather too few offers? Do late withdrawals force a dependence on low achievers and/or Clearing? Does the high cost of metropolitan accommodation discourage applications from those unwilling to study from home? It must also be borne in mind that London's pattern in Figure 3 could be the aggregation of very different experiences of the many colleges into a composite profile typical of none of them individually.

Clearly, any regional grouping must be a subjective exercise, and certainly the distinction between the West and the rest is more emphatic than the East/Intermediate divide. However, if we accept this classification, albeit with caveats, we can use it to broaden the argument, couched so far in terms of university admissions, in two ways.

V. Extensions

a) *Higher education beyond undergraduate entry*

If teaching standards are much-of-a-muchness among British universities for any particular degree, *if* intake quality has some positive relationship to degree class and *if* the standards necessary to gain a particular class of degree are also comparable then the profile of degree classes among universities should reflect differences in quality of their intakes (Johnes and Taylor 1987). Many readers will feel these are three very big 'ifs' (especially the last two: Johnson 1988), but in model terms the inference is that East attracts the better students so it should produce proportionately more high class degrees.

Furthermore, in a competitive labour market East's graduates should be more marketable than those from West. Finally, East University should have the higher

research status. In the closed two-region system of the model its high quality undergraduates and overall superior status should enable East to recruit better researchers as staff and graduate students (see, for example, Lacroix and Proulx 1973). Equally, it will have a higher quality crop of its own graduates to retain for post-graduate research.

In practice, all three extensions of the model can be tested, the first from the percentage of graduating students gaining Firsts from each university in 1987/88 (see *The Times*, 1st August, 1989), the second from Johnes and Taylor's (1989) analysis of inter-university differences in graduate employment and the third from the August, 1989 university research-ranking assessments by the Universities Funding Council (UFC).[2]

The results aggregated by university region appear as Figure 6. On these new criteria alone not every region aligns with its previous group. London belongs in the East on two counts and the West on one, while Scotland is western only on UFC rankings. But, overall, the average performance of the three regional groups as previously constituted still assume the 'right' rank positions on all three counts, consistent with the view that the practical relevance of the East-West model is not confined to undergraduate enrolment.

b) *The wider space-economy*

The second extension moves beyond the university sector to the differential health of the wider inter-regional economic system, taking a longer-term and less parochial perspective on the economic impact of a university than the 'local multiplier' analyses which dominate the literature to date (Hudson 1974; Wilson 1975; Bonini et al. 1977; Lichty et al. 1978; Maier and Wahl 1980; Leslie and Brinkman 1988).
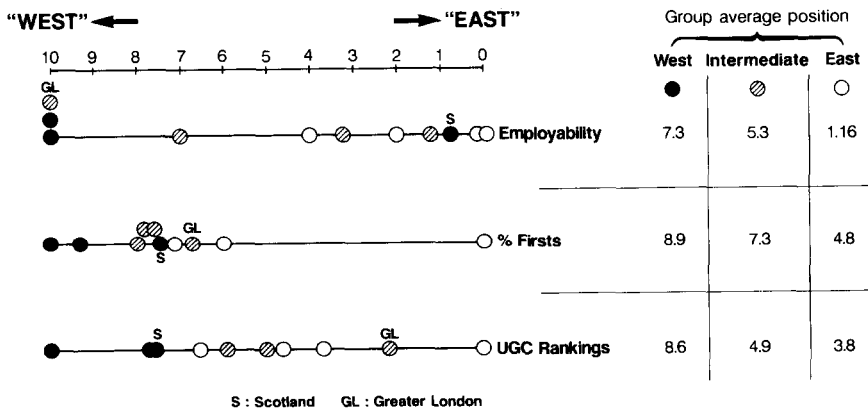

Fig. 6. Spectra of university regional competitiveness beyond undergraduate entry.

While attractive, competitive and prosperous universities can exist in depressed and under-performing regional settings (and *vice versa*) we can also envisage ways in which the fortunes of the two are inter-dependent, through a 'research' cycle and a 'labour supply' cycle. These cycles also interact, as described in Figure 7. Through the research cycle resources from local industry benefit university research activity which in turn generates advice to local firms, spins-off new products and processes and provides a flow of new entrepreneurial talent from ex-academics (Angel 1989; Howells 1986; Keeble 1989; Segal Quince Wicksteed 1989). In this way, for example, the recent UFC research rankings and their consequences for future research funding levels might have a direct economic impact on Britain's university towns (*The Times*, 22nd September, 1989).

However, the East-West model is probably more relevant to regional prosperity through the 'labour supply' cycle. The attraction of East University for annual cohorts of school-leavers owes much to its parent region's progressive image and affluence, to which the same students contribute further on graduating. The most able of each year's national graduates are accessible to Eastern recruiters, while many Eastern-trained graduates starting up on their own account prefer to do so nearby. Some of each such stream will be Easterners by birth, but others are ex-Westerners who remain after graduation. The economic lead of the East thereby widens, and also its social and cultural advantages, so adding to the pro-Eastern preferences of succeeding cohorts of school-leavers. In such ways inter-university competitiveness both reflects and enhances the difference between the two regional economies.

An obvious spatial parallel exists between the 'less-to-more' gradient of university competitiveness of Section IV and the UK's North-to-South prosperity gap (Martin 1988; Lewis and Townsend 1989; Hudson and Williams 1989; Smith 1989; Balchin
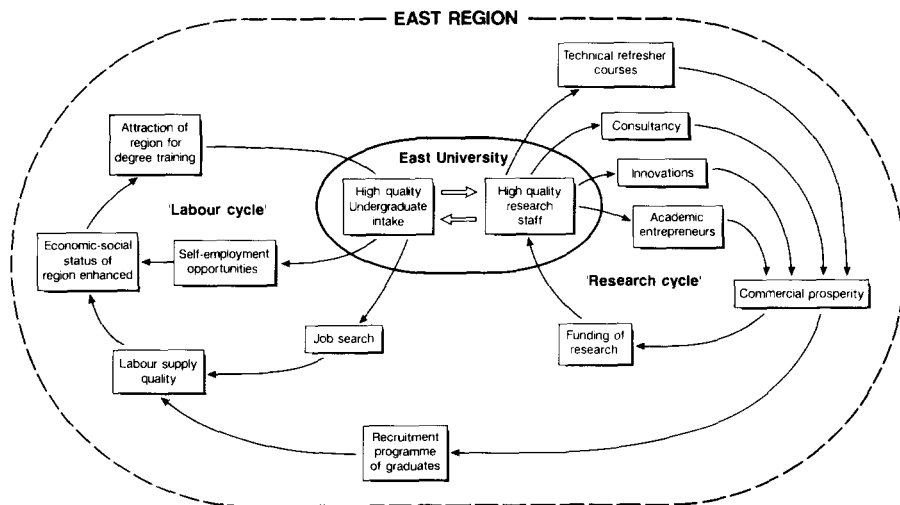

Fig. 7. The space economy and university competitiveness.

1990). Belatedly, (secondary) education has augmented the portfolio of variables on which this had been mapped (Bradford and Burdett 1989). Many see this 'divide' as having become ever sharper in the 1980s, while forecasters such as Cambridge Econometrics (CE/NIERC 1988) express confidence in its continuance and possible enhancement.

But trying to identify within this regional pattern the actual part played by higher education is no easy matter. Comprehensive data on the first-employment location of graduates from particular universities is not readily available, although that for at least one profession (dentistry) suggests an 'alma mater distance decay' effect from university training centres (Thexton and McGarrick 1983), while Johnston (1989) has traced a southwards drift in the career geography of the nation's 1980 cohort of graduates. The work of Johnes and Taylor (1989) cited previously shows how the inter-university intensity of the visitations by prospective employers can have a positive effect on their graduate employment rates, and it seems likely that these employers will selectively visit campuses producing the best quality graduates. Equally, the Northern Ireland experience is that the most successful 'lost' undergraduates (which, remember, have higher school grades than local degree course entrants) tend to find jobs in mainland Britain on graduating (Osborne et al. 1987).

Further afield, the big-city distribution of national universities in Japan encourages a major migration of freshmen from smaller centres, and later allows these dominant centres to reap the benefits of abundant able personnel (Muta 1988). Those graduates who *do* return home for work are differentially from lower-status universities, less attractive to leading employers (Wiltshire 1980). And American evidence highlights some states' concern over brain-drain losses to colleges elsewhere, the positive remedial efforts taken (Jaschik 1987), and how the economic prosperity of destination states (McHugh and Morgan 1984) and the academic reputation of out-of-state institutions (Simmons 1983) are important magnets for college students.

Much more research remains to be done into the complex of interrelationships sketched above but we know enough to appreciate that the implications of the East-West model are not confined to the university sector alone.

VI. Discussion

So far I have concentrated largely on the *current* regional pattern of competitiveness among United Kingdom universities for undergraduate recruitment, for the obvious reason that this generates something tangible to measure in the form of patterns and flows. Despite technical and interpretational caveats, a distinct university region pecking order exists, consistent over a range of indicators and generating a clear spatial pattern 'on the ground'. The 'least competitive' end of the spectrum is starkly defined, and the spectrum as a whole is echoed in other performance indicators of the university system and space economy. Good reasons can be suggested why this is more than just coincidence.

Assuming the higher education sector expands[3] in Britain, some particularly sharp questions arise for the less competitive universities. In the rivalry for undergraduate recruiting they will suffer a net loss of those they would otherwise have recruited and their regions experience a further drain of the more able school-leavers. One response would be to draw on the present markets of polytechnics and further/higher education colleges, thereby merely transferring the problem to other institutions, perhaps in the same region. A second would be the niche-marketing of selected subject fields where a university has a comparative advantage. Such a strategy may be 'home-grown' or engendered by outside support towards centres of excellence. As a third option, some 'western' universities may benefit from recruiting more non-UK students, perhaps cashing in on existing academic links overseas or geographical position. Northern Ireland campuses, and particularly Ulster University, already draw heavily on well-qualified students from the Republic of Ireland (Osborne and Cormack 1989), for example.

Alternatively, an improvement in the space economy status of the surrounding region might benefit its hitherto disadvantaged university in ways suggested previously. But at best this is a blunt and delayed-action way of tackling the unequal geography of higher education. Yet without such remedies the expansion of degree-level education in Britain seems likely to exacerbate the relative status differences among campuses and wider spatial discrepancies within the national society.

Present and future changes in student funding is another important issue relevant to the present argument. Whether through the new student loans system, the loss of housing and social security benefit, a possible graduate tax or full-cost tuition fees paid by students or their families, the burden of change will fall most severely on the less well-off (*pace* any means-tested scholarship system for the poorest). Two further consequences follow. First, more studying from home to reduce the burden of an undergraduate in the family benefits especially the less competitive, through an increased stock of undergraduate talent 'captive' to their home region. Secondly, and probably counterbalancing the first, universities drawing on more affluent regions and social sectors will benefit relatively in expansion as their market is less vulnerable to such cost escalations.

The mix of such students measured by the type of school attended also varies markedly across Britain's university regions (Hoare 1991). Those drawing proportionately heavily upon independent schools, such as universities in the South West, the South East and East Anglia, are competitive on the present analysis as well and so should enjoy a double benefit from expansion and funding changes, though at some cost to any desire to broaden their social and spatial profile of undergraduate entry. In university towns outside London where high private-market housing rents apply above-average dependence on the privileged segment of the undergraduate market will be all the more difficult to shed. Bristol is a case is point (*The Times*, 9th July, 1990).

The future structure of university education is more uncertain than at any time most of us can recall. Whatever way it does eventually change there will be regional implications. The purpose here has been to sketch the present basis of inter-university competition seen spatially, and extend this sectorally into other realms of

the national space economy and temporally into the uncertain future. Despite the fact that the higher education debate is conducted on a national stage it carries within it a number of very significant geographical consequences which deserve far more appreciation than they have received to date. This paper is one contribution to this end.

Acknowledgements

Appendix 1

Courses included in analysis

UCCA Code	Subject
C1	Biology
H2	Civil Engineering
G5	Computer Studies
L1	Economics
Q3	English
L8	Geography (Social Sciences)
V1	History
M3	Law
G1	Mathematics
H3	Mechanical Engineering
A1	Medicine

Notes

1. The regional divisions referred to are those adopted later for analytical purposes and illustrated in Figure 2.
2. The UFC research rankings have been analysed in terms of the total points score on the UFC's (lowest) to 5 (highest) scale as a proportion of the maximum attainable at each university, given its number of academic cost centres. This league table, as published in *The Times*, 26th August, 1989, is used to determine the (weighted) average proportion for each region. For success in graduate employment Johnes and Taylor calculate separately for each university, and for each of four years, the excess or deficit percentage of graduates going into employment and into further education and training based on the subject mix of its graduates, and national experience for each subject (see their Table 4). If for a given university the percentage of employment is positive for any one year, net of the further education and training figure, this scores as '1', and otherwise as '0'. The total score for all universities in a given region over the four years is then calculated and expressed as a proportion of the maximum attainable, which depends on the number of its constituent universities.
3. Since the paper was accepted for publication the UK Government has announced its intentions for

just such a major expansion of Higher Education. The White Paper *Higher Education: a new framework* envisages total numbers in a restructured Higher Education sector, within which the distinction between universities and polytechnics is removed, rising by 300,000 from their present 800,000 by the year 2000, a more massive growth than previous government statements had indicated as likely. As it would be accompanied by a continuing fall in 18-year olds as a proportion of the national population the penetration rate of Higher Education, and hence competition among institutions for the ablest students, should rise significantly.

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