


**RANKING ECONOMICS DEPARTMENTS WORLDWIDE ON THE BASIS OF PhD PLACEMENT**

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**Abstract**—Four rankings of economics departments worldwide in terms of graduate education are constructed. The central methodological idea is that the value of a department is the sum of the values of its PhD graduates, as reflected in the values of their current employing departments. Scores are derived as solutions to linear simultaneous equations in the values. The sample includes the top 58 departments, the composition of which is determined endogenously, invoking a criterion requiring more than three placements in the sample. Illuminating the current state and trends of economics PhD education, the conclusions should be of broad interest to PhD candidates, academics, and policymakers.

I. Introduction

A remarkable development in economic research is the emergence of a literature dealing exclusively with the evaluation of scientific performance. The multifaceted need for some of these rankings is increasingly viewed as critical for the proper functioning of the academic sector.1 While rankings in the past tended to rely on subjective methods such as opinion surveys,2 this trend comprises studies based on objective methods. In economics, this trend was pioneered by the journal ranking method of Liebowitz and Palmer (1984), giving rise to several studies ranking journals and/or departments according to various standards.3

The aim of this paper is to propose a ranking of economics departments worldwide based not on a measure of their research productivity but on the worth of their PhD program, as reflected in their ability to place their PhD graduates at top-level economics departments or business schools. As such, it is the first ranking that places PhD students and graduate education in a key position, within the class of objective rankings.

The methodology is an adaptation of the Liebowitz-Palmer method consisting of replacing journal citations by faculty hires and gives rise to an objective ranking in terms of long-run placement. For an n-department sample, the idea is to derive an endogenous relative valuation of each department by specifying a system of n equations wherein the value of department i is a weighted average of the values of all other departments, with the jth weight being the number of placements department i has made in department j. Thus the value of each placement is given by the score of the employing department, which is itself simultaneously determined in the underlying fixed-point relationship. The final score of a department is then simply the sum of all the values of its individual placements. We provide a simple theoretical foundation for this method that sheds light on its meaning and computation.

Within their respective contexts, faculty hires probably constitute a more reliable and stable indicator of influence than journal citations. Indeed, the latter should ideally be distinguished in terms of their primary or secondary nature vis-à-vis the contents of the citing article, while the latter tend to be of more uniform value for the recruiting department. This offsets the disadvantage of placements over citations in terms of statistical significance.

The data were collected in April 2006 directly from the Web sites of the relevant departments. The size of the sample was determined by invoking a selection criterion that required strictly more than three PhD placements within the sample, at least one of which abroad. The resulting final list of placements thus consists of faculty members that held a position at any rank at one of the departments in the sample as of early 2006, irrespective of PhD cohorts. With some methodological assumptions, the contribution of business schools to the demand and supply sides of the economics PhD market is taken into consideration.

From the primary ranking, three other rankings are derived, based on truncations of the original data set either to the period 1990–2006 and/or to placements in economics departments only. The motivations for these changes are to provide a ranking that does not entail biases against new or improved economics departments and to assess the contribution of business schools to the hiring side of the economics PhD market, respectively.

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1 Universities in the United Kingdom periodically undergo government-mandated evaluations of academic departments in terms of aggregate research output, upon which a substantial portion of their research funding is contingent.

2 A well-known example is a ranking of PhD programs in the United States by the National Research Council as a survey of department chairmen. Another is the popularized yearly survey by *U.S. News and World Report*.


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One of the primary aims of the present exercise is to provide an up-to-date objective source of guidance in the evaluation of PhD programs for potential recruiters, university administrators, and benefactors as a more informative alternative to the established overall reputation of the institutions. To this end, our ranking is arguably the most relevant one.\(^4\)

PhD education in economics emerges as a highly concentrated activity, with only ten countries as contributors and the score distribution being strongly skewed to the top. The well-known superiority of U.S. economics departments in terms of the general quality of PhD graduates is unambiguously confirmed by these rankings. Surprisingly, for PhD placement, the top ten U.S. places appear to cluster rather into three separate subgroups, with the dominance by Harvard and MIT prominently confirmed. The participation of good U.S. business schools to the hiring side of the economics PhD market is substantial and growing, and tends to exacerbate the concentration of the rankings while leaving the ordinal ranking virtually unaffected at least for the top twenty places. By contrast, non-U.S. departments typically place very few graduates within business schools. While some newly formed departments in Europe have achieved scores comparable to those of existing leading departments there, U.S. departments that have undergone a major successful build-up in terms of faculty in the past fifteen years experienced an increase in their score that falls quite short of reflecting their current faculty strengths. Further discussion and comparison with other rankings are given below.

II. Data and Methodology

A. Data Gathering and Sample Selection

For each economics department in the sample and the business school of the same university, we collected data on faculty members holding a full-time appointment at any academic rank (assistant, associate, or full professor in the United States and analogous ranks at non-U.S. universities) as of April 2006. For each individual, the information consisted of the date of PhD graduation, the granting university, and the current affiliation, but not the history of employment.\(^5\) Thus the term "placement" in this paper clearly differs from its customary use in academic life as the first long-term affiliation of a PhD graduate. Consideration was limited to individuals holding appointments at economics departments and business schools, and not at other departments.\(^6\) Those with an economics appointment are included irrespective of their PhD discipline (some hold PhDs from business administration or mathematical sciences). Individuals with a business school appointment must hold an economics PhD to be included. Thus while business PhDs employed at business schools are excluded (unless they hold a joint appointment in economics), the contribution of these schools to the demand and supply sides of the economics PhD market is fully accounted for.\(^7\)

A key decision is to determine the selection criteria for the sample of economics departments. It should be large enough to ensure that the study would not amount to an update of where exactly the usual top ten places stand today, and that it would include lesser-known places that have undergone serious improvements in recent times, as well as a selection of departments outside the United States to allow for international comparisons. On the other hand, the criteria must be demanding enough to include only departments that are making a recognized contribution to PhD education on a worldwide competitive basis.

**Inclusion Criterion:** To be included, an economics department must have placed strictly more than three of its PhD graduates as current faculty members, as of April 2006, in economics departments included in the sample (other than itself) or in business schools from the same set of universities, with the further requirement that at least one of these placements is in a department or a business school located in a different country.

As business schools are not ranked as such, a key assumption is that a placement in a business school is assigned the value of the economics department of the same university. As rankings of economics departments and business schools tend to have a good correlation, this is a good approximation (it will be confirmed as such by our ranking at least for the top twenty places). Likewise, a placement from a department other than economics accrues value to the same university's economics department, which is justified since such an individual would typically have been associated to some degree with the latter's PhD program.

Invoking this criterion gives rise to a sample of 58 economics departments worldwide, which is just about the target size we had in mind as appropriate for this study. As there is no systematic way of uncovering these departments, our approach involved some trial and error.

While most reactions from colleagues about this criterion tended to argue that the threshold of more than three was too low, we felt it was desirable to err on the side of inclusion to include enough international universities to allow for meaningful and representative comparisons.\(^8\) While this threshold was binding for only three departments, 22 others (roughly 40\%) have placed at least 25 graduates each in the sample.

The additional requirement of placing at least one PhD graduate abroad is justified on two separate grounds. First, it seems like a reasonable criterion to justify a contribution to PhD education at a worldwide competitive level, as economics is probably the most internationally integrated of all disciplines. Second, and more importantly, this requirement emerged as critical to rule out the presence of some departments that have succeeded in placing more than three PhD graduates in economics departments within the same country or even city (including their own department) as part of a hiring process motivated primarily by concerns outside of the competitive realm.

\(^4\) For some other purposes, such as guidance for PhD applicants, a ranking based on value added would be more desirable. Such a goal would require some normalization by the value of incoming students, which is beyond our scope due to obvious data limitations. By measuring the value of outputs only, our rankings embed the quality of the recruiting strategy (of PhD students) employed by departments as one of the relevant dimensions.

\(^5\) This information was collected directly from the departments' Web sites whenever it was available and up to date. In some cases, we solicited information directly from departments or from national academic databases.

\(^6\) This excludes economics PhDs employed at related departments, such as public policy or political science. As such people often hold a joint appointment in economics, this is probably not a major loss of precision. Including such people poses serious methodological problems in that it would require an endogenous evaluation of these departments as "economics departments" in view of our methodology, as will become clear below.

\(^7\) As PhD programs in business schools tend to be small, we are capturing the bulk of economics-related activity.

\(^8\) Another reason for this threshold is that it is convenient to use the same threshold for our second ranking based only on more recent placements. In this case, the same threshold is of course more demanding.
These considerations ended up being relevant in a few countries. In the converse direction, the requirement of one foreign placement did not disqualify any well-established department that would have otherwise qualified. U.S. departments have not been subjected to this secondary requirement, the justification being that faculty hiring is well-known to be competitive in the United States. Three U.S. departments in the sample fail the requirement: Duke U, Penn State U, and U Washington, which we interpret to mean that these do not satisfy the international dimension alluded to earlier.

Another key dilemma we faced was to determine whether own hires, that is, faculty members for whom the employing and the PhD-granting departments have constantly been the same, starting at graduation, ought to count in the present ranking. This issue is particularly troublesome in light of the fact that many non-U.S. departments continue to hire their own graduates on a somewhat regular basis for two opposite reasons. The first is that the local candidate may simply be the best person they could get in a particular year. The second, rather unfortunate, reason is that even some of the best non-U.S. departments still have “old-fashioned” members who, periodically if not systematically, endeavor to restrict hiring to or at least favor their own graduates irrespective of quality considerations, and sometimes succeed in imposing their views on their colleagues. In view of the sustained coexistence of these two conflicting ways of managing the hiring process, the appropriate course of action was to select, on the basis of faculty members’ CVs, those who were probably hired according to international standards. To this end, we included all individuals whose CV is consistent with a positive tenure period if not systematically, endeavor to restrict hiring to or at least non-U.S. departments still have “old-fashioned” members who, periodically if not systematically, endeavor to restrict hiring to or at least favor their own graduates irrespective of quality considerations, and sometimes succeed in imposing their views on their colleagues. In view of the sustained coexistence of these two conflicting ways of managing the hiring process, the appropriate course of action was to select, on the basis of faculty members’ CVs, those who were probably hired according to international standards. To this end, we included all individuals whose CV is consistent with a positive tenure decision within six to nine years of PhD graduation at a top-sixty economics department in the United States. This is obviously an approximate and partly subjective criterion.

B. Methodology for the Rankings

Our rankings are based on an adaptation of Liebowitz-Palmer’s method to PhD placements. Let \( q_{ij} \) be the number of PhD graduates from economics department \( i \) employed by economics department (or business school) \( j \) as of April 2006, where \( i \) and \( j \) belong to our sample of \( n \) departments, the selection of which was based on the inclusion criterion above.

Let \( Q = [q_{ij}]_{n \times n} \) denote the placement matrix and \( q_i = [q_{ij}]_{1 \times n} \) be the vector whose \( j \)th coordinate \( q_{ij} = \sum_{j=1}^{n} q_{ij} \) is the total number of graduates in the sample from department \( i \). The first step of the ranking procedure is to take the column vector \( q \) and divide each of its entries by the column sum. This yields the first ranking, which is treated as a vector of weights in the next iteration. We multiply the number of placements of department \( i \) in department \( j \) by the latter’s weight. Again, we add these weighted numbers along each row and divide by their total to get the next vector of weights, normalized to sum to 1. In symbols,

\[
v_{ij} = \frac{q_{ij}}{\sum_{j=1}^{n} q_{ij}} \quad \text{and} \quad v_{ij} = \frac{\sum_{j=1}^{n} (q_{ij})v_{(j-1)} + v_{(j-1)}}{\sum_{j=1}^{n} (q_{ij})v_{(j-1)} + 1}.
\]

The score of the \( j \)th department and hence the score \( n \)-vector are given by

\[
v_j = \frac{\sum_{j=1}^{n} (q_{ij})v_{(j-1)} + v_{(j-1)}}{\sum_{j=1}^{n} (q_{ij})v_{(j-1)} + 1}.
\]

Thus \( v \) is the eigenvector corresponding to the largest (positive) eigenvalue, whose existence and uniqueness follow from the Perron-Frobenius theorem for positive irreducible matrices (e.g., Seneta, 1981). While Liebowitz and Palmer report that this process converged quickly for their citation data, this result guarantees convergence for any such data set as long as the natural property of irreducibility is verified. This provides a simple and rigorous theoretical foundation for the procedure that fully clarifies when, how, and why it actually works.

III. The Rankings

This methodology is applied to four different rankings using different parts of the data, all displayed in table 1. The first ranking, R1, is based on the entire data set as described in sections IIA and B. The other three rankings are based on different subsets of the entire data set, as follows. The second ranking, R2, reflects placements within only economics departments for the entire period. By the same inclusion criterion, four institutions from the original sample no longer qualify (as indicated by the mention of “f.i.t,” or “failed the inclusion test”). The third ranking, R3, considers only graduates from 1990 onward, with the original data truncated accordingly, and all other aspects of R1 preserved. The same inclusion criterion eliminates fourteen institutions from the original sample, reducing our sample to 44 departments for R3. The fourth ranking, R4, further restricts the data of R3 to placements in economics departments only. The next two columns, “total # grad” and “# grad in econ,” give each institution’s total placements over the entire period in R1 and R2 respectively, that is including and excluding those in business schools. The last column, “# grad in US top 10,” gives each institution’s total placements in the top ten U.S. economics departments (LSE) and Oxford, which indeed correspond to the classical U.S. top ten.

NOTES
IV. Discussion of the Results

This section provides a general analysis of the rankings and draws conclusions of potential interest to educators, graduate students, and policymakers. We begin with general observations that can be seen from a cursory inspection of the rankings. While the cardinal scores should not be taken at face value, they do allow for some precise

<table>
<thead>
<tr>
<th>R1</th>
<th>Economics Dept.</th>
<th>R1 score</th>
<th>R2 score</th>
<th>R3 score</th>
<th>R4 score</th>
<th>total # grad</th>
<th># grad in econ</th>
<th># grad in U.S. top 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MIT</td>
<td>100.00</td>
<td>93.11</td>
<td>100.00</td>
<td>93.11</td>
<td>255</td>
<td>158</td>
<td>74</td>
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<tr>
<td>2</td>
<td>Harvard U</td>
<td>97.70</td>
<td>100.00</td>
<td>85.36</td>
<td>97.96</td>
<td>252</td>
<td>160</td>
<td>58</td>
</tr>
<tr>
<td>3</td>
<td>Stanford U</td>
<td>37.10</td>
<td>38.29</td>
<td>43.69</td>
<td>59.34</td>
<td>166</td>
<td>119</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>Princeton U</td>
<td>33.90</td>
<td>37.56</td>
<td>34.91</td>
<td>43.84</td>
<td>131</td>
<td>107</td>
<td>29</td>
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<tr>
<td>5</td>
<td>U Chicago</td>
<td>15.40</td>
<td>12.00</td>
<td>37.40</td>
<td>45.30</td>
<td>45</td>
<td>38</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>Yale U</td>
<td>20.10</td>
<td>22.04</td>
<td>20.04</td>
<td>30.13</td>
<td>107</td>
<td>87</td>
<td>29</td>
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<tr>
<td>7</td>
<td>UC-Berkeley</td>
<td>18.58</td>
<td>17.05</td>
<td>28.95</td>
<td>115</td>
<td>98</td>
<td>58</td>
<td>20</td>
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<tr>
<td>8</td>
<td>Oxford U</td>
<td>13.55</td>
<td>7.10</td>
<td>3.97</td>
<td>45</td>
<td>38</td>
<td>20</td>
<td>6</td>
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<td>9</td>
<td>U Minnesota</td>
<td>12.60</td>
<td>5.21</td>
<td>8.05</td>
<td>25</td>
<td>22</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>Northwestern U</td>
<td>7.80</td>
<td>1.23</td>
<td>1.72</td>
<td>13</td>
<td>10</td>
<td>9</td>
<td>2</td>
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</table>

TABLE 2.—DESCRIPTIVE STATISTICS FOR TABLE 1

<table>
<thead>
<tr>
<th>R1</th>
<th>R2</th>
<th>R3</th>
<th>R4</th>
<th>Herfindahl-Hirschman index</th>
<th>2-largest market share</th>
<th>7-largest market share</th>
<th>Correlation (Ri, total # grads)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1,215.51</td>
<td>1,059.42</td>
<td>918.36</td>
<td>0.94</td>
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<tr>
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<td>3</td>
<td>4</td>
<td>5</td>
<td>1,059.42</td>
<td>918.36</td>
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<td>918.36</td>
<td>918.36</td>
<td>0.87</td>
</tr>
</tbody>
</table>

(*) means the department fails the additional international placement criterion.
comparisons. Economics PhD education emerges as a highly con- 
centrated activity, with the top few departments scoring substantially 
higher than the others in all four rankings (see table 2). Another 
reflection of the high concentration is the small number of countries 
appearing in the rankings: the United States, United Kingdom, Can-
da, France, Spain, Belgium, Australia, Denmark, Israel, and Swe-
den. The latter four countries are each represented only by one 
institution. The well-known overall superiority of U.S. departments in 
terms of the general quality of PhD graduates is strongly reflected in 
these rankings. Hiring of economists by business schools is a 
significant component of overall placements. In view of the very low 
relative scores of the departments at the lower end of the rankings 
(with the top score normalized at 100%, departments in the bottom 
half each have a score of less than 1%), the fact that the inclusion 
criterion did indeed err on the side of inclusion is strongly confirmed. 
Including more departments by imposing less stringent placement 
requirements would result in a negligible gain in precision.

We now elaborate on these conclusions. Table 2 and the column “# 
grad in U.S. top 10” give various standard measures of “industry 
concentration” for our rankings. These measures point to a modest 
decrease in the level of concentration over time (from R1 to R3). In 
particular, the overwhelming dominance of Harvard and MIT in R1 
has shrunk a bit in R3, although it still persists to a remarkable extent. 
In the reverse direction, in the top league, Chicago, Stanford, and 
Northwestern recorded notable gains. These changes are more pro-
nounced in going from R2 to R4. The extremely steep rate of decline 
of the scores as one moves down the rankings suggests that, with few 
exceptions, only top departments manage to place PhD graduates in 
top departments on a regular basis. Yet, while the top ten U.S. 
economics departments are often portrayed as forming a closed clique 
in terms of hiring, the column “# grad in U.S. top 10” indicates that 
20% of their faculty is composed of PhD graduates from outside the 
U.S. top ten departments, of which one-third obtained their PhDs from 
non-U.S. universities. As a consequence, it seems fair to say that these 
numbers rather refute the insularity hypothesis.

As to the participation of business schools to the hiring side of the 
economics PhD market, comparing R1 and R3 on the one hand and R2 
and R4 on the other, along with a look at the data, reveals a number 
of observations of interest. With hires by business schools forming a 
substantial part of overall hiring, this appears to be to a large extent 
part of a recent and growing trend (60% of the top twenty places 
recruited between 50% and 85% of their current business school hires 
after 1990). The rate of decline of the scores is higher when business 
schools are included, the MIT/Harvard prominence being strongly 
exacerbated, suggesting that business schools conduct even more 
selective hiring than economics departments. Despite the significance 
in a cardinal sense of the contribution by business schools, a remark-
able observation is that this hardly affects the ordinal ranking of the 
economics departments: R1 and R2 on the one hand and R3 and R4 
on the other reflect virtually the same ordinal ranking for the top 20 
places. This ceases to hold as well for the bottom half of the places; 
a key reason is that the level of placement of non-U.S. economics 
departments in business schools is relatively minor (the only clear 
exceptions are LSE and Toronto). Finally, the level of participation 
of business schools is highly correlated with rankings amongst such 
schools, that is, better business schools tend to hire more economics 
PhDs.

The first step of the recursive version of the method, as described 
earlier, measures the total placements each department has made in the 
year in question (see columns “total # grad” and “# grad in econ” of table 1). 
As such, it already incorporates a rough measure of the quality of the 
PhD program since our sample comprises only the highest-scoring 
departments in terms of PhD placement. A somewhat surprising 
outcome is that the rankings implicit in those two columns and the 
corresponding actual rankings are remarkably similar, as reflected in 
the correlation coefficients in table 2. While this stands in sharp 
contrast to the case of journal rankings, this result simply reflects the 
fact that the best PhD programs are also those that produce the largest 
numbers of top-level PhDs, which is quite natural in view of the 
characteristics of this market. Indeed, the best programs receive more 
quality PhD applications, can thus afford larger faculties, and provide 
a richer program with a more diversified set of courses and closer 
research supervision. This is no doubt also facilitated by their being 
mostly well-endowed private schools. Naturally, this high correlation 
reflects a welcome sense of overall efficiency in terms of world 
welfare. It also follows from this correlation that a measure of average 
placement quality obtained by dividing scores by number of place-
ments would not differ significantly from the total score.

The share of non-U.S. departments in the sample is remarkably 
constant over time at 36% (21 out of 58 departments in R1 and 16 
out of 44 in R3). However, for economics-only placements, the 
share of non-U.S. departments increased from 35% to 38% from 
R2 to R4. While this gain is rather minor, it is nevertheless 
noteworthy that many of the non-U.S. departments have made most 
of their nonlocal placements (those excluding own hires) in the 
past fifteen years. In other words, their number of placements is 
only slightly lower in R4 than in R2. This indicates that a modest 
catching-up trend is under way. The reason this observation does 
not have a significant impact on their overall score is simply that 
their placements are often limited to departments at the lower end 
of the ranking.

Several departments have entered the global market for PhD 
education in the past fifteen years at a level that earned them a place 
in the present rankings. Some are drastically improved departments

13 While located in Italy, the European University Institute is a European-
wide graduate school that functions according to international norms and 
programs.
14 Indeed, most internationally oriented non-U.S. departments that are 
strongly committed to competitive hiring attend the North American 
ASSA meetings and tend to aim their recruitment effort at those selected 
graduates of good U.S. departments that appear promising in terms of their 
potential to move to, and remain in, their country of location. The rankings 
vindicate the well-founded nature of this broadly observed hiring strategy.
15 All four rankings reflect a bias in favor of larger departments. While 
one might be tempted to normalize the scores by faculty size, we decided 
against such a step because faculty size and the concomitant diversity of 
scholarly expertise and availability for research mentoring are critical 
dimensions of PhD education.
comparative purposes because our own data spans a longer period than the recent ranking in Combes and Linnemer (2003, Appendix B), which tends to fall at a much lower rate. This may be seen for instance in the productivity also produce outcomes that are lopsided at the top, scores from Princeton, and 7% from each of Chicago and UC-Berkeley.

Our findings may also be usefully related to various rankings constructed on the basis of research output alone. Coupe (2003) develops a ranking of the top hundred most research-productive economists worldwide and reports a high level of concentration; 25% of these scholars are PhDs from MIT, 14% from Harvard, 9% from Princeton, and 7% from each of Chicago and UC-Berkeley. While department rankings on the basis of faculty research productivity also produce outcomes that are lopsided at the top, scores tend to fall at a much lower rate. This may be seen for instance in the recent ranking in Combes and Linnemer (2003, Appendix B), which also shows that the gap in scores between the top U.S. and non-U.S. departments is less dramatic in research rankings than it is in our PhD program ranking.

A comparison with the research rankings of the top fifty U.S. departments by Dusansky and Vernon (1998), or DV, reveals larger discrepancies. A key reason is that research rankings are known to have pervasive variations across time periods, which in part reflects the high mobility of economics professors. Nevertheless, this research ranking can be invoked to confirm that newly reformed economics departments such as New York U (#6 in DV), Boston U (#7), UC-San Diego (#9), and U Texas-Austin (#11) have achieved a very high rank in terms of the quality of their faculty. Interestingly, a further confirmation of their new status is that these four departments occupy the top four places in the NRC subranking based on the criterion of "change in quality," that is, on a measure of the level of progress made in recent years (as of 1994). However, their standing is not nearly as high in our ranking (U Texas-Austin did not even make our top 58). This discrepancy is further evidence of the reputation lag that follows the fact that the overall name of a university plays a major role in the ability of its departments to attract highly qualified graduate students.

REFERENCES


