

Some Evidence on the Future of Economics

Andrew Oswald and Hilda Ralsmark of Warwick University collect and study the CVs of 112 assistant professors in the top ten American departments of economics, and treat these as a glimpse of the future. They find evidence of a remarkable brain-drain from other nations and that the great majority of these assistant professors are doing empirical rather than theoretical work. The findings are examined alongside forecasts made in the 1991 Centenary issue of the *Economic Journal* on 'The Future of Economics'. Thanks go to Amanda Goodall for helpful discussions.

As part of a larger study of elite scientists, we have been collecting information on young American economists. This was done by collating, and examining the patterns in, the CVs of all assistant professors in the top-10 departments in the US. We treat these individuals as data points. Arguably, they help give us a glimpse of the future.¹

We find evidence of a severe brain drain — a funnelling of talent into the United States — at the bachelor-degree level. The typical assistant professor has a BSc from outside the US (though a PhD from inside the US). Put loosely, three quarters of young

American economists are not Americans. Contrary to dark assessments of the state of academic economics — including some in the 1991 'The Future of Economics' centenary issue of the *Economic Journal*, reprinted as a set of essays in Hey (1992)) — the great majority of these young economists are doing empirical research. Of our 112 researchers, relatively few do deductive theory. Many commentators who criticise economists as obsessively mathematical and un-empirical have a view of economics that is now out-of-date. The future of economics in the elite American universities is likely to be heavily applied. We show also that the male-to-female ratio among assistant professors is now approximately 3 to 1, and that the most-studied areas of economics are macroeconomics, econometrics, and labour economics (though these days this encompasses topics only obliquely related to labour markets).

Our results seem potentially of interest to those concerned with debates such as that articulated in Morgan (1988). He demonstrated, and worried openly about, the fact that half of the articles published in the *American Economic Review* and the *Economic Journal* contained no data. He found that in physics journals the number was just 12 per cent and in chemistry approximately zero.² Our numbers may also be relevant to discussions about the state of the European and American economics professions (Machin and Oswald 2000; Neary *et al* 2003; Laband and Tollison 2003; Oswald 2007) and about the brain drain (Saint-Paul 2004).

Higher education is big business. Approximately 2.1 million European Union students graduated in the year 2000 compared to 2.07 million in the US. Despite this, the EU employs many fewer researchers per 1,000 workers (5.4 per cent) in the labour force compared to the US (8.7 per cent) (Woods 2003). The trans-Atlantic drain is fairly small and has been estimated to be 0.5 to 1 per cent (Saint-Paul 2004). Nevertheless, these are top performers within their fields. When only considering the United States labour force with doctoral degrees in the Science and Engineering field, 29 per cent of those conducting R&D are foreign-born (Johnson and Regets 1998).

In 2001, the European Council of Ministers adopted 'The Barcelona Objective', stating that all EU members should spend a minimum of 3 per cent of GDP on research by 2010 (EC 2002). At that point, the EU was estimated to spend 1.9 per cent, compared to the US's value of 2.8 per cent. This strategy was meant to create 400,000 new jobs for European scientists every year (Woods 2003). Yet, by 2003, only a few countries had met the criteria. The gap between EU and US research spending continues to widen.

Some evidence

We gather primary data on assistant professors from ten of the highest-ranked economics departments in the US. The departments were chosen using www.econphd.net.

Our data set was compiled in January/February 2007. In total, we obtained biographies (usually by reading people's CVs published on the web) on 112 assistant professors. Stanford University has the highest number in the sample with 16 and the University of Chicago the fewest with 6 assistant professors. In our data, there are 26 women.

We wished to document both the research areas and research styles of the economists. The following classification was used. If fewer (more) than 25 per cent of a person's papers used data, he or she was defined as a theoretical (empirical) researcher. Otherwise, the person was assigned to an intermediate category of someone doing

"The risk ... seriously exists that the discipline progressively loses touch with real problems."

Edmond Malinvaud. 'The Next Fifty Years' in *Economic Journal* Centenary Issue, January 1991, reprinted in Hey *et al* (1992).

"I know... one section of scholars...regard as their inferiors those who contend the need to observe the real world. This phenomenon is a palpable symptom of scientific degeneration."

Michio Morishima. 'General Equilibrium Theory in the Twenty-First Century'. *Ibid*.

Table 1: Ranking of Economics Departments

Ranking	Name of University	Location of University	No. of Ass't Profs in Data Set
1	Harvard University	Cambridge, MA	14
2	University of Chicago	Chicago, ILL	6
3	Massachusetts Institute of Technology(MIT)	Cambridge, MA	9
4	University of California	Berkeley, CAL	12
5	Princeton University	Princeton, NJ	11
6	Stanford University	Palo Alto, CAL	16
7	Northwestern University	Chicago, ILL	12
8	University of Pennsylvania	Philadelphia, PA	12
9	Yale University	New Haven, CT	9
10	New York University	New York City, NY	11

both theory and empirics. This type of information is missing for three assistant professors, one in Harvard, Stanford and New York University respectively, which decreases our effective sample size to 119. People's main areas of research were recorded. Data on gender were also collected.

The results reveal *ex post* a striking brain drain: only 25 per cent of the sample had obtained their first degree in the US and 87 per cent got their Ph.D there. Assistant-professor positions are not evenly distributed between the genders: 24 per cent are female and 76 per cent male. Purely theoretical work is uncommon. Almost half of these economists focus on empirical research; one third do a mixture of theory and applied work; only one fifth do entirely, or almost entirely, purely theoretical research (Figure 1). Closer inspection finds a lot of work that touches other social sciences, plenty of gathering of primary data,³ and much evidence of laboratory and field experiments.

Table 2: The Ten Most Popular Research Areas of the Assistant Professors (people could list more than one)

Research area	Number of researchers
Macroeconomics	33
Econometrics	28
Labour economics	25
Industrial organisation	15
Game theory	14
Growth and development economics	13
International economics	11
Applied microeconomics	11
Contract theory	7
Finance	7

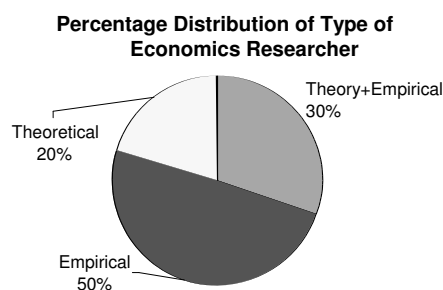
The 10 most popular research areas are listed in Table 2. The full list of areas is available on request. We find that the three most popular fields are macroeconomics, econometrics and labour economics.

Conclusions

We hope these simple data might be of interest to those concerned with the state of academic economics, with long-range academic planning, and with brain-drain issues.⁴ Our main findings are the following:

- In economics there exists a remarkable brain-drain, after the bachelor-degree, towards the United States.
- The 112 assistant professors in our sample are heavily involved in empirical research. In a sense, this fact runs contrary to longstanding worries expressed by authors such as Morgan (1988).
- Macroeconomics, econometrics and labour economics are the dominant fields.
- Approximately one quarter of these young economists are female.

Finally, we found it valuable to sit down with our results and open them up on the left-hand side of the desk while turning the pages of the interesting Hey (1992) volume on the right-hand side of

Figure 1

Note. For this exercise, we denote someone as 'theoretical' if more than three-quarters of their papers use no data, and as 'empirical' if more than three-quarters of their papers do use data. The other economists are classified as theory+empirical. Classifying people has an arbitrary element to it; it seems inevitable that there will be measurement error in our data.

the desk. Some of the latter essays, which aimed to forecast the profession to come, have weathered well in 15 years. Alvin Roth, for example, looks prescient⁵ when he says: 'I anticipate that experimental economics will play a growing role...' Milton Friedman's essay is modest about economists' achievements and frank about the role of technical expertise: 'Again and again, I have read articles written primarily in mathematics, in which the central conclusions and reasoning could readily have been restated in English, and the mathematics relegated to an appendix.' Although he may not have foreseen that a psychologist was soon to win the Nobel prize in economics, far-sightedness is found too in the words⁶ of Edmond Malinvaud: 'Psychologists, sociologists, and political scientists will offer us a rich body of evidence... Eventually the profession will find these contributions useful and even palatable.'

Notes:

1. We do not focus on the US to downplay the vitality and importance of young European scholars. Rather, our gathering of data stemmed from a project designed to measure international flows of scientists into the United States. ...continued on p.24

The results from this exercise tell us about the types of jobs in which women are over- or under-represented. The first two columns of Table 8 reports the results where the dependent variable is being female and the last two where it is being non-white.

This analysis largely confirms the results from the bivariate analyses. Professors are much less likely to be women, part-timers are more likely to be women, and higher-ranked departments have fewer women as do business and management departments. The second column indicates that women are over-represented among those promoted in the past year. For ethnic minorities the only significant finding is that professors and senior researchers are less likely to be non-white.

The low response rate: conspiracy or apathy?

As mentioned already, the response rate to this survey is not high. Conspiracy theorists might think this is because non-responders have something to hide. To investigate this Karen Mumford kindly provided a RA who went to the web-sites of no-responders and recorded the number of women by grade. Table 9 reports the comparison of responders and non-responders. In coding the non-responders we excluded visitors and emeritus staff and all research staff are grouped together.

There is no real indication here that non-responders are reluctant to participate in the survey because they have something to hide — it seems a more likely that this type of exercise is not regarded as a high priority in the face of considerable other demands on departmental time.

Table 9: A Comparison of Percentage Female in Different Ranks by Responders and Non-responders

	<i>Responders</i>	<i>Non-responders</i>
Professor	8.2	9.4
Reader	19.2	12.5
Senior Lecturer	19.9	19.2
Lecturer	24.6	30.1
Research Staff	38.0	29.0
All	20.6	20.0

Conclusion

The overall impression from the 2006 survey is one of little change – women remain a small minority among academic economists, and are heavily under-represented among the more senior grades. What change there is not always in the right direction e.g. the proportion of full-time academic jobs held by women has decreased slightly from 20.5 per cent in 2004 to 19.47 per cent in 2006, a trend also observed in the balanced panel. It could be argued that this lack of change is unsurprising as nothing much in the organization of academia has changed. Although many academics probably think the low proportion of women an embarrassment and that it would be a good thing if the proportion of women rose, there is little in the way of positive steps to do anything to address the problem. Indeed the low response rate to the survey suggests a lack of interest in the issue.

Ethnic diversity has also changed little. In 2004, 91.38 per cent of professors were white, by 2004 this had decreased to 90.34 per cent. Overall the proportion of jobs held by white academics increased slightly over the two years.

A full version of the report can be found at <http://www.res.org.uk/society/women.asp>

The future of economics ...continued from p.16

- Oswald (1991) was less pessimistic: it showed that the percentage of *Economic Journal* papers using micro data had risen quite strongly through time.
- Perhaps surprisingly, almost no contributor to the 1991 Centenary Issue mentions the need for economists more often to gather their own primary data. Morgan (1988), however, does emphasise this.
- Later this year we hope to release a more wide-ranging paper (Warwick University, 2007). It will provide data on the brain drain among the world's most-cited physicists and bio-scientists.
- Charles Plott's essay makes the same point and adds that 'the involvement of the life sciences will foster a degree of specialisation beyond the imagination of most economists.'
- Related sentiments are expressed, within the Centenary volume, by Frank Hahn, John Pencavel and Richard Schmalensee.

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