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Some Evidence on the Future of Economics

Andrew J Oswald and Hilda Ralsmark

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## **Some Evidence on the Future of Economics**

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### Abstract

This short paper collects and studies the CVs of 112 assistant professors in the top-ten American departments of economics. The paper treats these as a glimpse of the future. We find evidence of a strong brain drain. We find also a predominance of empirical work.

As part of a larger study of the brain drain among elite scientists, we have been collecting information on young American economists. This has been done by examining, and collating the patterns in, the CVs of all assistant professors at the top-10 departments in the USA. Today, almost all such CVs are available on the web. The paper treats these individuals as data points.

We believe that some of the numbers may be of interest to readers. One reason is that these young men and women arguably provide a glimpse of the future of American economics.

This paper describes our results. First, we find evidence of a severe brain drain -- what one might call a funnelling of talent into the United States -- at the bachelor-degree level. The typical assistant professor has a BSc from outside the USA and a PhD from inside the USA. Second, contrary to numerous gloomy assessments of the state of academic economics -- including some in the 1991 The Future of Economics centenary issue of the *Economic Journal*, compiled as a set of essays in Hey (1992)) -- the great majority of these young economists are doing empirical work. Many people who criticise economists as obsessively mathematical have a view of economics that is out-of-date: our data paint a clear and more modern picture. The future of economics in the elite American universities seems likely to be heavily applied, not abstractly theoretical. Of our 112 researchers, few appear to be doing deductive theory for its own sake. Third, we show that the male-to-female ratio among assistant professors is now approximately 3 to 1, and that the most-studied areas of economics are now macroeconomics, econometrics, and labour economics (though these days this encompasses topics only obliquely related to labour markets).

Our data seem of potential interest to those concerned with debates described in sources such as Morgan (1988) -- who demonstrated that half of the articles published in the American Economic Review and the Economic Journal contained no data, while in Physics the number was 12% and in Chemistry approximately zero -- and Oswald (1991, 2007). The numbers may also be relevant to discussions about the state of the European and American economics profession (Neary et al, 2003) and about the brain drain more generally (Saint-Paul 2004, Mugu  rou 2006).

Higher education is big business. Approximately 2.1 million EU students graduated in 2000 compared to 2.07 million in USA. Despite this, the EU employs many fewer researchers per 1,000 workers (5.4%) in the labour force compared to the US (8.7%) (Woods, 2003). Historically, about half of foreign science and engineering doctoral recipients in USA reported that they planned to stay there but these percentages appears to have increased: in 1990-93, for example, the percentage was 63% while in 1998-2001 it was 76%. Admittedly, the trans-Atlantic drain is probably small and has been estimated to be between 0.5%-1% (Gilles, 2004). But these are top performers within their fields. When only considering the US labour force with doctoral degrees in the Science and Engineering field, the statistics show that 29% of those conducting R&D are foreign-born (Johnson and Regets, 1998). Common sense suggests that migration of people with a high level of human capital may be harmful for the country of emigration and beneficial for the country of migration: The brain drain may or may not be a zero-sum game, where one country's gain is another country's loss.

In 2001, the European Council of Ministers adopted "The Barcelona Objective", stating that all EU members should spend a minimum of 3% of GDP on research by 2010 (Commission,

2002). At that point, the EU was estimated to spend 1.9%, compared to USA's value of 2.8%. This strategy was meant to create 400,000 new jobs for European Scientists every year (Woods, 2003). By 2003, only a few countries had met the criteria, and the rest, with the exception of France's reduction of spending on research and recruitment of young scientists, stalled the initiative. The gap between EU and US research spending continues to widen.

Most brain-drain research has focused on academics in science and engineering. We use primary data collected on assistant professors from ten of the highest-ranked economics departments in the USA to present evidence for skill-based migration USA. The departments were chosen using *www.econphd.net*. Their ranking is from 2004 and an update of the list is expected in 2008.

Our data were collected in January/February 2007. In total, we obtained data (usually by reading people's CVs published on the web) on 112 assistant professors, making an average 11 young economists per economics department. Stanford University has the highest number with 16 and the University of Chicago the fewest with 6 assistant professors. In our data, there are 26 women.

In a small number of cases, we failed to find a CV for listed assistant professor. Our hope is that these missing cases do not lead to serious bias.

<b>Table 1: Ranking of Economics departments</b>			
<b>Ranking</b>	<b>Name of University</b>	<b>Location of University</b>	<b>Number of Assistant Professors in Our Data Set (Total: 112)</b>
1	Harvard University	Cambridge, Massachusetts	14
2	University of Chicago	Chicago, Illinois	6
3	Massachusetts Institute of Technology	Cambridge, Massachusetts	9

	(MIT)		
4	University of California	Berkeley, California	12
5	Princeton University	Princeton, New Jersey	11
6	Stanford University	Palo Alto, California	16
7	Northwestern University	Chicago, Illinois	12
8	University of Pennsylvania	Philadelphia, Pennsylvania	12
9	YALE University	New Haven, CT	9
10	New York University	New York City, New York	11

We wished to document the research areas and research styles of the young economists. The following classification was used. If a researcher's papers were less than 25% empirical (theoretical) work, he or she is defined here as a theoretical (empirical) researcher. Otherwise, the person is assigned to the intermediate category of someone doing 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 109. Also, their main area of research was recorded. Finally, data on gender were also collected. Men traditionally dominated the academic world and therefore it is interesting to see if that is still the case.

We construct two graphs of how many assistant researchers obtained their bachelor degree and Ph.D. in or outside the USA. The results reveal a brain drain: only 25% of the sample obtained their first degree in the USA (Figure 1) while 87% got their Ph.D. there (Figure 2). This means that, assuming that the region where the bachelor degree was obtained is the same as the country, or at least continent, where the person was born, 62% of the subjects migrated to USA after their bachelor education and got their Ph.D. and that a further 13% moved there after their Ph.D. Our data also reveal that the assistant professor positions are not evenly distributed between the two genders: 24% are female and 76% male. Almost half

of these researchers focus primarily on empirical work, whereas one third do both theory and applied work, and one fifth do almost or entirely purely theoretical research (Figure 3).

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

<b><u>Table 2: The Ten Most Popular Research Areas of these Assistant Professors:</u></b>	
<b>Research area</b>	<b>Number of researchers</b>
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 etc.	7
Finance	7

In conclusion, we hope these results might be of interest to those concerned with the state of academic economics and with brain-drain issues.<sup>1</sup>

Our main results are:

- There is evidence of a strong brain drain, at the bachelors level, in our data on the assistant professors now working in elite American departments.
- These young economists are predominantly involved in empirical research. Only a small proportion of them do purely theoretical work. In a sense, this is contrary to longstanding worries expressed by authors such as Morgan (1988).

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<sup>1</sup> Late in 2007 we released a more wide-ranging paper (Warwick University, 2007). It provides data on the brain drain among the world's most highly-cited physicists and bio-scientists.

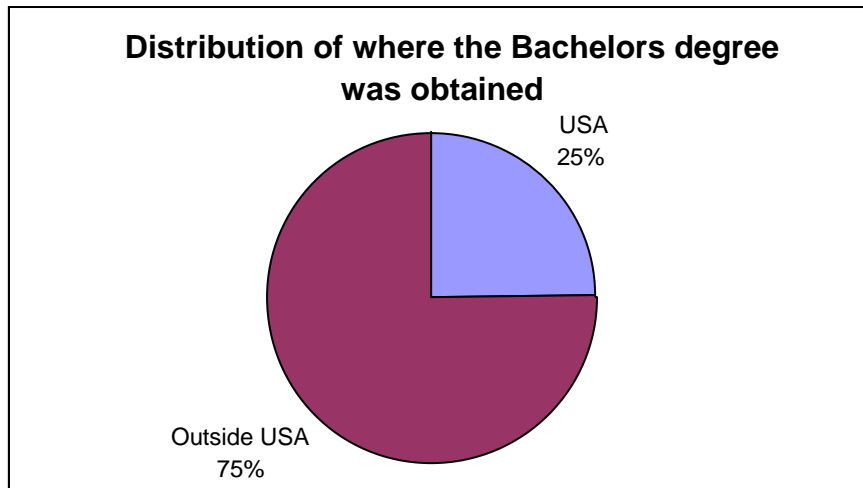


Some economists will see our data as providing an encouraging sign about the future usefulness of academic economics in the world.

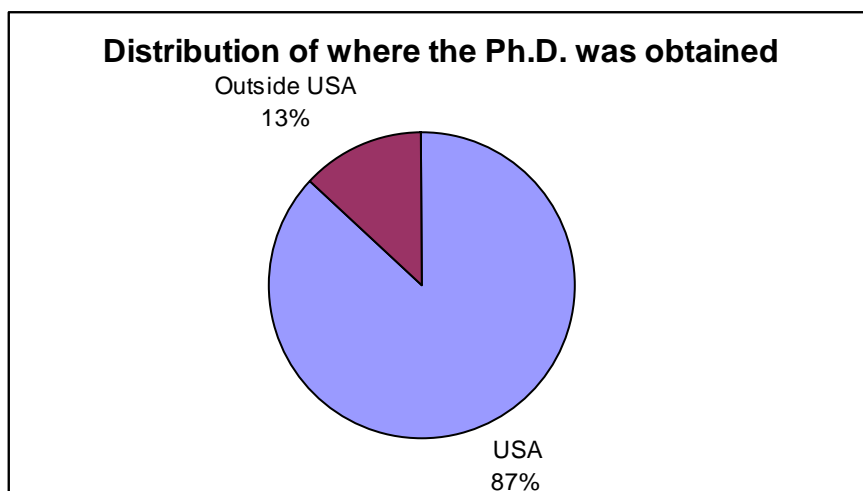
- Macroeconomics, econometrics and labour economics are the dominant fields.
- Approximately one quarter of these young economists are female.

It seems interesting to sit down with our results and open them up on the left-hand side of the desk while one opens Hey (1992) on the right-hand side of the desk. Some of the latter essays, which forecast the profession to come, have weathered the 15 years quite well. Alvin Roth, for example, looks prescient when he says: ‘I anticipate that experimental economics will play a growing role...’. Milton Friedman’s essay is engagingly modest about economists’ achievements, and refreshing on 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, the same far-sightedness is found in Edmond Malinvaud’s words: ‘Psychologists, sociologists, and political scientists will offer us a rich body of evidence...Eventually the profession will find these contributions useful and even palatable.’.

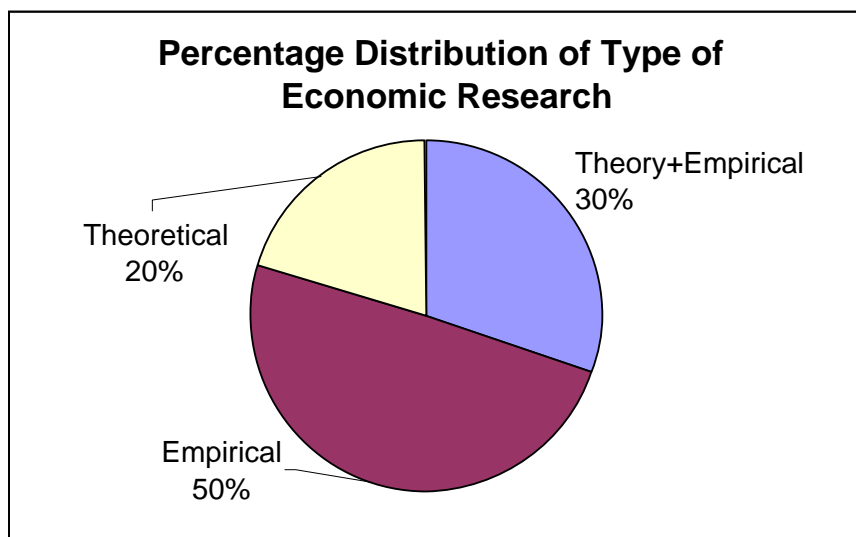
**Figure 1: An Illustration of the Brain Drain in the Data on 112 Assistant Professors in Major US Departments of Economics**



**Figure 2: An Illustration of the USA-Based Preponderance in the PhD Locations of these 112 Assistant Professors**



**Figure 3: An Illustration of the Emphasis on Applied Research among the 112 Assistant Professors**



**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 inevitably arbitrary element to it. It is likely that there is measurement error in our data.

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Appendix: The exact research areas of the 112 economists.

Type of Research	Number of Assistant professors researching the topic
Game theory	14
Microeconomic theory	11
Industrial Organisation	15
Public economics	6
Experimental economics	5
International Economics	11
Macro-economics	33
International Macro-economics	3
Economic History	5
Applied microeconomics	11
Public Policy	1
Labour economics	25
Computational Economics	2
Applied Economics	4
Growth and Development economics	13
Econometrics	28
Applied theory	2
International trade	6
Public finance	3
Corporate Finance	2
Income distribution	1
Technological change	
Bankruptcy	1
Economic theory	6
Economics of terrorism	1
Contract theory etc.	7

Behavioural economics	5
Finance	7
Monetary theory	1
Search theory	1
Health Economics	2
Monetary policy	3
Information economics	2
Organisation	5
Education	3
Political economy	6
Statistics	2
Dynamic equilibrium Models	1
Economics of Risk	2
Decision theory	4
Business history or cycle	3
Tax	2
Competition	2
Vertical integration	2
Incomplete markets	3
Comparative Industrial Relations	1
Personnel Economics	1
Incentives	1
Security Design	1
Social Insurance	2
Economics of the family	1
Consumption and Saving Choice	2
Economics of innovation	2
Forecasting	1
Real Options and Uncertainty	1
Auctions	2

Communication	1
Reputation	1
Mechanism design	2
Bounded rationality	1
Product Differentiation	1
Role of firm heterogeneity	1
Impact of liquidity constraints on the export behaviour of firms	1
Coordination	1
Evolutionary models	1
Foundation of solution concepts	1
Economic density and efficiency	1
Market structure	1