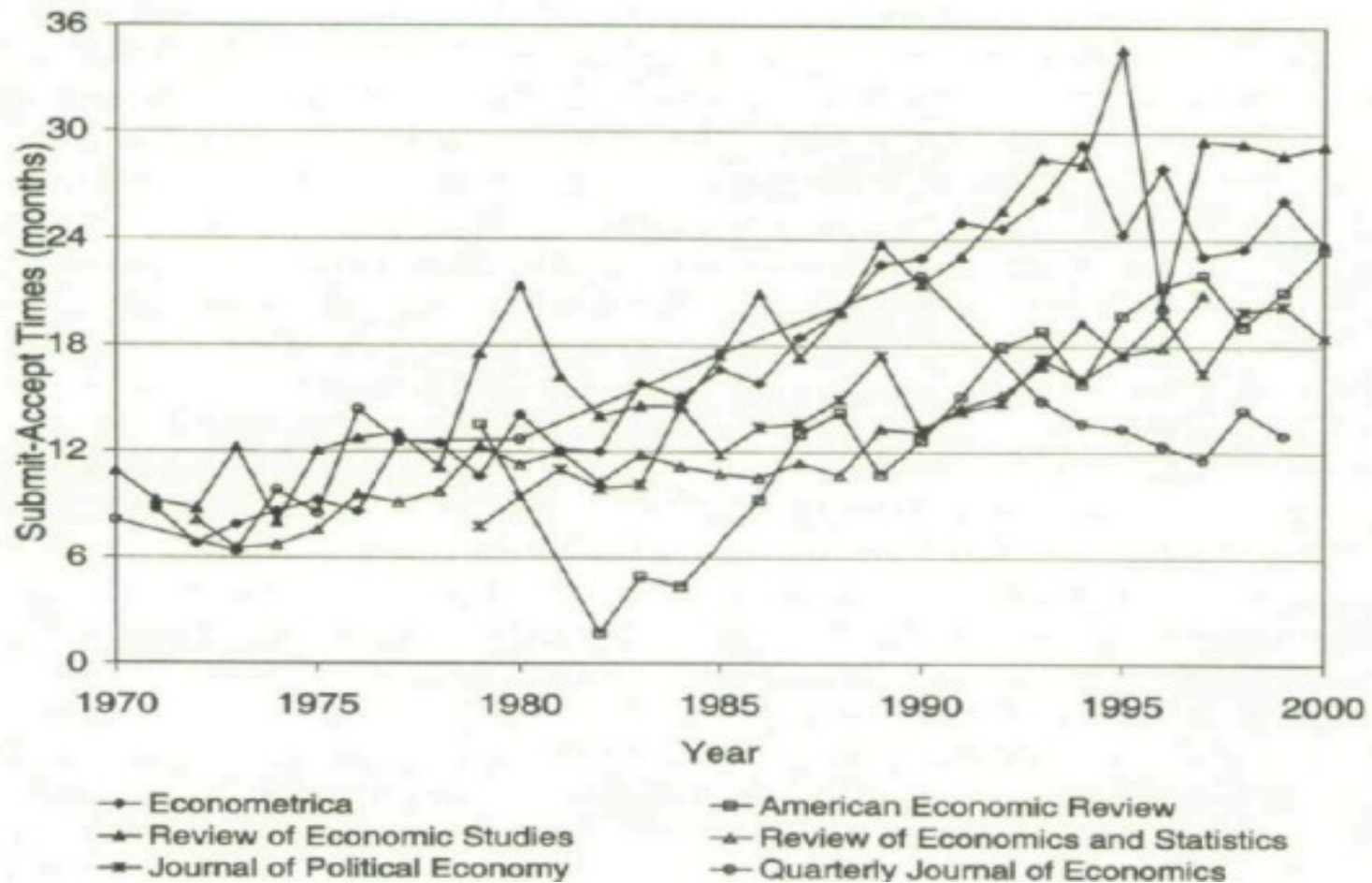


Incentives and Effects of Publication Lags on Life Cycle Productivity in Economics

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Increasing publication lags

Glenn Ellison (QJE, 2002): Publication process in top economics general interest journals and in top field journals has slowed down



Changes in publication regime

Why has the slowdown occurred? Ellison mentions three main reasons:

1. Papers today are almost twice as long as papers 30 years ago.
2. Competition for publishing in very top journals is fierce. A top journal publication today is more prestigious than it was 30 years ago.
3. Social norms in the profession have changed. (This accounts for $\frac{2}{3}$ of the slowdown)

OUR QUESTION: Has the slowdown in the publication process negatively affected the publication profiles of young researchers?

A calibrated model (outline)

We developed a calibrated “time to build” model in which we viewed new PhDs as:

1. Endowed with a number of papers at birth (e.g. 2 or 3)
2. Able to write new a number of new papers each year (e.g.1 or 2)
3. Submitting each unpublished paper not currently under consideration to a journal with different probabilities of acceptance (e.g. 12.5% to 25%) with different decision lags (e.g 1 or 2 years) and longer or shorter papers (a 50% increase in pages).

Model results

Omitting the details we ran simulations and not very surprisingly found that Ph.D's subject to an older regime of higher acceptance rates, smaller lags and shorter papers had dramatically more papers published at the end of six years (tenure time) than those subject to the current more difficult regime.

In fact, even changing the publication game in only one or two or the these dimensions has substantial effects (enough to get a tenure case turned down).

Model results

Thus, if you wonder what is wrong with young people today, it may be the profession has changed, not young people.

Rather than explore these calibrations today, I want to talk about the second part of the paper in which we see if these predictions hold up empirically

Data Sources

We focus on an essentially comprehensive list of Economics PhDs obtained from universities in the USA from 1986 to 2000: Total of 14,348 PhDs from two sources.

American Economic Association (AEA) database (13,148 PhDs)

2003-2004 Prentice Hall Guide to Economics Faculty by Hasselback: (2,831 PhDs)

We segment these approximately annual 1000 PhDs into five cohorts of three adjacent years: 1987, 1990, 1993, 1996, 1999

Note that we only include graduates who published at least on paper in their first six years since we want to focus on those with research ambitions (about 50% of the sample).

Data

We connect these names to the EconLit journal database from 1982 to 2006 contains a total of 615,145 entries, corresponding to 402,067 publications from 203,991 authors.

In turn determine the size and impact adjusted quality ranking for journals (quality in terms of AER equivalence): Kalaitzidakis et al (2003) "Rankings of Academic Journals and Institutions in Economics," Journal of the European Economic Association, 1(6), 1346-1366

Finally we use Tom Coupe' department rankings (adjusted for size, ordinal): Coupes (2003) "Revealed Performances: Worldwide Performance of Economists and Economics Departments 1990-2000," Journal of the European Economic Association, 1(6), 1309-1345, to determine a set of top 30 departments to compare against non-top 30 departments.

Data

Of course right way to quality rate journals is debatable. We do a number of robustness checks I won't discuss here.

Also what is a top 30 department is debatable, especially since over 15 years, department must have moved in an out of this group. Thus, it is better to think of our tests comparing a selection of “top departments” vs “lesser ranked” departments.

We will also offer our own ranking at the end.

Skewness of productivity

First, just some gross numbers. Here is a table that gives the AER equivalent publication achievement at the end of the sixth year by productively percentile. It is extremely skewed.

Table 3. Performance of Various Percentiles

Percentiles	AER Equivalent Pages					AER Equivalent Publications				
	1987	1990	1993	1996	1999	1987	1990	1993	1996	1999
99th	70.0	57.2	69.6	57.3	65.1	3.87	3.06	3.23	2.45	2.48
95th	33.9	28.0	27.1	26.7	24.3	2.00	1.48	1.33	1.28	1.22
90th	20.5	14.5	15.9	15.0	15.0	1.34	0.98	0.85	0.76	0.73
85th	13.6	9.4	10.6	9.4	9.7	0.99	0.62	0.61	0.52	0.51
80th	8.4	6.2	7.3	6.2	6.3	0.62	0.43	0.44	0.37	0.37
75th	6.2	4.0	5.3	4.0	4.3	0.45	0.31	0.30	0.26	0.26
Median	1.1	0.9	1.0	0.9	0.9	0.08	0.06	0.06	0.06	0.05

Skewness of productivity

Looked at different way, here is an intellectual Lorenz Curve.

Note the 80/20 rule and also the stability of this result across cohorts. We seem to be an elitist profession

Table 2. Intellectual Lorenz Curve

Productivity Percentile	Percent AER Pages					Percent AER Publications				
	1987	1990	1993	1996	1999	1987	1990	1993	1996	1999
99%	86.7	83.5	83.7	87.0	84.3	87.5	86.1	85.6	88.2	87.1
95%	57.9	54.0	54.5	57.9	54.6	61.6	59.3	59.4	62.5	60.0
90%	37.7	35.1	37.2	37.8	36.5	42.9	41.0	41.9	43.4	42.1
80%	19.0	17.2	18.1	17.8	17.6	23.0	21.0	21.7	21.8	21.4

Annual productivity

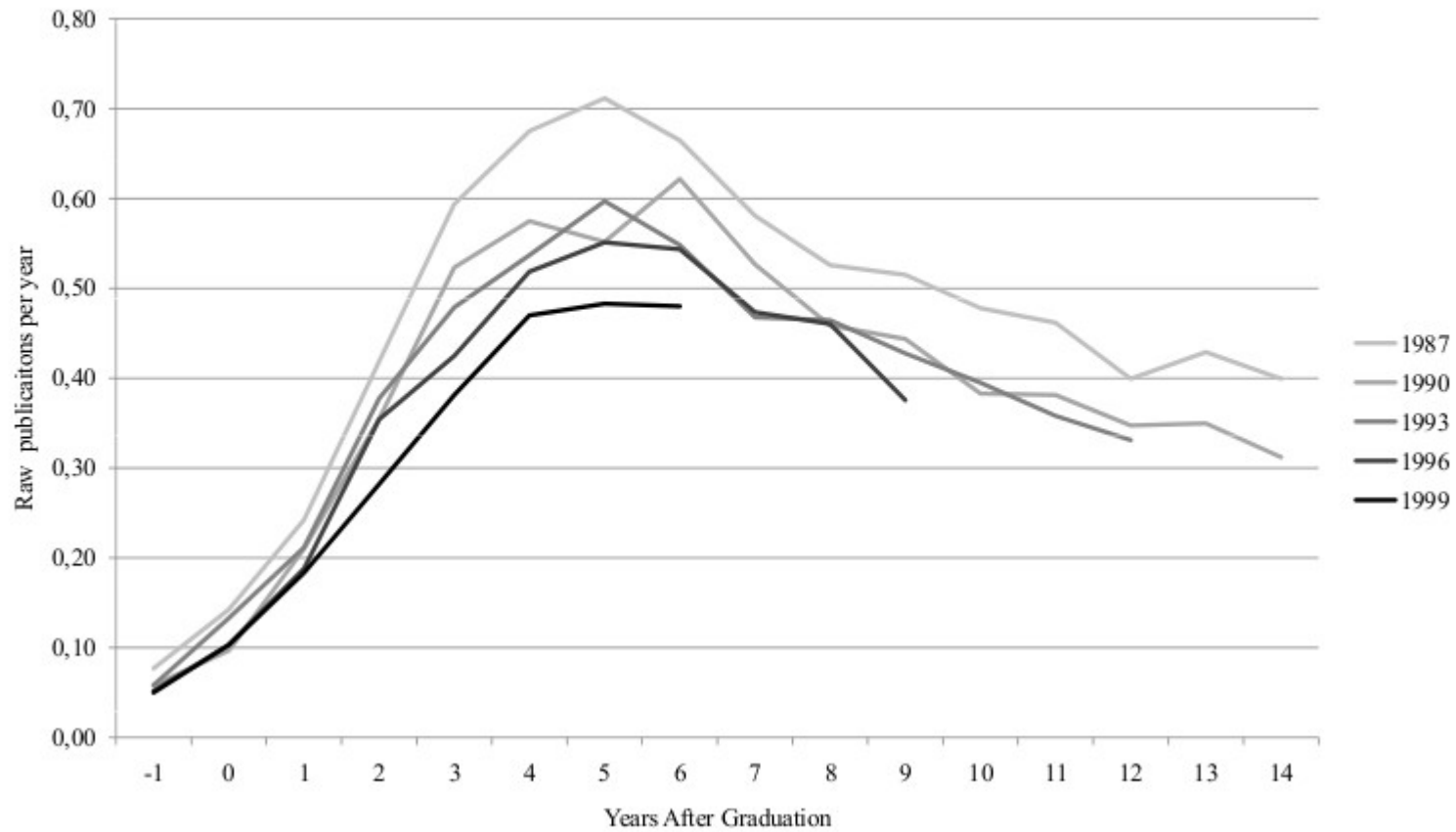
The first thing we did was look at the annual productivity rate of top 30 and non-top 30 departments by cohort. We considered:

- Raw pages
- Raw publications
- AER equivalent pages
- AER equivalent papers
- Alternative measures of quality
- Discounting and not discounting for coauthorship.

Here is a representative picture of the data:

Annual productivity

FIGURE 4. LIFE-CYCLE PRODUCTIVITY OF GRADUATES OF TOP 30 PROGRAMS
RAW ANNUAL PUBLICATIONS



Annual productivity

Here are our major finding:

- There is a consistent pattern of publication peaking at the sixth year and then trailing off to about 60% of the peak
- Top 30 graduates are about three times as productive as non-top 30 graduates.
- There is a suggestion of a productivity ranking from oldest to youngest (We do some regressions that bear this out, especially for the period before the mid-90's).

Coauthorship

An interesting aside is the emerging pattern of coauthorship. Two things are notable.

- Coauthorship is on the rise over time
- There is U-shaped lifecycle of coauthorship that troughs at the third year.
- Younger cohorts coauthor more often than older cohorts.
- Implications?

Coauthorship

FIGURE 7: COAUTHORSHIP IN ECONLIT JOURNALS

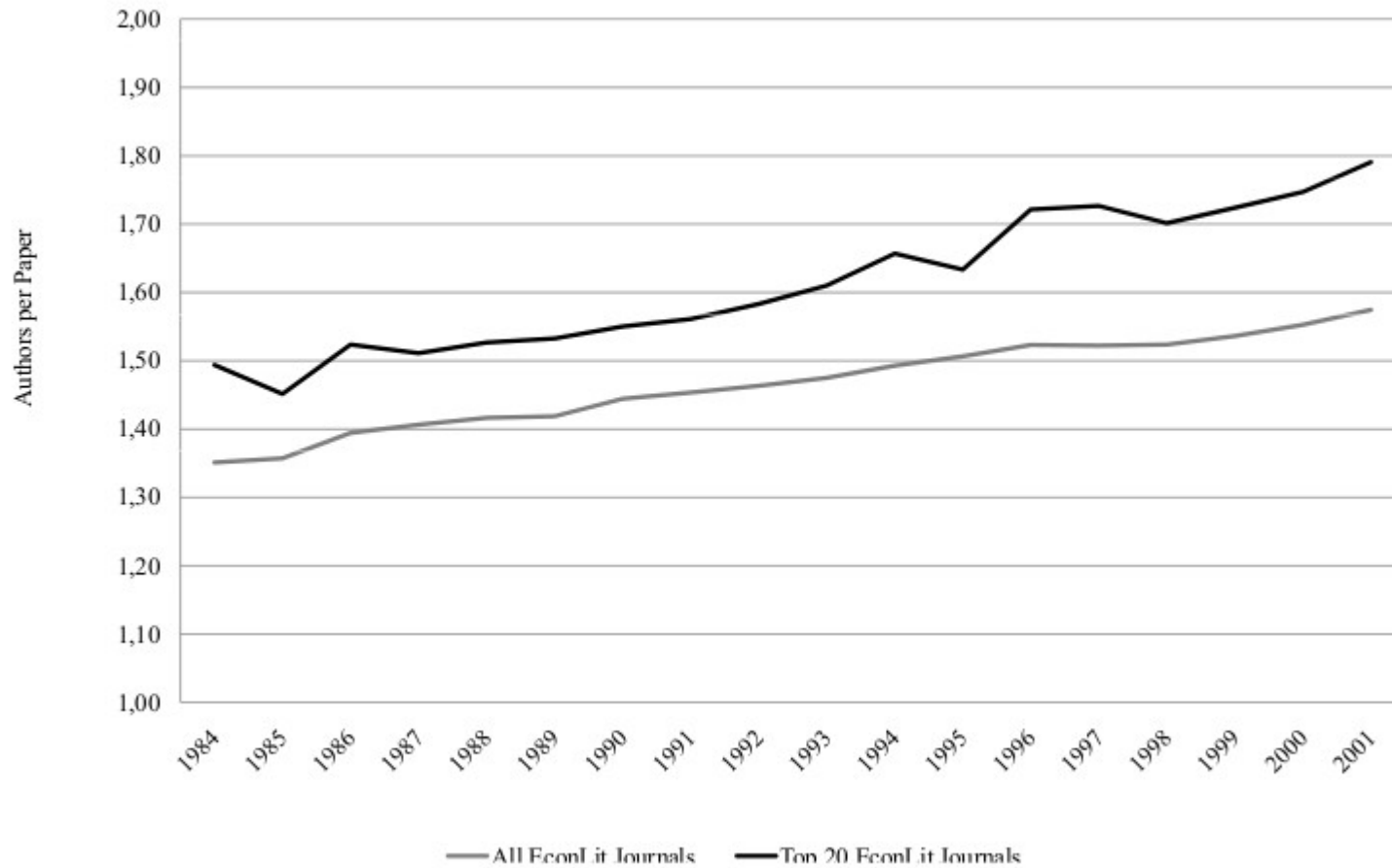
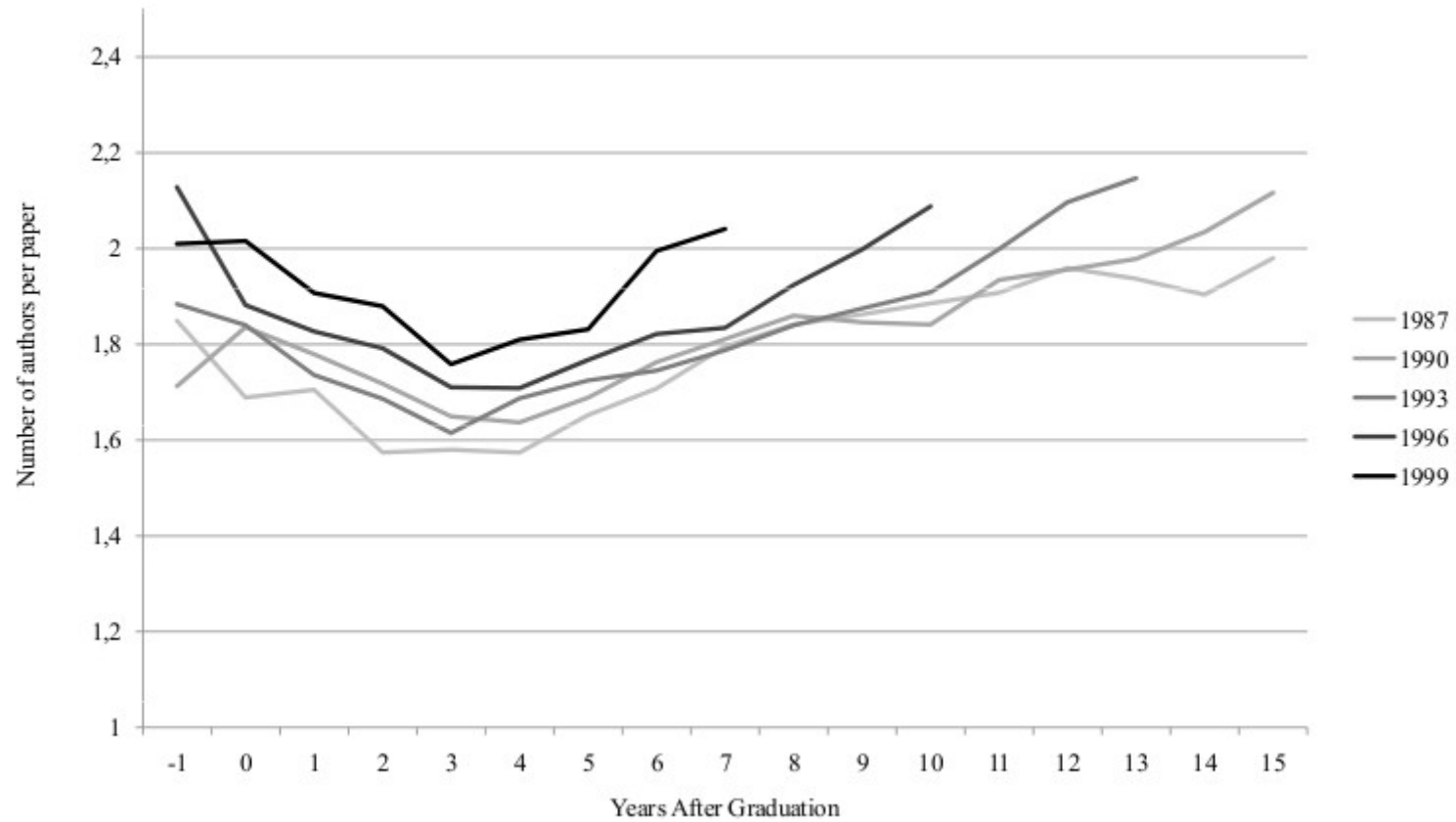


FIGURE 8. LIFE-CYCLE PATTERN OF COAUTHORSHIP



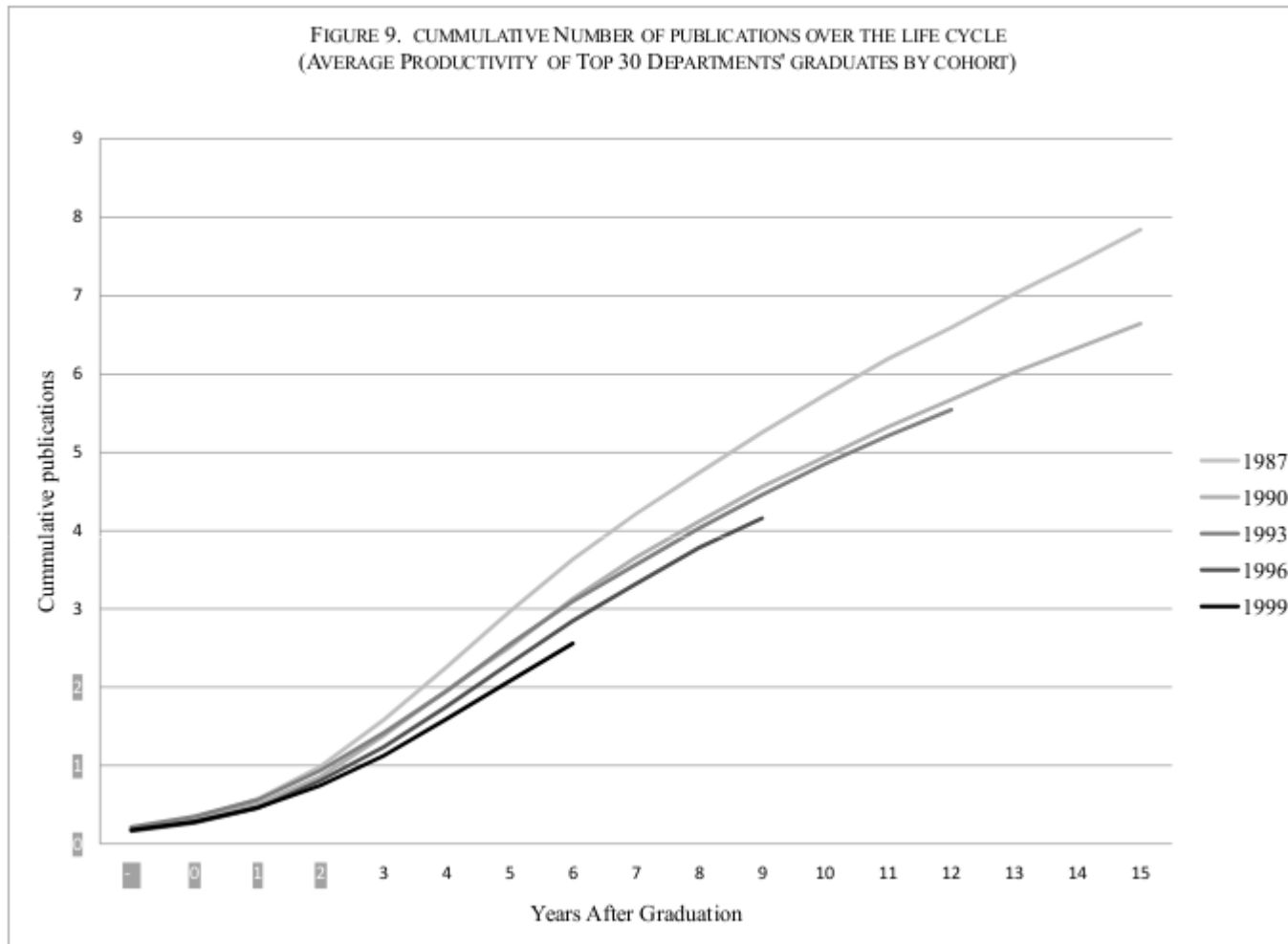
Cumulative productivity

Now we turn to the main finding of the study.

We want to find out if newer cohorts accumulate significantly better CV's at the end of their sixth year in the profession (tenure time).

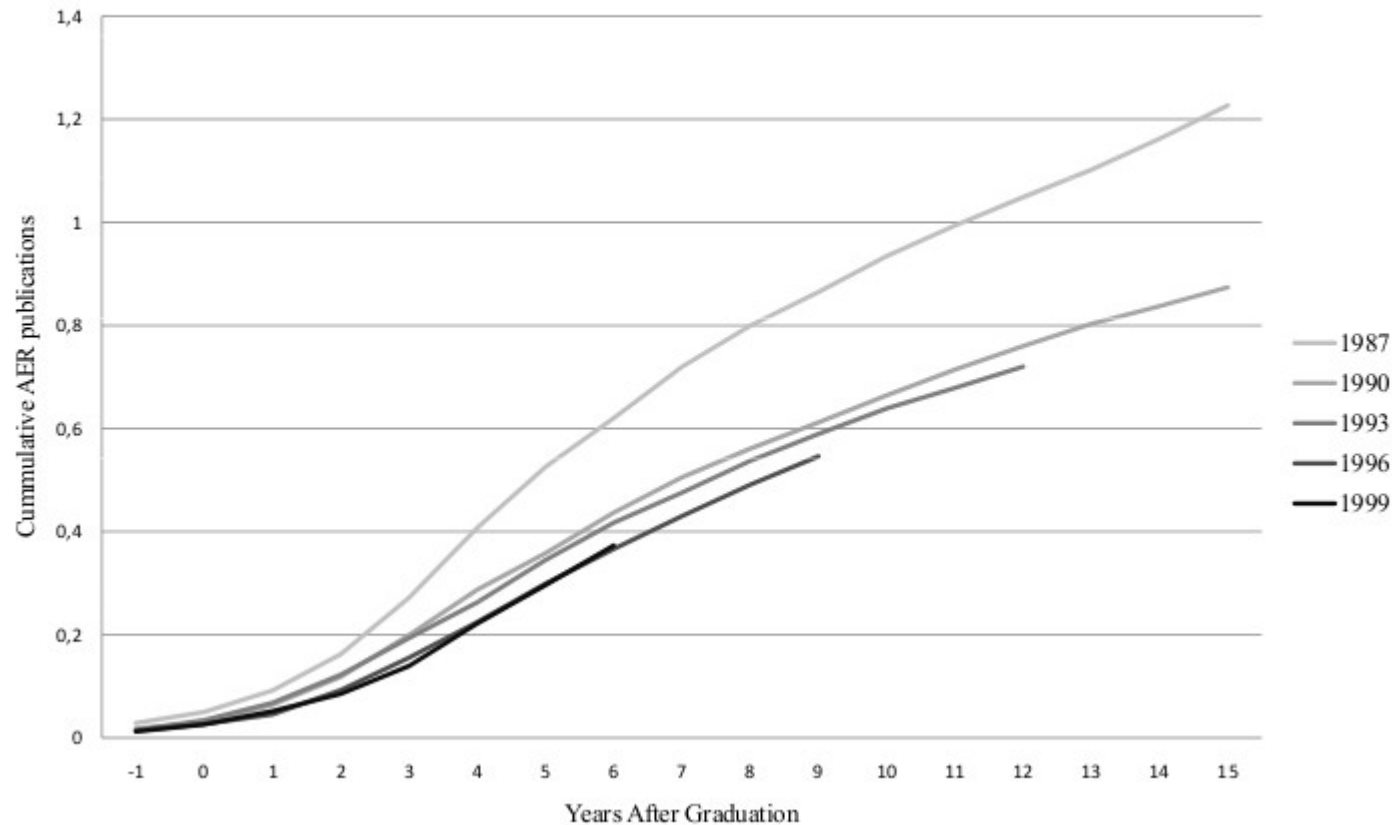
First let me show you graphs of the cumulative publication rates of top 30 graduates for both raw papers and AER equivalent papers

Cumulative productivity



Cumulative productivity

FIGURE 10. CUMMULATIVE AER EQUIVALENT PUBLICATIONS OVER THE LIFE CYCLE
(AVERAGE PRODUCTIVITY OF TOP 30 DEPARTMENTS' GRADUATES BY COHORT)



Cumulative productivity

Note that these do seem to line up by cohort.

The 1990 and 1993 are very similar as are the 1996 and 1999. We therefore combine them.

We conclude that:

1. 1987, 1990+1993, and 1996+1999 cohorts published 0.61, 0.42, 0.37 AER equivalent publications over all at the end of six years.
2. The middle cohorts are 12% more productive than the youngest cohorts while the oldest cohort is 48% more productive than the middle and 68% more productive than the youngest.
3. the p-values for these differences are all less than .01.

Cumulative productivity

Slicing a dicing this data different ways gives this table:

	Ph.D.s from Top Thirty				
	1987	1990	1993	1996	1999
Equal Credit to each coauthor					
Total Pages	58.0	52.8	56.7	54.2	51.7
Total Publications	3.58	3.04	2.99	2.76	2.47
Pages per publication	16.2	17.4	19.0	19.6	20.9
AER Pages	9.95	7.56	8.14	7.32	8.04
AER Publications	0.61	0.43	0.41	0.36	0.37
Full credit to each coauthor					
Total Pages	82.0	76.5	82.9	81.5	82.3
Total Publications	4.94	4.33	4.27	4.07	3.84
Pages per publication	16.6	17.7	19.4	20.0	21.4
AER Pages	14.9	10.9	12.2	11.4	13.6
AER Publications	0.89	0.62	0.6	0.56	0.61
Ratio of 'Full' to 'Equal' Credit					
AER Pages	1.50	1.44	1.50	1.56	1.69
AER Publications	1.46	1.44	1.46	1.56	1.65

Cumulative productivity

For non-top thirty schools we find at the end of six years, the 1987, 1990+1993, and 1996+1999 cohorts published 0.19, 0.16, 0.12 AER equivalent publications, respectively.

We see an overall trend in which the middle cohorts are 33% more productive than youngest cohorts while the oldest cohort is 19% more productive than the middle and 58% more productive than the youngest.

All these differences have p-values less than .01.

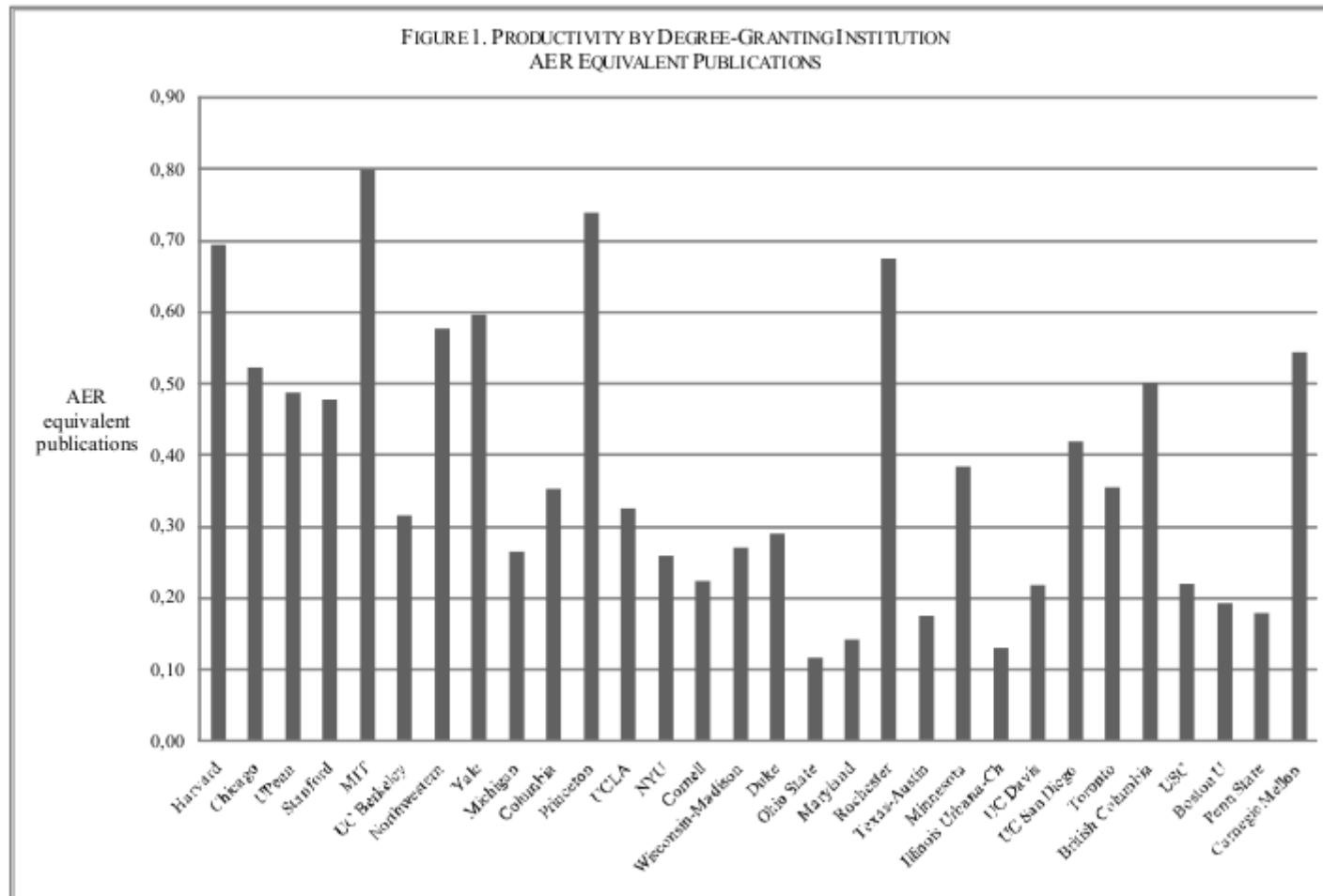
Cumulative productivity

Here is the equivalent table to non-top 30 PhDs

Equal Credit to each coauthor	Ph.D.s from Non-Top Thirty				
	1987	1990	1993	1996	1999
Total Pages	33.8	34.2	36.3	33.2	38.8
Total Publications	2.57	2.38	2.36	2.0	2.16
Pages per publication	13.2	14.4	15.4	16.6	18.0
AER Pages	2.42	2.29	2.33	1.88	2.07
AER Publications	0.19	0.17	0.14	0.11	0.12
Full credit to each coauthor					
Total Pages	51.0	51.2	55.3	51.4	63.6
Total Publications	3.83	3.57	3.54	3.09	3.49
Pages per publication	13.3	14.3	15.6	16.6	18.2
AER Pages	4.04	3.7	3.9	3.04	3.55
AER Publications	0.3	0.26	0.23	0.18	0.2
Ratio of 'Full' to 'Equal' Credit					
AER Pages	1.67	1.62	1.67	1.62	1.71
AER Publications	1.58	1.53	1.64	1.64	1.67

A new ranking of Economics Depts.

Using this we get a ranking of departments by the revealed quality of their graduates:



Conclusions

1. Unless we believe that new PhDs are less able or less hard working than older PhDs, the evidence suggests that the current publishing regime puts them at a significant disadvantage
2. This is especially true if we look at AER publications rather than pages since papers have increased in size.
3. This is partially offset if we don't fully discount for coauthorship
4. Productivity peaks at six years and drops to 60% of peak after.
5. Productivity is skewed. 80/20 rule, top 1% 15 times as productive than average, Most PhDs never publish at all, Top 30 grads 3 times as productive than bottom 30.