The Macro-Foundations of Microeconomics: Initial Labor Market Conditions and Long-Term Outcomes for Economists and MBAs*

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September 28, 2005

Abstract

Each year, many people in elite graduate programs are subject to macroeconomic risk as they enter the job market. Given the importance of general human capital and the relative ease of publicly observing productivity in professions such as academia, banking, and consulting, one might expect unlucky graduating cohorts' long-term labor market outcomes to resemble those who graduate in favorable climates. In this paper, I analyze the relationship between macroeconomic conditions at graduation, initial job placement, and long-term outcomes for PhD economists from seven programs and Stanford MBAs. Using macro conditions as an instrument for initial placement, I show a causal effect of quality and industry of initial job on long-term job characteristics. In the case of economists, I show that better initial placement increases research productivity which helps to limit the set of economic models that can explain the effect of initial placement on long-term jobs.

*I am trying to make the economist dataset used in this paper as complete and accurate as possible. It includes people that got PhDs in economics from Berkeley, Northwestern, Stanford, MIT, and the Universities of Chicago, Texas, and Minnesota and went on the job market between 1979 and 2004. I would be grateful to anyone in this group (whose CV is not easily available online) who sends me a current CV or resume at the contact information below. I thank Robert Gibbons, Uri Simonsohn, and participants in the MIT Organizational Economics Summer Camp for comments. I am very grateful to the placement directors and graduate program administrators who provided historical economics job market materials. I thank Edward Lazear for sharing his MBA job data. James Caputo, Eric Forister, Michael Grubb, Diane Lee, and Khine Williams provided excellent research assistance. I also want to thank Bill Clinton, Alan Greenspan, and anyone else responsible for the fact that the economy was healthy during the 1995-1996 academic year.

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1 Introduction

There is much speculation each year among graduate students who are leaving school about whether they will face a "good" job market. Given the years of work, minimal compensation, and, in some cases, large investments in tuition, it is only natural for graduates to hope to reap the benefits of their educational investments. Conventional wisdom and casual empiricism suggests that the state of the job market is important in determining pay and initial job placement immediately after leaving graduate school. But several economic theories suggest that these short-term effects of macroeconomic conditions can persist so that graduating in a "good" year provides an element of randomness that can have a long-term influence on pay and the types of work people do.

In this paper, I study two sets of high-skill graduates whose careers can be affected by initial macroeconomic conditions: PhD economists and MBAs from elite programs. There have been numerous studies of how macroeconomic conditions affect large samples of people across a large set of occupations. Two potential issues with these studies are that many employees transition slowly into the labor force, making it difficult to isolate a single "entry" point, and that the average effects in these large samples may mask interesting differences across professions. The innovation in this paper is to focus on two sets of professional graduates where the date of final entry into the labor market is easily identifiable and can plausibly be considered exogenous. While economists and MBAs may not be representative of the economy as a whole, they provide a useful portrait of the increasingly important high-skilled "knowledge" workers.

By using macroeconomic conditions at the time of graduation to instrument for the first job held by a new MBA or economist, I can estimate the causal effect of the first job on longer-term outcomes. Note, however, that I do not have useful compensation data, so the labor market outcomes I study are industry and proxies for job quality. The results, therefore, have only indirect implications for long-term wealth, but directly address issues of human capital development.

For both economists and MBAs, I show that first jobs matter a great deal. In the case of economists, those who graduate when demand for economists is high are far more likely to obtain a tenure-track position at a ranked institution and, more specifically, are more likely to get a job at a top 50 university. Transition in and out of attractive positions is very small, so those who start with "good" jobs are much more likely to hold them later in their careers. By using instruments for initial demand for economists, I argue that there is a causal link between the quality of an economist's first job and the quality of his position anywhere from three to fifteen years later. As I discuss in the next section, several economic theories would predict this relationship between initial and long-term outcomes. While I cannot fully isolate the source of the cohort effects for economists, I can use publication records to look at productivity differences among those who get

good first jobs through the "luck" of a good market and those who have bad luck initially. I find that getting a "good" first job increases publication productivity, which suggests that models of "influence activity" and simple inertia do not drive the results.

Perhaps the "experiment" and results for economists are best understood through the following hypothetical example. Consider an economist who receives his PhD during a favorable economic period when university budgets create many open positions. Suppose this person accepts a position as an assistant professor at Boston University (ranked as the thirtieth best economics department in the world by Coupe (2003), twenty-second by Kalaitzidakis, Mamuneas and Stengos (2003), and twenty-sixth by "econphd.net.") He goes on to have a career at BU and possibly other institutions including universities, government agencies, and the private sector. Now suppose the same person was born a few years earlier or later and he receives his PhD during a "buyer's market" when school budgets are tight. Due to the lower demand for economists, he ends up taking a position at Washington University in Saint Louis (ranked forty-eighth, fifty-third, and sixty-third, respectively, by the same authors.) The change to graduating in a less favorable climate has clearly hurt this person's career initially. But, some number of years after taking his first position, is he any worse off if he starts at Washington University than if he starts at BU? Or does the market adjust his position over the years so that, regardless of where he starts, he ends up matched to an appropriate institution given his skills and preferences? I show that he is much more likely to end up at an institution of the caliber of BU if he starts at BU than if he starts at Washington University. I also ask whether these longer-term advantages are due to the fact that his initial luck leads him to be more productive in the initial phase of his career than he would have been had he placed at a lower-ranked school. That is, do the advantages that might come with working at a higher ranked school (including lighter teaching loads, higher visibility in the profession, and more accomplished colleagues) make people more productive and, therefore, more successful over their careers? While I cannot isolate which potential advantage of working at BU makes him more productive, I show that he is more likely to end up at a higher-ranked job because his initial placement at BU makes him more productive than he would have been at Washington University.

The analysis of MBAs and its interpretation are somewhat different because I do not have any proxies for productivity and because there is not nearly so clear an ordering of attractiveness among different positions. However, I find that, at least in the case of two jobs that are generally considered highly attractive for MBAs – investment banking and consulting – initial placement in these industries has a causal effect on long-term employment there. I find similar results for the high technology industry. These results suggest that random factors affect where MBAs start their careers and that these initial decisions lead to human capital and other investments that have

long-run effects on the type of work they do.

Again, an example may make the point clearer. Following the stock market crash in the Fall of 1987, Stanford MBAs in the classes of 1988 and 1989 were unlikely to take jobs on Wall Street relative to other classes. During the long bull market that started a few years later, new MBAs returned to Wall Street in large numbers. But few members of the classes of 1988 and 1989 moved into investment banking. Given that this industry has historically been relatively lucrative, this suggests that many members of these two classes had significantly lower lifetime wealth (though not necessarily lower utility) due to the timing of their graduation.

Given the measures of labor market outcomes available, I will not analyze wages. As a result, this paper differs significantly from prior work on cohort effects. In these papers, job quality is typically defined by wages. A recent example, which is similar in many ways to the exercise I perform, is Oreopoulus, von Wachter and Heisz (2005). They look at the early careers of Canadian college graduates. They find that graduating in a recession has little effect on employment, but adversely affects early career income. They go on to show that these effects fade over the first decade of a career. Most of their results are due to people accepting jobs at small, low-paying firms during recessions and moving to larger firms when the economy recovers. Kahn (2005) uses the National Longitudinal Survey of Youth to study U.S. college graduates in the classes of 1979-1988. She finds that macroeconomic conditions have important wage effects (which are more persistent than those found by Oreopoulus et al. (2005)) and that this is largely due to the occupations where graduates start. She finds no effect on labor supply, except that those who graduate during a recession are more likely to go to graduate school.

The conclusion that cohort effects on pay are due to sorting among firms rather than within-firm cohort effects is consistent with Beaudry and DiNardo (1991). They show that macroeconomic conditions at the time an employee starts a job are not an important determinant of wages, controlling for the best conditions during the employee's tenure. However, Devereaux (2004) and Baker, Gibbs and Holmstrom (1994) show that the timing of the start of a job can have long-term wage effects. Devereaux (2004) shows that, relative to "comparable" people, workers who accept low-paying jobs are stuck with low wages for at least several years. Some, but not all, of this effect goes away for those who switch jobs. Baker et al. (1994) document cohort effects on wages within a single firm.

A large set of papers have studied economists. Many of these, including Coupe (2003) and Kalaitzidakis et al. (2003), simply rank the research output of individuals or their institutions.[1] I use these rankings to generate various measures of the quality of economists' jobs. A smaller

[1]See Neary, Mirrlees and Tirole (2003) for a discussion of the relative advantages of these and other rankings of economists and institutions.

set of papers, including Coupe, Smeets and Warzynski (2006) and Smeets (2004), have studied the labor market for economists and found that the economics labor market provides incentives through potential promotion and mobility.[2] Swidler and Goldreyer (1998) document that, at least in the case of economists working in the area of finance, there are strong financial incentives to generate research. The availability of "performance" (that is, publication) information makes the economist labor market attractive to study.[3] However, the lack of salary information introduces a limitation in interpreting labor market outcomes. Also, because local labor markets for economists are fairly illiquid, often requiring people to move when changing jobs, this market may not be typical of other high-skill labor markets and the results may not generalize to labor markets more broadly.

The analysis of MBAs, a high-skill group where local markets are likely to be more liquid, helps to counterbalance this weakness and to understand the limitations of the PhD analysis. Though a large and growing segment of the labor market, there are surprisingly few studies using micro-data focused on MBAs. Lazear (2005) and Hvide (2005), both of whom use the same MBA dataset I use, focus on the decision to become an entrepreneur. Reder (1978) and Tracy and Waldfogel (1997) study the determinants of starting salaries for newly graduated MBA's.

The rest of the paper proceeds as follows. Drawing on other work, the next section lays out the theoretical background for why initial placement might have long-term implications. Sections 3 and 4 contain the empirical analyses of economists and MBAs, respectively. Section 5 concludes with a summary and suggestions for future research.

2 Theoretical Background

There are several economic theories that would suggest "stickiness" (or "cohort effects") in first jobs after graduation. That is, there are many possible reasons to think that the type and quality of a person's initial job will have a long-term effect on the type and quality of jobs they hold for years after starting their careers. Therefore, finding a long-term effect of initial placement will not distinguish among these models. However, using economist publication records as a measure of productivity, I can also analyze whether first placement affects productivity. So, in the following

[2]For basic information about the market, see Siegfried and Stock (1999) and Siegfried and Stock (2004). For a historical perspective on the market for economists, see Brook and Marshall (1974). They discuss the matching process, describe the state of supply and demand as of 1974, and recommend starting a publication that became *Job Openings for Economists*. Also, see Tervio (2005b) for a study of networks within the economics labor market and a comparison with other academic labor markets. There is a large literature studying academic labor markets more broadly. See Ehrenberg (2003) for an overview of recent work and references to past studies.

[3]Einav and Yariv (2005) also use productivity measures and study the effect of another source of luck – alphabetic placement of economists' surnames – on economist careers. They show that economists with last names starting further down in the alphabet face a handicap because they are more likely to be listed later on papers' author lists.

discussion of long-term effects of first placement, I consider each model's implication for the effect of first job on productivity.

Firm-specific human capital may influence the value of on-the-job investments of workers, making them more valuable at their initial employers than elsewhere. The types of jobs held by MBAs and academics are typically thought to be dominated by general human capital. But if organizations differ in, for example, their mix of research and teaching or if people become attached to their co-workers, then the models in Lazear (2003) and Hayes, Oyer and Schaefer (2006) can generate similar implications to classical versions of firm-specific human capital. Under these models, I would expect that getting a good first job will have a positive effect on economist research productivity due to the orientation towards research and the spillovers from more successful colleagues at top institutions.[4]

A related idea, with a more direct tie to the empirical analysis here, can be found in the model developed by Gibbons and Waldman (2003) and related discussion in Gibbons and Waldman (2004). They suggest that initial conditions can be important in long-term labor market outcomes because of the effect on on-the-job skill development. In their model, employees develop "task-specific human capital." Those hired under more favorable conditions are initially given higher value tasks and develop more valuable human capital that persists throughout their careers. In terms of productivity, the initial investments in research skills would lead economists who place at better institutions to be more productive (again, in the causal sense.)

Suppose people's tastes evolve based on their experience and environment. This notion, which I will call "endogenous preferences" and is related to the relative utility idea in Frank (1984), could lead people who place into top institutions to get caught up in the local norm of what is considered success while those who do not place as well build their lives around less work-oriented priorities. For example, someone who gets a job at Harvard might spend more time at the office than someone who gets a job at the University of Massachusetts because his environment makes being a top researcher a higher priority. This leads the person who places at Harvard, even if he placed there only due to job market timing, to be more likely to stay at a top institution and to be more productive than the unlucky UMass economist.

Another class of models regarding co-workers focuses on "influence activity" (see, for example, Milgrom (1988).) In the context of MBAs or economists and in its extreme, this model would suggest that people get ahead ("make partner" or get tenure) based on their ability to influence

[4]While it would obviously come as no surprise to find that economists at higher ranked schools have higher research output, the predictions here and the empirical analysis below are about the *causal* effect of a given economist (that is, conditional on "ability") obtaining an initial placement at a higher ranked institution.

their colleagues. Those who place well initially have better long-term outcomes due to their ability to influence people at better institutions. However, people would not necessarily be any more productive as a result of getting a better job.

An alternative idea, with similar emprical implications, is that the job market takes initial job placement as a signal of ability and fails to compensate for the "luck" associated with initial market conditions. For this idea to apply to the economist job market would imply non-rational behavior among a group that prides itself on rationality. However, given that Einav and Yariv (2005) suggest that economists do not properly compensate for the first letter of each others' last names in evaluating one another, it seems plausible that they would also fail to fully account for labor market conditions on first jobs.

Models where search is costly (either for firms or employees) also leads to frictions where initial jobs are likely to become long-term. Models where incumbent firms have useful private information (such as Akerlof (1970) and Waldman (1984)) about employee productivity have similar implications. Again, pure forms of these models do not suggest that initial placement will affect productivity.

A recent and intriguing model that could apply to the MBA and/or economist markets is Tervio (2005a), who considers a case where skill is industry-specific and learned on-the-job and where productivity is publicly observable. Workers stay at the same type of firm (though not necessarily the same firm) even though social welfare would be improved if experienced workers were more regularly replaced by fresh graduates. Individual firms do not have an incentive to do this, however, because a new employee that turns out to be a star can simply leave. This model would not predict that getting a good job will increase productivity.

3 Empirical Analysis of Economists

3.1 Construction of the Economist Dataset

I constructed a new dataset of economist careers. Though the data itself is consistent and accurate, the basis of the sample was somewhat random. I began by contacting economics department chairpeople, faculty in charge of graduate placement, and administrators of graduate programs. I either relied on my own personal contacts, the recommendations of colleagues, or I simply sent "cold-call" e-mails to the relevant people. As far as I know, it is a universal practice among top economics departments to create a book each Fall that contains the CVs of all graduate students who, at the time the books are generated, expect to be on the job market that academic year. I asked for copies of these books going back as far as I could get. Responses to this request fell into

one of three categories. First, a few schools simply ignored my request. Second, several schools were very helpful but they did not keep copies of the old books of CVs for enough years to make it worth pursuing. Third, seven schools had copies of the books going back to at least the late 1980s and they sent me copies of each book from as early as they had through the Fall of 2003. While there could be selection effects in the set of schools that provided CVs, I see no reason why schools that made CV books available would be different in any systematic way from schools that did not have this information. My impression from this data-gathering exercise is that the dominant factor in a school making the CV books available to me was the existence of a graduate program administrator who was both very organized and had been in the position for a long period.

The seven schools from which I have CV books are the University of California at Berkeley, the University of Chicago, the University of Minnesota, the Massachusetts Institute of Technology, Northwestern University, Stanford University, and the University of Texas. Five of the seven have been consistently ranked among the ten best in the world over the entire period I study. At least two of these departments could and have made legitimate cases that they are the very best department in the world at various points over this period. Minnesota and Texas are generally ranked anywhere from tenth to thirtieth in the world, depending on survey methodology.[5]

For each CV in each book at the seven schools, I first created a dataset of information from the CVs themselves. I entered full names as they appeared on the CV, the research fields of the person (or, if they did not list research areas, I used teaching fields or the fields in which the person passed examinations), up to two primary advisors, undergraduate institution, year undergraduate degree was received, and undergraduate major. I was able to assign gender to over 98% of the sample. For the vast majority of the sample, I inferred gender from people's names. When the name did not make gender obvious, I tried to find a picture online and used lists of names available in "Baby Name" books and internet sites. For three of the seven schools, the graduate program administrator was able to confirm gender for those I could not otherwise figure out. For almost all people, I created indicator variables for whether the person received National Science Foundation Graduate and Sloan Foundation Dissertation Fellowships.[6]

I then attempted to track the person's career year-by-year from the Fall of the year after the

[5]I will not identify any person or school by name for the rest of the paper. However, I would like to appeal to readers who were PhD students at one of these schools and went on the job market between 1979 and 2004 to please send me your current CV or resume (see cover for my contact information) so that I can minimize measurement error. Any reader whose CV or a detailed bio is readily available through a Google search need not send me their information.

[6]For a few years in the early 1980's, one school only provided a summary table with names, advisors, fields, and educational background. Because I did not have complete CVs with details on honors and awards, I could not determine if these people had received NSF or Sloan fellowships.

person's CV was in his graduate institution's CV book through 2004. I relied on several sources for this. Where possible, I used a current CV (which I typically found through an internet search) or biography on a web page.[7] The second choice source was the 1981, 1985, 1989, 1993, 1997, 2003, and current online directories of members published by the American Economics Association (AEA). The 1981-1997 directories were published as part of special December issues of the *American Economic Review* while the 2003 directory was made available online as a PDF document. Many AEA members provide significant biographical detail in these directories, while others provide no information or only current job as of the time of the survey. The third source was initial job placement reports provided by three of the seven schools and a current alumni directory provided by two schools. Naturally, the placement reports were only useful for identifying the first position the person held. The fourth source was the affiliations listed for authors in the EconLit database. The reason this source is not as good as the others is that EconLit does not typically indicate if the person holds a visiting position. Also, EconLit does not typically identify whether a person works at a professional school rather than in an economics department. The final source was indirect information found through internet search. Examples of this varied. Two common forms of useful indirect information were articles quoting economists ("Economist John Doe of Morgan Stanley predicted the peso would be stable...") and acknowledgements in articles ("We thank Jane Doe of the World Bank for the data..."). However, there were other random helpful sources, such as a graduate of one of the programs who posted a list of classmates he had found and their current jobs.

After assigning a job to a person for each year possible, I categorized these jobs along several dimensions. For people working at universities, I created indicator variables for tenure-track positions (visitors, post-docs, research fellows, etc.), working in a business school, working in a public policy school, working in a law school, and working in any other school or department that is not an economics department (including medical school, school of public health, political science department, education school, agricultural economics department, and social work.)

In addition to these descriptions of the job, I categorized and ranked the institutions where people worked. Using these rankings and the job information, I created five measures of the quality of a given job. The first two measures are based on the 2004 rankings of economics research institutions available at www.econphd.net as of June 1, 2005. Universities are ranked from 1 to 321 and other organizations from 1 to 112. Details of the ranking system are available on the website. Based on looking at the econphd measure of "equivalent papers", which takes into account

[7] As an example of the distinction, the Board of Governors of the Federal Reserve posts biographies of their research economists that detail the positions the people have held since receiving PhDs. The cite does not provide full CVs.

the number and length of articles published, it is clear that a university of a given rank is more productive than another organization of similar rank. I therefore define "econphd" as the rank between 1 and 321 for universities, twice the rank from 1 to 112 for other organizations, and 350 for any organization that is not ranked at all. Because the differences in output get smaller further down the rankings, I define "log econphd" as the natural logarithm of this measure and use it as the second measure of job quality.

I define a job as "ranked" if the person holds a tenure-track (or, in non-academic institutions, a similarly permanent position) at any of the 433 institutions in the econphd.net rankings. I define "tenure-track ranked" jobs (which I will often refer to as "TTR" positions) as any tenure-track position at a university or college that is on econphd.net rankings. Finally, "Top 50" jobs are tenure track positions at schools in the top 50 of the econphd.net university rankings. The qualitative conclusions of my analysis are not changed if I substitute the university rankings in Coupe (2003) or Kalaitzidakis et al. (2003) for econphd.net rankings when defining these variables.

If I knew that a person held one job in year t and another job in year $t + x$, I assumed that the person held the year t job in years $t + 1$, $t + 2$, ..., $t + x - 1$. If I was not able to determine what job a person held in a given year, I assumed that the person held a job that was not ranked by econphd.net. The one exception to this was the way I assigned initial positions. If I first found the person working at a job t years after his last time on the job market, I assumed that he held that position from the year after going on the market until I found him at that job. Treating these observations the same as other missing observations has no material effect on any of the results.

I use four primary measures of the state of the macroeconomy. When looking at students looking for jobs starting in the Summer of year t, I use the level of the S&P 500 as of the end of October of year $t-1$ and the unemployment rate for the U.S. as of October of year $t-1$. For more economist-specific measures of labor demand, I use the total number of jobs and the total number of academic jobs listed in the Job Openings for Economists (JOE) in year $t-1$. This information is published annually in the JOE director's report in the May "Papers and Proceedings" issue of the *American Economic Review*. Some of these jobs can be listed early in the year, at the tail end of the previous academic job market. However, the vast majority of listings in JOE are in the Fall for openings in the following year.

3.2 Summary Statistics

Table 1 provides summary statistics of the economist sample as a whole, as well as for each of three of the graduate programs. To maintain confidentiality of individuals and institutions, I refere to these three graduate programs as "School A", "School B", and "School C." The sample is

predominantly male and most people are American (using whether the person went to a U.S. undergraduate institution as a proxy.) Recently, the sample has become increasingly foreign but not more female. Of those entering the job market in the last five years of the sample, 22% were female and 49% went to American undergraduate institutions.

Fewer than half of the sample gets placed initially, or holds at any given time, a tenure-track job at a ranked institution and about a quarter of the sample holds a position at a top 50 university. These measures of job quality, as well as pre-graduation indications from high-profile fellowships, vary greatly between which graduate program the person attended. Publication success also varies significantly between schools, with those who graduate from "School C" publishing at a much higher rate than the sample average and at nearly an order of magnitude higher rate than graduates of "School B."

An important part of the following analysis is to see how people transition to "better" and "worse" jobs over the course of their careers. Table 2 give a sense of how much movement there is between quality tiers in this labor market. Upon leaving school, about half the sample starts a "TTR" position and 30% start tenure track jobs in Top 50 departments. The movement in and out of these positions is quite slow after that, however. A few people transition out of these positions every year, with the outflow peaking at 6-8% in the years around the time tenure is granted. The transition into these positions is minimal with only 1-2% of any given person/year observation in either the TTR or Top 50 category being held by someone who did not hold such a position in the prior year. Given the lack of movement into or out of these positions, this seems like a market where the luck of initial conditions has the potential to matter.

Figure 1 graphs the basic supply and demand measures in the data. To insure consistency over the sample period, the graph is limited to the three schools for which I have CV books going back to the Fall of 1980 or before. The graph shows two of the proxies for demand (unemployment and total JOE listings). It also shows the level of "supply" as proxied by the number of economists listed in the CV books of the three schools.[8] In the graph, year t denotes October unemployment, the number of academic JOE listings during the year, and the number of CVs in the books sent out that Fall (that is, number of people seeking jobs starting in the Summer or Fall of year $t+1$.) All variables are normalized such that 1980 equals one.

As the graph shows, there are several periods of ups and downs in all these variables.[9] This

[8]The book issued in the Fall of 1985 is missing for one of these schools. For that year, I assigned that one school the average number of students in its 1984 and 1986 books.

[9]I did not include the S&P 500, academic job listings, and number of CVs in book for the first time in order to keep the graph simple. Similar conclusions can be drawn from these alternative supply and demand measures, though

	Total	School A	School B	School C
Female	21.2%	26.8%	22.7%	22.5%
U.S. Undergraduate	59.2%	75.2%	57.3%	66.7%
NSF Graduate Fellowship	11.5%	3.1%	0%	36.4%
Sloan Dissertation Fellowship	8.7%	6.5%	0%	12.5%
First Job:				
econphd.net rank	154.1	154.2	291.4	104.3
	(149.2)	(148.4)	(116.8)	(135.3)
Tenure-track ranked	47.6%	44.0%	14.8%	55.7%
Top 50	29.8%	24.8%	5.9%	42.3%
All Job/Years:				
econphd.net rank	179.4	181.9	298.0	139.0
	(153.9)	(152.8)	(111.6)	(151.2)
Tenure-track ranked	41.8%	38.8%	13.3%	50.1%
Top 50	25.5%	20.5%	5.9%	37.2%
Publications:				
First 7 years	2.36	1.86	0.78	3.47
	(3.41)	(2.97)	(1.52)	(4.35)
Average per person/year	0.31	0.27	0.14	0.44
	(0.47)	(0.46)	(0.32)	(0.59)
Total People	2,393	420	172	537
Total Person/years	27,259	5,120	1,739	7,027

Table 1: Economist Sample Summary Statistics. Note: "econphd.net" rank is the average of the adjusted ranking provided on the econphd.net website. The rank is the number the school is ranked in the case of universities, twice the ranking for non-academic institutions, and 350 for any institution that is not ranked. "Tenure-track ranked" is an indicator variable for whether the person holds a tenure-track position at a university that is listed on the "econphd.net" rankings. "Top 50" is an indicator variable for holding a tenure-track position at a school that is ranked among the top 50 universities by econphd.net. The columns for "School A"-"School C" each display data on all students who went on the job market from each of three (anonymous) graduate institutions.

Career Year	Sample	TTR	TTR in	TTR out	Top50	Top50 In	Top 50 Out
1	2,325	1,122	1,122	0	707	707	0
2	2,198	1,056	17	24	669	10	13
3	2,078	1,004	23	19	637	17	13
4	1,951	935	13	23	592	12	21
5	1,840	862	20	37	540	12	29
6	1,717	753	5	58	470	3	31
7	1,590	680	15	35	418	13	30
8	1,488	620	8	30	378	7	24
9	1,378	558	5	25	336	3	24
10	1,268	500	7	29	298	8	21
11	1,150	443	2	20	255	0	21
12	1,044	395	5	14	223	3	12
13	956	366	8	12	203	6	8
14	842	325	4	10	181	3	5

Table 2: Economist Transitions. "TTR" is the total number of people holding tenure-track jobs at institutions ranked by econphd.net. "Top 50" is the number holding tenure-track jobs at econphd.net top 50 universities. The "in" columns list the number of economists who moved into the category a given number of years into his career and "out" columns list the number who moved out of the category. Sample size changes because the last observation for a given person is the 2003-2004 academic year.

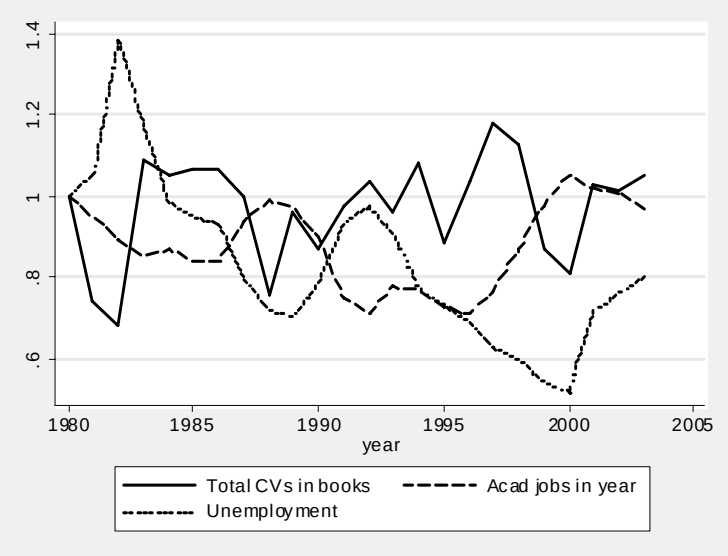

Figure 1: Proxies for Supply and Demand of Economists

is important, as much of the following analysis is identified by inter-temporal variation in the measures of the state of the economy. During the early 1980's recession, unemployment spikes and JOE lists drop. Over the years shown, unemployment moves up and down considerably and the JOE listings generally move in the opposite direction at the same time. The correlation between the unemployment rate and JOE listings is -0.488 and is significantly less than zero at the 98% confidence level. The correlation between the number of CVs in the books (or the number in the books for the first time) and the demand variables is insignificantly different from zero. This provides some initial confidence that economists are not generally timing their decision of when to go on the market based on macroeconomic conditions.

3.3 Cyclicality of Demand and Initial Job Placement

Figure 2 shows the annual macroeconomic conditions, as proxied by total JOE listings, with two measures of the quality of initial job market placement. The lines for the top 50 and tenure-track ranked variables are the proportion of people who were on the market for the last time in a given year that started jobs in these categories the following year. As the graph suggests, quality of placement is at least somewhat cyclical. Fewer graduates get "good" jobs during the early 1980's, 1990's, and 2000's recessions than in surrounding years. Figure 3 shows similar (though noisier) trends for graduates of one of the programs.

To see this relationship between macroeconomic conditions and initial job placement more formally, consider economist i entering the labor force in year t. At the time he looks for a job, potential employers have a common estimate of his ability, α_i. The number of positions available are exogenously determined by the state of the economy, θ_t. All else equal, an economist who enters the job market when θ_t is relatively high will get as good, or better, a job than an economist with equal α_i who enters when θ_t is low. Given this, I model the initial placement of economists as

$$q_{it} = \alpha_i + \delta\theta_t + \beta X_{it} + \varepsilon_{it} \tag{1}$$

where q_{it} is one of the measures of the quality of a job taken by economist i in year t, X is a set of characteristics that affect demand for economists (which will initially include only indicators for individual schools and a linear time trend), and ε_{it} reflects unobserved factors (such as geographical preferences or individual preference for money relative to an academic lifestyle).

Because there is only one observation for initial placement for each person, the ability term (α_i) is part of the error term when estimating (1). The estimated effects of macro conditions on

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the S&P 500 has only one long period of increase and one shorter down period.

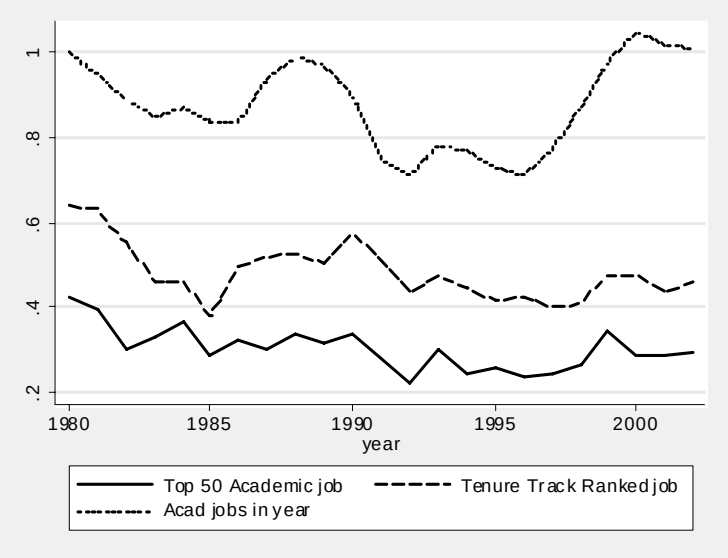

Figure 2: Macroeconomic Conditions and Initial Economist Placement

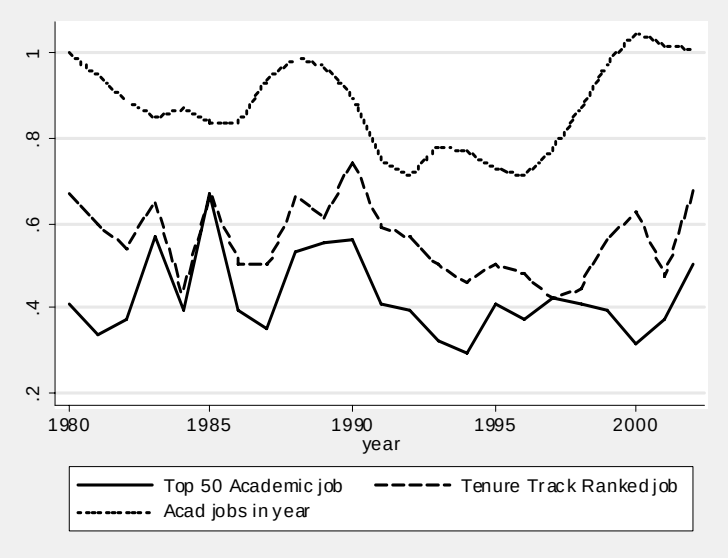

Figure 3: Macroeconomic Conditions and Initial Economist Placement – School #4

Dependent Variable	econphd.net Rank	Log Rank	Ranked	TTR	Top 50
Specification	OLS	OLS	Logit	Logit	Logit
	(1)	(2)	(3)	(4)	(5)
Academic JOE listings	-68.61	-0.593	0.168	0.282	0.299
	(25.59)	(0.319)	(0.087)	(0.051)	(0.052)
Year (trend)	-0.305	-0.003	0.002	-0.003	-0.002
	(0.429)	(0.005)	(0.002)	(0.001)	(0.001)
R^2 (or pseudo R^2)	0.0942	0.0920	0.0625	0.0385	0.0546
N (People)	2,325	2,325	2,325	2,325	2,325

Table 3: Quality of Initial Placement. Each of the dependent variables is a measure of the quality of the job held in the academic year after the person last appears in his school's CV book. The sample is limited to people who appear in two or fewer CV books. "econphd.net Rank" is econphd.net's ranking of the institution, adjusted as described in Table 1 and in the text. "Ranked" is an indicator for working at an institution that is ranked by econphd.net. "TTR" is an indicator for tenure-track ranked position. "Top 50" is a tenure-track position at a school in econphd.net's top 50. See text and notes to Table 1 for more details on each of these variables. All columns include school fixed effects. "JOE listings" is the number of academic jobs listed in Job Openings for Economists in the calendar year when the CV book was sent out divided by the number listed in 1980. Unemployment rate is the U.S. unemployment rate for October of the year the CV book was sent out. In columns 3-5, coefficients are marginal effect on probability. Standard errors (in parentheses) are adjusted for correlation within year.

initial placement (θ_t) will be unbiased as long as supply is not related to the state of the economy. This requires that the average quality of economists not vary systematically with θ_t. Given that the quantity (and, many economists agree, quality) of applicants to graduate programs varies with macroeconomic conditions, it seems plausible that conditions when leaving graduation school could also be related to quality of the outgoing class. For now, I will assume that θ_t for an economist on the job market cannot be predicted by conditions when the economist entered school due to the four-plus years in between and/or that variation in the time it takes to get through graduate school insures θ_t is orthogonal to average α_i in a given class.[10] In later drafts, I will evaluate this assumption more carefully.

The results of estimating (1) using five measures of q_{it} are displayed in Table 3. Columns (1) and (2) show estimates from OLS regressions where the dependent variables are the adjusted rank and log adjusted rank defined in Section 3.1. In both cases, a lower number indicates a higher quality institution (at least as measured by "econphd.net.") The graduate school indicators, which are included in the regression and not displayed, are economically and statistically significant.

[10]As one small piece of evidence in favor of this assumption, the JOE proxies for θ_t are not correlated with the fraction of people on the job market that have a publication by the time they finish school.

Placement success varies systematically across these seven PhD programs. In both regressions, the year trend is insignificant, suggesting that the average ranking of the hiring institutions did not change over the course of the sample.

In both rank OLS regressions, the negative coefficient on "Academic JOE listings" indicates that the average economist is hired by a higher-ranked institution when the demand for economists (as proxied by JOE listings) is relatively high. This relationship is significant at the 2% level when looking at rank and at the 8% level when looking at log rank. The -68.61 coefficient in column (1) indicates that, other things equal, when the number of academic JOE listings grows by 10% of the 1980 listings (which was slightly above the sample average for number of listings), the average economist's first institution will rank almost seven places higher than it otherwise would have. This is equivalent to getting a job at the University of Illinois at Urbana-Champaign rather than at the University of Southern California, at Tulane rather than Oregon State University, or at the Federal Reserve Bank of Cleveland rather than at the Inter-American Development Bank. The -0.593 coefficient suggests that the same 10% change in JOE listings would lead to placing at an institution with a ranking six percent better. This corresponds to getting a job at Cornell rather than the University of Michigan, at UC Santa Cruz rather than the University of Western Ontario, or at Williams College rather than the University of Maine.

Columns (3)-(5) show results from fitting a logit-equivalent version of (1). The dependent variables are indicator variables for working at a ranked institution, holding a tenure-track job at a ranked institution, and holding a tenure-track job at a top 50 institution. The positive and significant coefficients on the JOE variable indicates that economists are more likely to get jobs in these desirable categories when conditions are favorable. The coefficients indicate that an increase in JOE listings by 10% of the 1980 total increases the probability of each of these outcomes by 1.7% to 3.0%. This is a large effect, given an unconditional probability of about a quarter for Top 50 and about a half for the other measures.

In unreported regressions, I also found that the unemployment rate and the return on the S&P 500 predict initial placements. However, these effects generally become insignificant when controlling for the more economist-specific JOE measure. I also found suggestive evidence that non-academic demand for economists makes academic jobs less attractive. When controlling for academic JOE listings, non-academic JOE listings are associated with worse academic placements using all the placement measures in Table 3. However, this effect is only marginally significant.

The estimates in Table 3 suggest that macroeconomic conditions have a large effect on the likelihood of candidates obtaining desirable academic positions. Under the assumption that macroeconomic conditions are orthogonal to average ability of economists on the job market, it appears

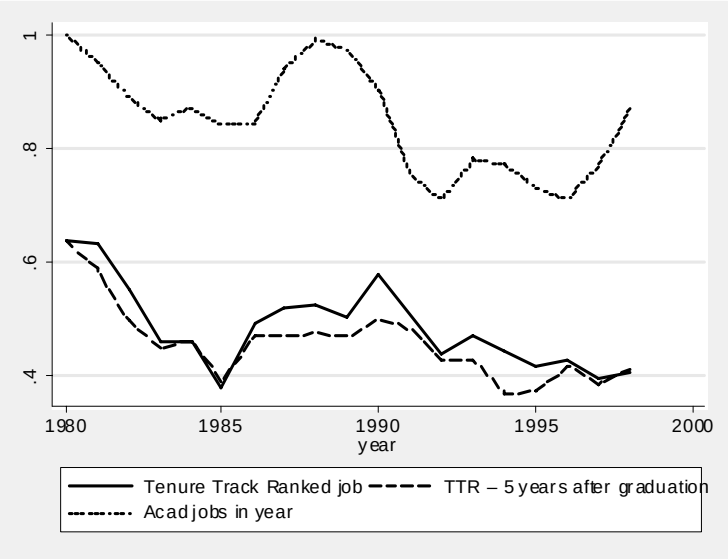

Figure 4: Macroeconomic Conditions, Initial Placement, and Longer-Term Placement

that "luck" plays a large part in the initial placement of economists. The next section investigates the degree to which this effect wears off as macro conditions change over economists' careers.

3.4 Initial Macroeconomic Conditions and Long-term Outcomes

To get an initial sense of the degree to which good initial jobs are related to long-term good jobs, Figure 4 graphs the JOE listings macroeconomic proxy, the fraction of people in each class with initial jobs at tenure-track ranked institutions, and the fraction that hold such jobs five years after the last time they are in their graduate institution's CV book. The graph shows that the proportion holding tenure-track ranked jobs five years after graduation in any given year is closely related to the fraction that hold such jobs immediately after graduation. This could just reflect unobserved variation in quality across classes. However, because the fraction with initial good placement is also related to macroeconomic conditions, there is some reason to believe that initial macro conditions have lasting effects. Figure 5 shows a similar graph for a single school. As with the broader group of economists from seven schools, the relationship between initial and five-year placement is close. However, because this relationship is not obviously closer than it is for the market as a whole, differences in unobserved quality are unlikely to explain the relationship alone because it would seem logical to expect these effects to be stronger within school-years than within a year across a group of schools.

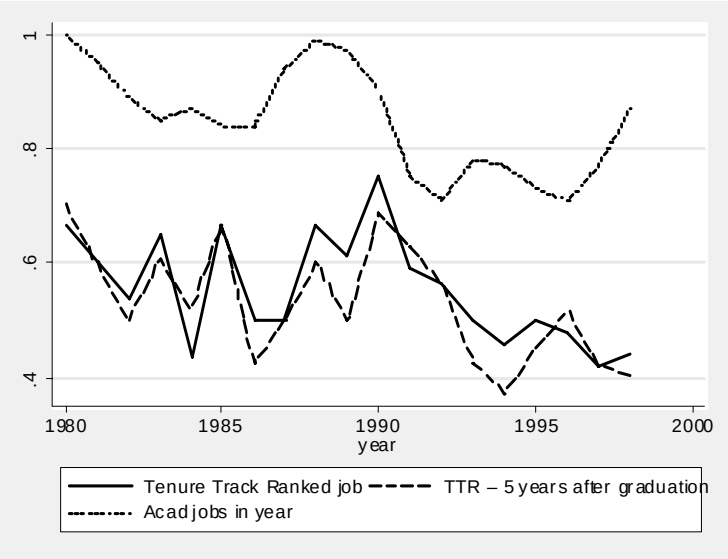

Figure 5: Macroeconomic Conditions, Initial Placement, and Longer-Term Placement – School #4

Figure 6 provides another graphical perspective on the development of cohorts' careers. It shows the fraction of any given graduating class that holds a tenure track ranked job initially, four years after graduation, eight years after, and twelve years after. In the graph, the x-axis represents the Fall of the year the person's CV last appeared in his/her institution's CV book. For any given year on the x-axis, the points on the lines represent the fraction of people in that job market year that held tenure-track ranked jobs some number of years after leaving school. The graph shows that the relationship between initial and later outcomes is always strong but fades over the twelve year interval.

I now more formally address the question of to what extent does obtaining a "good" first job affect the probability of holding a good job at some future date? I start by updating equation (1) for an economist who has been out of school for a number of years. Consider economist i who went on the job market in year m and holds a job in year t. I model his current position as

$$q_{it} = \alpha_i + \delta\theta_t + \beta X_{it} + \phi q_{im} + \varepsilon_{it}. \tag{2}$$

There are two differences between (1) and (2). First, because the person has worked for a number of years, the set of variables in X has evolved. I now control for graduate school, indicators for year of observation (t), indicators for years of experience ($t - m$), and a linear trend for year entered labor market (m).

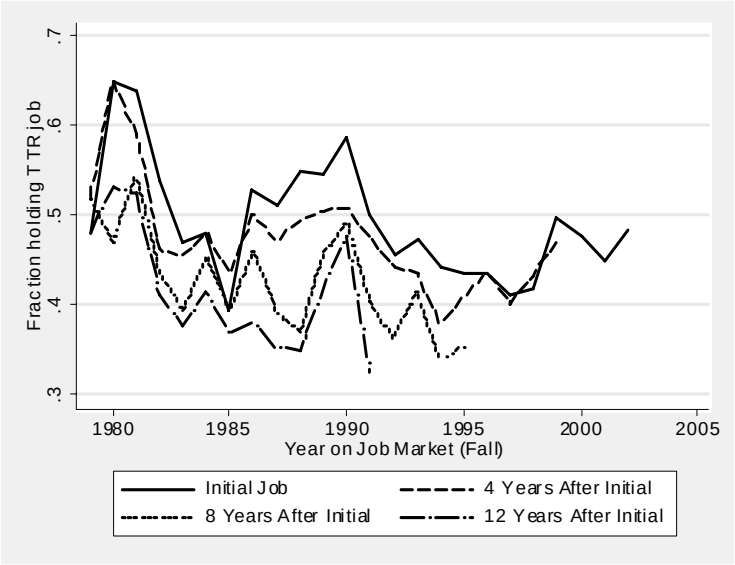

Figure 6: Cohort Fraction with Tenure-track Ranked Jobs Over Twelve Initial Years of Careers

The more important difference between (1) and (2) is ϕ, which is the effect of the quality of the initial job on the current job. This parameter cannot be estimated by OLS (or, in the case of discrete measures of q, by a logit), however. Given that I do not observe α and that it will surely be the case that $corr(q_{im}, \alpha_i) \neq 0$, the OLS estimate of ϕ will not capture the causal effect of a change in the initial job. Even though I have multiple observations for each person, I cannot use person-specific fixed effects to estimate ϕ because q_{im} does not vary across observations for the same person.

Though a causal interpretation of estimates of (2) requires using instrumental variables, I start with standard OLS and logit analyses to establish the baseline determinants of q_{it} and to use for comparison in later analyses that include instruments. Table 4 shows results from this analysis, using two of the job quality measures as dependent variables. In these regressions, an observation is a person/year at least two years after the person went on the job market for the last time. Panel A shows OLS regressions where the dependent variable is the adjusted econphd.net rank and Panel B shows logits where the dependent variable equals one in any year where the person holds a tenure-track position at a ranked institution. The results for the other job quality measures are similar.

Column 1 shows that economists who graduate when JOE listings are relatively high are more likely to have a "good" job at any year in the sample. In fact, the coefficients are quite similar to those for initial placement in Table 3, though the coefficient in the Panel A regression is not

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: OLS, Dependent Variable = econphd.net rank						
JOE listings	-55.48	-86.33				10.29
	(32.15)	(41.01)				(15.78)
Initial Job TTR			-144.88		-11.45	-11.57
			(8.84)		(6.743)	(6.708)
Initial Job rank				0.781	0.757	0.758
				(0.019)	(0.018)	(0.018)
JOE listings *		4.46				
Years Out		(4.62)				
Year (trend)	-2.209	0.959	-2.79	-2.71	-2.75	-2.697
	(0.350)	(0.335)	(0.245)	(0.172)	(0.167)	(0.2380)
R^2	0.0682	0.0683	0.2794	0.6027	0.6036	0.6036
Panel B: Logit, Dep. Var. = 1 if person holds "TTR" position						
JOE listings	0.2163	0.2229				-0.2553
	(0.0774)	(0.0911)				(0.1522)
Initial Job TTR			0.9731		0.8890	0.8921
			(0.0362)		(0.0398)	(0.0375)
Initial Job rank				-0.0020	-0.0005	-0.0005
				(0.0001)	(0.0001)	(0.0001)
JOE listings *		-0.0010				
Years Out		(0.0198)				
Year (trend)	0.0060	0.0051	0.0186	0.0080	0.0186	0.0172
	(0.0008)	(0.0188)	(0.0016)	(0.0011)	(0.0016)	(0.0021)
Pseudo R^2	0.0333	0.0333	0.5122	0.2172	0.5164	0.5171

Table 4: Quality of Longer-Term Job. On observation is a person/year at least two years after the person last goes on the job market. In each regression, there are 21,200 observations covering 2,078 people. The sample is limited to people who appear in two or fewer CV books. "econphd.net Rank" is econphd.net's ranking of the institution, adjusted as described in Table 1 and in the text. "TTR" is an indicator for tenure-track ranked position. All columns include school fixed effects, year of observation fixed effects, and indicators for every possible number of years from when the person went on the market to the observation. "JOE listings" is the number of academic jobs listed in Job Openings for Economists in the calendar year when the CV book was sent out divided by the number listed in 1980. Standard errors (in parentheses) are adjusted for any correlation within year.

statistically significant. In column 2, I include an interaction between the JOE listings and the number of years from the time the person is last on the job market to the observation $(t - m)$. If the effect of initial conditions wears off, this coefficient would indicate that the relationship between initial conditions and job quality gets smaller over time. This would be reflected by a positive coefficient on the interaction variable in Panel A and a negative coefficient in Panel B. However, the interaction variable is imprecisely estimated and insignificant in both panels suggesting that there is no strong evidence that the effects estimated in Table 3 wear off over economists' careers.

Columns 3-5 show the relationship between initial job quality and longer-term job quality. Column 4 of Panel A and Column 3 of Panel B show how each initial quality measure is related to that same measure for longer term outcomes. In both cases, the relationship is quite strong and, in the case of TTR, suggests a one-for-one correspondence between initial job quality and later quality. These effects make the JOE listings variable coefficient insignificant, as shown in Column 5.

A naive interpretation of the results in Columns 3-5 would be that getting a good initial job leads to good later jobs. However, the only way to make a causal interpretation of ϕ is to find an instrument that is exogenous with respect to q_{im} and only affects q_{it} through its effect on q_{im}. That is, I need an exogenous variable that affects economists' initial position but only affects later outcomes through its effect on initial conditions. Fortunately, several candidates are available.

The first instrument is the JOE listings variable used in Table 3. From that Table, it is clear that the JOE variable has a meaningful effect on initial placement. I can see no reason why the JOE listings when the person initially entered the labor market would affect later outcomes other than through its effect on initial placement. So, as long as the standard assumptions for OLS estimation of θ_t in (1) hold (and also allowing for correlation of outcomes for people on the market in a given year), JOE listings should be a valid instrument for q_{im} when estimating (2).

The second set of instruments is the unemployment rate, S&P 500 level, and S&P 500 return variables. While these variables have the advantage that they are unrelated to the market for economists and, therefore, potentially more clearly exogenous with regard to q_{im}, they have the disadvantage that they provide less precise estimates of initial placement. That is, these instruments are weaker than the JOE listings instrument.

I also use indicator variables for market-entry years as instruments. This provides a more flexible specification for effect of individual years on initial conditions relative to the JOE variable. However, the validity of these instruments requires a stronger assumption. Specifically, market entry year is only a valid instrument if the year of entry only affects later positions through its effect on initial placement. A very strong interpretation of this assumption requires that, controlling

for school and years of experience, average economist ability does not differ across the years in the sample. The instrument is also valid under the weaker assumption that demand for economists is inelastic with respect to quality of the new economists available on the market. If schools are allotted a certain number of "slots" in a given year and they fill those slots (to the extent possible) regardless of supply, this assumption will hold.

Table 5 shows IV results using the same dependent variables as in Table 4. In both cases, I use two-stage least squares (so the Panel B results are linear probability estimates.)[11] Columns 1 and 2 use academic JOE listings as the instrument for initial placement and either TTR or rank as the measure of initial job quality. In both cases, the initial placement measure that matches the dependent variable generates the more precise result. But in all four regressions, the point estimate indicates that initial conditions matter. That is, if JOE listings is a valid instrument, it appears that getting a good initial job has a *causal* effect on having a good job later. The Panel B, column 1 estimate suggests that holding a TTR position right after leaving school raises the probability of holding one in a later year by 48%. Given an unconditional probability of about 50%, this is a huge effect. The Panel B, column 2 estimate suggests that holding an initial job that ranks one place higher initially leads to holding a job that ranks 0.69 places higher in a later year.[12]

The estimates using the other macro variables as instruments for initial job lead to similar, though less precisely estimated, coefficients. The estimates in column 4, which use the job market year indicators as instruments, are also similar and they are estimated quite precisely. Though the assumption underlying the validity of this set of instruments is more debatable, the fact that the results are similar across all specifications provides some degree of comfort.

The evidence in the tables and graphs to this point are consistent with the notion that starting conditions have a very large impact on economists' careers. The transition probabilities, the importance of macro conditions on initial conditions, and the correlation between initial conditions and long-term outcomes all suggest that seasoned economists are far more likely to hold a "good" job if they start with a "good" job. The IV estimates in Table 5 imply that this relationship is strong and causal.

These results have several implications. First, they suggest that a fledgling economist who wants to spend his career at a leading institution can increase the odds of that occurring by looking for

[11] I use linear probability two-stage least squares because it is relatively simple to implement, makes interpretation easier, and, according to Angrist (2001), is an appropriate empirical approach in contexts such as this.

[12] I also ran these regressions looking at a single point in careers (such as five years after leaving school or ten years after leaving school.) The results are generally similar and usually the effects of first job remain statistically significant. For years further from graduation, the effects dissipate somewhat and (because the sample size decreases when I condition on a higher number of years since leaving school) become less precise.

	(1)	(2)	(3)	(4)
Panel A: 2SLS, Dependent Variable = econphd.net rank				
Initial Job TTR	-129.17		-191.03	-163.31
	(71.06)		(151.87)	(70.96)
Initial Job rank		0.691		
		(0.198)		
Year (trend)	-2.692	-2.615	-3.068	-2.899
	(0.524)	(0.319)	(0.979)	(0.526)
Instrument(s)	JOE	JOE	Macro	Job Market Year
R^2	0.2769	0.5957	0.2579	0.2760
Panel B: 2SLS, Dep. Var. = 1 if person holds "TTR" position				
Initial Job TTR	0.4820		0.5538	0.5184
	(0.1662)		(0.3069)	(0.1467)
Initial Job rank		-0.0026		
		(0.0014)		
Year (trend)	0.0077	0.0074	0.0081	0.0079
	(0.0012)	(0.0017)	(0.0019)	(0.0011)
Instrument(s)	JOE	JOE	Macro	Job Market Year
Pseudo R^2	0.5179	0.1855	0.5500	0.5354

Table 5: Quality of Longer-Term Job. An observation is a person/year at least two years after the person last goes on the job market. In each regression, there are 21,200 observations covering 2,078 people. The sample is limited to people who appear in two or fewer CV books. In each column, the measure of initial placement is instrumented using the listed set of instruments. "econphd.net Rank" is econphd.net's ranking of the institution, adjusted as described in Table 1 and in the text. "TTR" is an indicator for tenure-track ranked position. "JOE" is the number of academic jobs listed in Job Openings for Economists in the calendar year when the CV book was sent out divided by the number listed in 1980. "Other Macro" indicates the S&P 500 level and one-year return as of the end of October and the October unemployment rate of the year the CV book was distributed. All columns include school fixed effects, year of observation fixed effects, and indicators for every possible number of years from when the person went on the market to the observation. Standard errors (in parentheses) are adjusted for any correlation within year.

a first position when job market conditions are favorable. This is unlikely to be useful for people who are on the track to winning the Nobel Prize or who will never write a publishable paper. However, those economists who are on the margin for getting a good first job can potentially gain significantly by timing their market entry.

Second, an underlying assumption of this analysis is that people would generally agree that job quality is represented by econphd.net or other rankings. Naturally, there are variations in geographical preferences, research styles, and other things that affect happiness on the job. But preferences and skills evolve over careers. Those economists who, because of bad timing, end up at lower ranked schools where they invest in teaching rather than research skills might find it hard to move to a more research-focused school. Their comparative advantage in teaching may make it efficient and preferable for them to stay at their initial employer even if "better" opportunities arise. That is, economists may invest in what Gibbons and Waldman (2004) call "task-specific human capital" and, conditional on initial placement, may obtain higher utility by staying with their first employer than switching to a school that they would have preferred initially.

Finally, none of the analysis to this point has uncovered the reasons for these cohort effects. Is it simply the case that preferences evolve and/or that the costs of moving positions is too high? Or do economists who get better initial positions "deserve" better positions later because they obtain more human capital? Though I will not be able to determine exactly which factors create the cohort effects, I can at least narrow down the possibilities by determining if initial placement affects economist productivity. The next section explores this issue by examining the relationship between research output, initial placement, and later placement.

3.5 Research Productivity and Job Placement

I now consider how initial placement affects research output. As discussed in Section 2, some theories that are consistent with the long-term effects of initial jobs demonstrated in the last section predict that initial placement will affect productivity. Others do not predict a direct effect of first job on productivity. By using publishing activity as a measure of productivity, I can take some steps towards discriminating among possible explanations for long-term effects of initial jobs.

I gathered information on economist productivity by compiling a list of all journal article publications of each economist listed in the online version of "EconLit." I look at total publications and at a variable that categorizes the number of papers an economist published. Economists in the career sample were matched to EconLit using full names. I hand checked any outliers where a person had many publications but did not have a research job or few publications but worked at a top institution. These cases usually were rectified after determining that there were multiple

economists with the same name[13] or that the person publishes under a slight variant from the name on their job market CV. However, there is likely to be at least some (hopefully innocuous) measurement error.

I define a categorical variable, which I will call "publication group", that equals zero for those who have never published (44% of the sample after seven years and 36% after twelve years), one for those with one or two publications (22% and 15%), two for those with three to five publications (18% and 16%), three for those with six to ten (12% and 17%), four for those with eleven to twenty (3% and 13%), and five for those with more than twenty (the remaining 0.25% and 3%.) This categorization was based on a taste for round numbers and the fact that it seemed to break people into groups one might reasonably describe as "superstars", "stars", "solid research contributors", and so on to those who never published. It was the only categorization that I tried. Figures 9 and 10 in the Appendix show the detailed distribution of publication counts seven (censored at ten papers) and twelve years (censored at twenty papers) after leaving school.

The analysis that I discuss in the text and that is displayed in Table 6 is based on publication category while the analysis using number of publications as a dependent variable is displayed in Table 11 in the Appendix. In addition to simple counts of all journals, I also did analyses where I defined the dependent variable as publications in "Top 5" journals, publications in the journals econphd.net includes in compiling its rankings, and publications ranked in Kalaitzidakis et al. (2003). The results were quite similar to those presented below. One might argue that citations is a better measure of productivity than citations. However, I was only able to gather information on number of citations at the present time and so it is not possible (at least not at reasonable cost) to get a consistent measure of citations over a person's career.

The analysis of publications is similar conceptually to the analysis of long-term jobs. I regress publication records as of some number of years after leaving school on measures of the quality of a person's first job and/or measures of demand for economists when the person went on the job market.[14] I then instrument for quality of first job with macro variables that were shown to affect first placement in Section 3.3, but that should not affect research productivity other than through their effect on initial placement. I also instrument for initial placement with a full set of indicator variables for the year the person went on the job market. However, the validity of this instrument requires the assumption that the average ability of job market candidates is constant across years.

[13]Kevin Murphy and John Roberts are especially problematic economist names.

[14]Grove and Wu (2005) also study factors that are correlated with economists' research output. They focus on variables that are observable from graduate school applications. Unless there is some imperfection in the economist labor market, the effects of these variables should be captured by the quality of initial placement and the state of the job market.

Unlike the long-term placement regressions above, I only use one observation per person in any given regression. This is because any measure of publications should include the "stock" of publications to date (at least over the number of years I analyze here). In picking the number of years after the person leaves school, there is an important trade-off between reducing the noise publication lags create in early career publication counts against the fact that each year I wait requires throwing one graduating class out of the data. I ended up settling on seven and twelve years because looking at publication records after only five years turned out to be almost meaningless. The mean and median publications seven years after going on the job market are 2.4 and 1, respectively. At twelve years, these numbers reach 4.9 and 2. The mode is zero in both cases.

Each regression controls for a linear trend in calendar years because, as publication cycles and paper complexity have increased over time (see Ellison (2002b) and Ellison (2002a)), this should lower publication counts at any given point in people's careers. Controlling for year squared and year to the third power generally increases the estimates of the effects of interest in the following analysis, but also increases standard errors.

Panel A of Table 6 shows the results of regressions where the dependent variable is the number of papers the person has published within seven years of going on the job market. In all specifications, the time trend is negative and varies from insignificant to marginally significant, providing weak evidence of a slowdown in publishing in that time frame. The JOE listings at the time the person went on the market does not have any predictive power for publications within seven years. Column (2) shows that, as expected, people who start with tenure-track jobs at research universities publish more than others. However, this is likely to be due to ability and taste differences and may not reflect any effect of the job on output.

Columns (3)-(6) attempt to isolate the causal effect of a good first job on publications by using macro conditions or year indicators to instrument for the first job. While all four regressions have coefficients that suggest better jobs do have a causal effect on output and the magnitudes are large, the estimates are quite noisy and no individual coefficient is anywhere near statistically significant.

Panel B, which looks at output in the first twelve years, shows a stronger link between first job and research output. First, column (1) shows that JOE listings at time of going on the job market are associated with more publications for a given economist twelve years later. The effect is large, indicating that a 10% increase in JOE listings leads a typical economist in that cohort to move up 0.08 categories in the 1-5 scale. This could be due to the fact that people in cohorts when demand is high get better jobs which leads them to publish more. Column (2), which uses OLS, again shows the expected association between good first jobs and more publications.

The column (3)-(6) regressions show that, with twelve years of publication history to use, the IV

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Dependent Variable = Publication group after 7 years						
JOE listings	0.0758	-0.3971				
	(0.4376)	(0.4460)				
Initial Job TTR		0.9354	0.1499	0.1475		
		(0.0611)	(0.8639)	(0.6182)		
Initial Job rank					-0.0007	-0.0007
					(0.0043)	(0.0015)
Year (trend)	-0.0195	-0.0210	-0.0197	-0.0198	-0.0206	-0.0206
	(0.0084)	(0.0082)	(0.0074)	(0.0061)	(0.0056)	(0.0056)
Instrument	None	None	JOE	Year	JOE	Year
R^2	0.0586	0.2061	0.1021	0.1015	0.1124	0.1124
Panel B: Dependent Variable = Publication group after 12 years						
JOE listings	0.8629	0.1579				
	(0.4485)	(0.4123)				
Initial Job TTR		1.343	1.644	1.273		
		(0.0907)	(0.7629)	(0.6077)		
Initial Job rank					-0.01090	-0.0056
					(0.0057)	(0.0016)
Year (trend)	-0.0192	-0.0283	-0.0303	-0.0303	-0.0661	-0.0484
	(0.0139)	(0.0126)	(0.0095)	(0.0096)	(0.0191)	(0.0095)
Instrument	None	None	JOE	Year	JOE	Year
R^2	0.0654	0.2400	0.2313	0.2394	0.2031	0.2038

Table 6: Publication Records. An observation is a person either seven (Panel A) or twelve (Panel B) years after the person last goes on the job market. The dependent variable equals 0 if the person has no EconLit journal articles, 1 if he has 1-2 publications, 2 if he has 3-5, 3 if he has 6-10, 4 if he has 11-20, and 5 if he has more than twenty. There are 1,590 observations in each Panel A regression and 1,044 in Panel B. The sample is limited to people who appear in two or fewer CV books. "Rank" is econphd.net's ranking of the institution, adjusted as described in Table 1 and in the text. "TTR" is an indicator for tenure-track ranked position. All columns include school fixed effects. "JOE listings" is the number of academic jobs listed in Job Openings for Economists in the calendar year when the CV book was sent out divided by the number listed in 1980. "Year" instruments is a set of indicator variables for the possible years of going on the job market. Standard errors (in parentheses) are adjusted for any correlation within year.

specifications show a less noisy relationship between initial placement and publications. In all four specifications, the coefficients indicate that getting a "better" first job leads to more publications and that the effect is at least as large as that indicated by OLS. Putting the coefficients in some perspective, the estimates in columns (5) and (6) indicate that getting a job at, for example, BU rather than Washington University leads a person to move up 0.2-0.4 publication categories. It is hard to put this number into an exact figure, but it is roughly a couple of extra papers for someone who publishes 10-15 papers in twelve years.

The results of the analysis are consistent, but not always overwhelming. The evidence is fairly strong that there is a causal effect of getting a good first job on publication records. This suggests that at least some of the long-term effects of getting a good initial placement as an economist are due to this placement making the person more productive. This rules out a very strict form of influence activity, asymmetric information, or search cost models being the primary reason for long-run effects of initial job placement. The evidence seems consistent with the idea that economists develop "task-specific" human capital as in Gibbons and Waldman (2003). Those who place at research focused institutions develop research skills that lead to more publications. It could also be the result of peer effects from better colleagues or from initial job placement endogenously affecting economists' ambitions and preferences. Naturally, the true underlying model is probably some combination of these possibilities.

4 Empirical Analysis of MBA's

4.1 Data

I now perform a related set of analyses of the employment outcomes of MBAs using a dataset of Stanford Graduate School of Business (GSB) Alumni. Some of the analysis will differ from the economist analysis due to differences in the data and institutional features of the two labor markets. The MBA dataset was gathered through a voluntary survey. I do not have access to names or to a measure of productivity comparable to the publication data used for economists. I also am limited to the graduates of a single institution. I do have a measure of income, though it is crude.

The survey was conducted in 1996 and 1998 and had a response rate of approximately 40%. Survey respondents provided detailed job histories, including jobs before they entered Stanford's MBA program. I use information gathered from members of the GSB classes of 1960 through 1997. Table 7 provides summary statistics of all post-graduation person/year observations, as well as details on each person the year after graduation and at the time they completed the survey. Observations in this table and throughout the analysis are a snapshot of the person's job as of

	Total	First Job	Survey Job
Female	11.6%	19.4%	19.1%
Work in USA	86.05%	83.0%	83.0%
Minority	7.34%	12.47%	12.24%
Investment Banking	12.0%	12.4%	14.4%
Consulting	10.6%	18.6%	13.6%
High Technology	10.7%	11.1%	12.1%
Partner/Owner	24.9%	7.7%	31.1%
Founder	13.0%	3.2%	17.7%
Employees (median)	1,000	2,000	450
Salary > $50,000	77.78%	42.07%	93.34%
Salary > $100,000	47.86%	5.95%	71.09%
Salary > $500,000	9.02%	0.12%	13.62%
Graduation Year	1973.5	1980.4	1980.3
Age	39.6	29.4	44.2
Total Person/years	62,169	3,835	3,938

Table 7: MBA Sample Summary Statistics. "First Job" is the job the person held in the January after graduating. "Survey Job" is the job held when answering the survey in 1996 or 1998. "Employees" is the number of employees at the firm where the respondent worked.

January of each year.

Given that the income data is too crude to analyze formally, the outcome variables I will focus on relate to the industry in which the person works. While it may be reasonable to argue that there is a fairly common view of the "quality" of jobs available to economists, tastes differ more for MBAs. I will focus on jobs in investment banking, consulting, and high technology because these industries are generally attractive to a large set of any Stanford class. However, a large fraction of each class has no interest in any given one of these industries. So this analysis should be thought of more as a means of studying how initial conditions affect human capital investments rather than how they affect job "quality."

I use several proxies for total and industry-specific demand for MBAs. I use the national unemployment rate as a proxy for the overall state of the economy. Both supply and demand of jobs in investment banking are likely to be sensitive to movements in the Stock Market, so I use the one and three-year returns on the S&P 500. To proxy for consulting-specific demand, I use the number of professional staff at the Boston Consulting Group (BCG.) BCG was one of the largest employers of Stanford MBAs over this period and is the only consulting firm that has publicly available employee counts for each year. Employee counts are more readily available for high-technology firms because many of them are public. Therefore, I use the number of employees at Hewlett Packard Company, Oracle Corporation, and National Semiconductor Corporation as

Post-MBA Year	Sample	I-bank	I-bank in	I-bank out	Tech.	Tech. In	Tech. Out
1	3,807	473	326	191	421	310	197
2	3,614	433	22	21	439	57	17
3	3,460	403	30	25	434	58	37
4	3,326	406	39	14	425	53	33
5	3,143	406	42	24	402	37	35
6	3,005	391	19	20	377	33	28
7	2,877	361	14	18	362	31	25
8	2,723	346	15	11	331	23	22
9	2,584	323	16	16	309	24	24
10	2,475	311	16	13	293	20	22
11	2,371	295	12	9	278	21	25
12	2,264	274	12	14	253	14	22
13	2,156	251	12	9	233	9	14
14	2,061	232	11	9	206	8	20

Table 8: MBA Transitions. "I-Bank" is the total number of people working at an investment bank. "Tech" is the number working for a high-technology company. The "in" columns list the number of people who moved to the relevant type of firm a given number of years after receiving MBAs and "out" columns list the number who moved out of the type of firm. Sample size changes because the last observation for a given person is the year of the survey (1996 or 1998).

proxies for demand in high technology.

To get a sense of the dynamics of movement between industries for the respondents, Table 8 shows transitions into and out of investment banking and high technology jobs for the first 14 years after graduating. Graduates are listed as moving into investment banking or high technology in year 1 if they worked in the industry right after graduation but had never worked in that industry before getting an MBA. Those who move out of the industry in year 1 worked there at some point before school but did not take a job in the industry upon receiving an MBA. In subsequent years, movement in or out simply indicates that the person switched jobs and industries during the year.

Movement in and out of both industries is somewhat higher than the movement in and out of academic research jobs for economists shown in Table 2. In the first few years after receiving MBAs, 5-10% of the people in either of these industries leave or were not in the industry the year before. Movement slows by about year ten, however.

4.2 Initial Job Placement

Figure 7 shows how the fraction of graduates whose initial placement is at an investment bank (normalized to one for the class of 1994) rises and falls with the three-year return on the S&P 500 as of June of the year of graduation. The graph shows that the fraction of graduates taking jobs

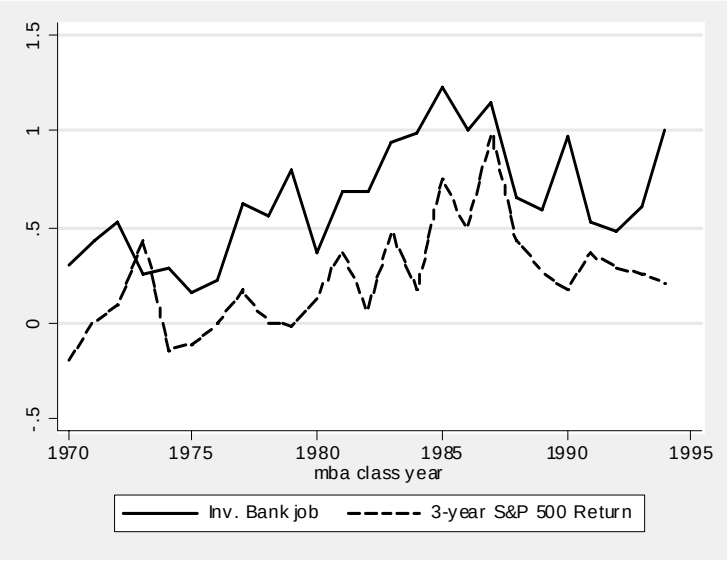

Figure 7: Stock Returns and Initial Placement in Investment Banking

on Wall Street is at least somewhat responsive to recent stock market returns.

Table 9 investigates the determinants of initial industry more formally. Similar to the analysis of first economist jobs, consider MBA i graduating in year t. Unlike the analysis of economists, I am not imposing assumptions about the relative quality of jobs. I simply look at how industry choice is driven by macroeconomic factors. I estimate initial placement as

$$T_{it} = F(\theta_t, X_{it}) \tag{3}$$

where T_{it} is an indicator for whether the person is first employed in, depending on the particular analysis, investment banking, consulting, or high technology, θ_t is a measure of demand for MBAs in the industry in year t, and X is linear, quadratic, and third-power time trends.

As the table shows, macroeconomic and industry-specific proxies for demand have some explanatory power in MBA placement, but the relationships are not generally strong. The relationship between stock returns and the choice to take a job in investment banking is the strongest. The coefficients in columns 1 and 2 indicate that a 10% increase in the S&P 500 over a three-year period is associated with an increase of almost one percent in the probability of the person taking an investment banking job. Given that about 12% of first jobs are in this field, this is a meaningful increase. Using one-year S&P 500 returns leads to similar, but noisier, estimates. As the column 2 results show, the relationship between stock returns and initial placement is not affected by con-

Dependent Variable	Inv Bank	Inv Bank	Consultant	Consultant	High Tech	High Tech
	(1)	(2)	(3)	(4)	(5)	(6)
3-year S&P return	0.0833	0.0827	-0.0447	-0.0500	-0.0368	-0.0303
	(0.0283)	(0.0279)	(0.0242)	(0.0237)	(0.0265)	(0.0250)
BCG employees			0.1231	0.1030		
(000s)			(0.0736)	(0.0757)		
HP employees					0.0023	0.0019
(000s)					(0.0013)	(0.0013)
Oracle employees					-0.0114	-0.0102
(000s)					(0.0026)	(0.0025)
Pre-MBA		0.1774		0.1292		0.1495
		(0.0134)		(0.0206)		(0.0104)
Pseudo R^2	0.0243	0.0900	0.0540	0.0710	0.0127	0.0643
N (People)	3,754	3,754	3,754	3,754	3,754	3,754

Table 9: Industry of Initial Placement. Each column displays the marginal effects on probability, using a logit, where the dependent variables are indicators for the person being employed in the relevant industry as of the January after graduation. Each regression also controls for year, year squared, and year to the third. "Pre-MBA" equals one if, before starting MBA studies, the person ever worked in investment banking (columns 1 and 2), management consulting (columns 3 and 4), and high technology (columns 5 and 6.) The column 5 and 6 logits include variables for National Semiconductor employment, but the coefficients are neglible and insignificant. Standard errors (in parentheses) are adjusted for any correlation within graduating class.

trolling for the person already having experience in investment banking. Rerunning the column 1 regression on samples that include either all people who worked in investment banking or did no work in investment banking before school yields similar results.

The column 3 and 4 analyses show that it is more difficult to find factors that predict placement in consulting. High recent stock returns are associated with a lower propensity to take a job in investment banking. This is consistent with the notion that investment banks and consulting firms compete for MBA graduates. The number of professionals working at BCG is marginally significantly associated with the probability of graduates going into consulting. The coefficient on this variable indicates that, in years when BCG adds 100 employees, the probability of a new graduate entering consulting is about one percent higher. Controlling for pre-MBA consulting experience does not have a material effect on these other variables, but is an important predictor of whether the person takes a consulting job.

Finally, columns 5 and 6 show that it is also difficult to predict placement in high technology. The coefficients on stock return and HP employment are consistent with investment banking and high technology competing for people and with high technology demand increasing high technology placement. However, the results are, at best, marginally statistically significant. Oracle employment has a strong relationship with high technology placement, but the relationship is the reverse of what one might expect. When Oracle employment is relatively high, new MBAs are less likely to take positions in high technology. I also found that the HP and Oracle coefficients are similar to those shown in the table when using growth in employment rather than level. I suspect that this is because, during the times when Oracle was growing, venture capital jobs became more popular with Stanford MBAs. However, that is admittedly an ex post and ad hoc explanation. So, while I will use Oracle employment as an instrument for high tech placement, it is not ideal due to its questionable economic justification for this purpose.

One thing that predicts initial placement in any of these three industries quite well is a set of graduating class indicator variables. That is, the class differences in investment banking placement shown in Figure 7 are economically and statistically meaningful. Under the assumption that these year-to-year differences, controlling for pre-MBA experience, are driven by demand factors and graduates' expectations about the prospects for jobs in these industries, these year indicators constitute a valid instrument for initial placement when looking at longer-term employment. I consider this assumption in more detail in the next section.

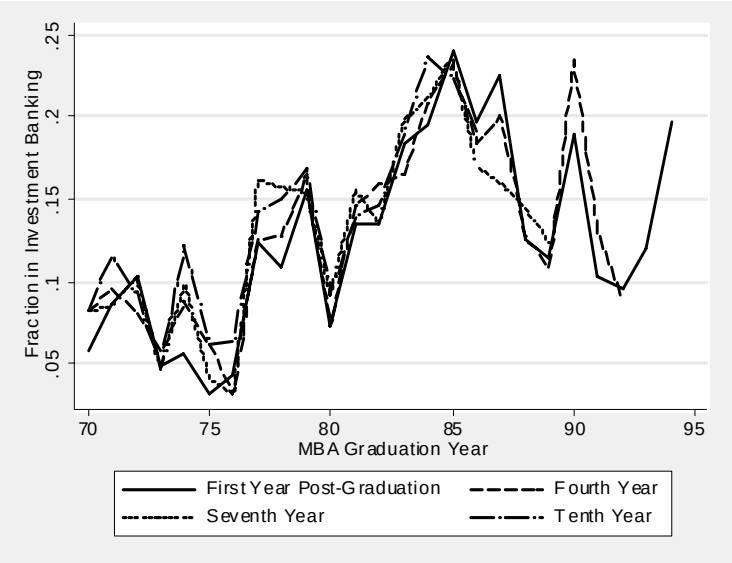

Figure 8: Fraction of Class in Investment Banking 1-10 Years After MBA

4.3 Initial Conditions and Long-Term Outcomes

Figure 8 provides an initial look at how first job after MBA graduation is related to jobs held later. The graph shows the fraction of each graduating class that initially takes a job in investment banking and then what fraction of the class works in banking for up to ten years after graduation. As the graph shows, classes where a relatively large set of people go into banking still have a high fraction in banking at any given year over this first post-graduation decade. For example, there is a substantial drop in people entering investment banking in the late 1980's after the crash of 1987. These classes continue to have low representation on Wall Street over the entire available sample. Graphs for consulting and high technology look similar. While this suggests that an exogenous shock has long-term effects on human capital investments and careers, I now consider this issue more formally.

I model MBA i's industry as of year t by updating equation 3 to

$$T_{it} = F(\theta_t, X_{it}, T_{im}) \tag{4}$$

where T_{im} is an indicator for whether the person worked in investment banking (or whichever industry is being analyzed) in the first year after graduation. As with economists, OLS or a simple logit would not reveal the causal effect of T_{im} on T_{it} because an individual with an appropriate set of skills for a given industry will be more likely to both start in and eventually work in that

industry. As a result, I instrument for T_{im} using either the macro variables used as explanatory variables in Table 9 or a set of indicator variables for each graduating class.

The proxies for demand for new MBA's should be fairly uncontroversial instruments. The return on the S&P 500 and the number of employees at various companies affect initial placement of MBA's, as shown in Table 9, but I see no reason they would affect where they work later except through the effect on initial placement. BCG employment is potentially endogenous to the initial placement decision. But Stanford MBAs are only a small fraction of BCG's staff, so the BCG variable is unlikely to be driven by Stanford graduates. The problem with these variables, however, is that they are fairly weak instruments in some specifications.

Using year dummies as instruments takes care of this problem because the graduating class dummies have very strong explanatory power in initial MBA placement. If this is because the class indicators are more flexible and direct measures of demand for MBAs in a given year, then they are a valuable instrument. That is, if classes of Stanford MBAs are generally similar in skills and interests, at least controlling for pre-MBA industry, then the class indicators are valid instruments because they capture differences in career prospects and demand by employment sector. However, if there are important differences from year to year in the types of people admitted to Stanford, then this may not be a valid approach. The fact that all the MBA results are not generally sensitive to controlling for pre-MBA experience and that the results are generally similar (though less precisely estimated) when using the demand proxies as instruments is somewhat comforting, but it is still important to bear in mind the underlying assumptions when using the class indicators as instruments.

Table 10 displays the results of the IV estimates. The results are strikingly similar across all specifications and for all three industries. They suggest that taking an initial job in any of these industries after MBA graduation increases the probability of holding such a job at any future time by 50-80%. The coefficients are statistically greater than zero at conventional significance levels in all specifications except column 3. The point estimate in that regression is similar to the one when using the graduating class indicators, but is only significant at the 12% level. The estimates are noticeably more precise, but not much different, when using year of graduation as an instrument than when using macro conditions and employment levels at industry firms. Note that Pre-MBA industry does not significantly affect longer-term post-MBA industry, conditioning on initial post-MBA industry.

The results in Table 10 suggest that new MBAs typically develop industry or task-specific human capital after graduating and that this ties them to the industry where they start. While initial placement appears to be partially driven by random demand shocks, those shocks have lasting

Dependent Variable	Inv Bank (1)	Inv Bank (2)	Consultant (3)	Consultant (4)	High Tech (5)	High Tech (6)
Initially in Industry	0.7654	0.8290	0.6232	0.5937	0.5051	0.7117
	(0.3485)	(0.0740)	(0.3880)	(0.1339)	(0.1751)	(0.1092)
In Industry Pre-MBA	0.0484	0.0233	0.0313	0.0345	0.0618	0.0196
	(0.1407)	(0.0322)	(0.0395)	(0.0205)	(0.0476)	(0.0332)
Instruments	S&P	Class	BCG, Macro	Class	Firms, Macro	Class
R^2	0.5241	0.5223	0.2239	0.2336	0.3987	0.4085

Table 10: Industry of Longer-Term Job. All columns are results of two-stage least squares linear probability regressions. Each regression includes 48,933 observations, based on 3,355 people, of a person's job as of January at least two and a half years after graduation from Stanford GSB. "Initially in Industry" equals one if the person was working in the relevant industry (investment banking, consulting, or high technology) in the January after graduation. "In Industry Pre-MBA" equals one if the person worked in the relevant industry before studying at Stanford GSB. Instruments for "Initially in Industry", which are all measured as of time of MBA gradutation, are 1-year and 3-year S&P return in column 1, BCG employment, 3-year S&P return, and the national unemployment rate in column 3, employment at Hewlett-Packard, Oracle, and National Semiconductor, 3-year S&P return, and national unemployment in column 5, and a set of graduating year indicator variables in columns 2, 4, and 6. Standard errors (in parentheses) are adjusted for any correlation within a graduating class.

effects on where MBAs spend their careers. As Table 8 shows, some MBAs do transition in and out of these industries. However, there is considerable stickiness that is apparently attributable to random graduation-date factors. Considering that jobs in investment banking and consulting have typically paid at least 10% above the Stanford MBA median over the last few years and that pay in investment banking is particularly high for those who are successful over a period of time, this suggests that the state of the stock market at graduation has a large and long-term effect on the future wealth of many MBAs.[15]

5 Conclusions and Further Research

At least in the two high-skill professional labor markets studied in this paper, "good" jobs are very persistent. The evidence suggests that a person graduating from a top MBA program or a top economics PhD program that has a particular long-term job in mind should make every effort to get an appropriate *initial* job that will start them on the right path. Economists who work at top research jobs start at top research jobs. While some of this is because top universities hire

[15]Further detail on the initial placement of Stanford MBAs from the classes of 1997-2004, including industry and compensation details, can be found at http://www.gsb.stanford.edu/cmc/reports/index.html.

researchers with obvious potential, some is just the luck of the job market when people graduate.

One implication of this study, therefore, is that graduating economists who are not at the very top or very bottom of their cohort may reap long-term benefits by timing their market entry to coincide with a strong job market. Naturally, if that strategy became too common, the benefits of using it would likely go away as supply responded to demand. Given that MBA's do not have the "luxury" of staying in school to wait out a bad job market, the results in this paper suggest that getting into a person's industry of choice as soon after graduation as possible is likely to be the best way to increase the probability of working in that industry in the long-term.

Another implication of this study is that luck matters a lot in these markets. A bad economy at market entry will have a long-term effect on a lot of market participants. These people may adopt their ambitions and tastes so that these effects are nearly utility neutral. But initial job market luck appears to move large amounts of wealth, determine top positions in academia, and drive research productivity between neighboring cohorts of graduates. Understanding just how much money is involved in these transfers would require much better compensation data than what is available in the data used in this paper.

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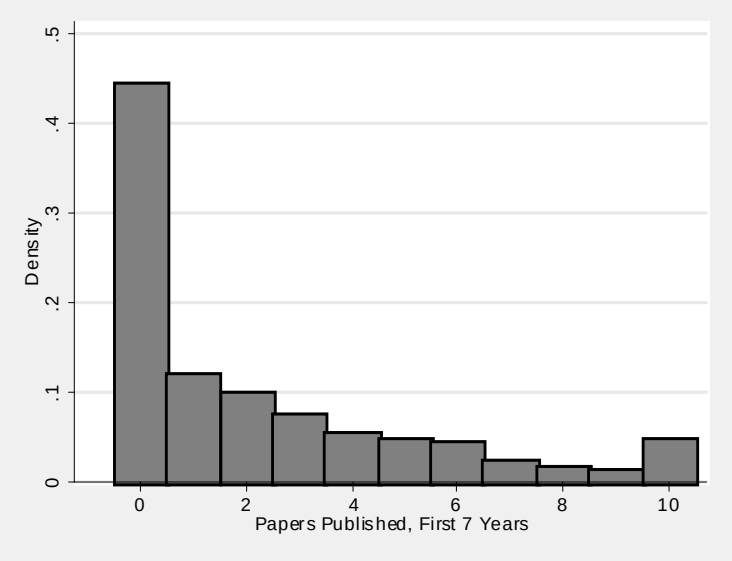

Figure 9: Publications in First 7 Years (10 = 10 or more)

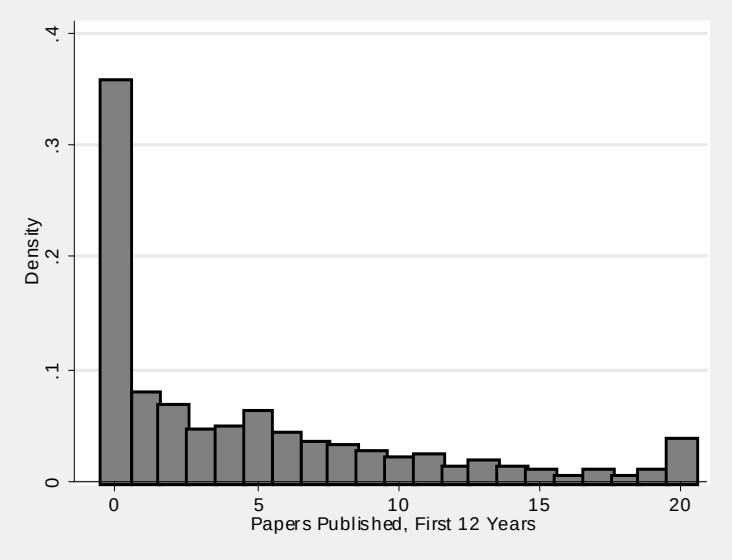

Figure 10: Publications in First 12 Years (20 = 20 or more)

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Dependent Variable = Papers after 7 years						
JOE listings	0.3990	-0.7842				
	(1.296)	(1.308)				
Initial Job TTR		2.340	1.616	1.573		
		(0.2060)	(2.344)	(2.107)		
Initial Job rank					-0.0038	-0.0028
					(0.0127)	(0.0051)
Year (trend)	-0.0681	-0.0718	-0.0422	-0.0424	-0.0737	-0.0737
	(0.0264)	(0.0267)	(0.0254)	(0.0245)	(0.0163)	(0.0164)
Instrument	None	None	Macro	Year	Macro	Year
R^2	0.0603	0.1722	0.1311	0.1302	0.1339	0.1187
Panel B: Dependent Variable = Papers after 12 years						
JOE listings	2.546	0.1269				
	(2.330)	(2.156)				
Initial Job TTR		4.610	4.851	4.4489		
		(0.4761)	(4.076)	(3.688)		
Initial Job rank					-0.0322	-0.0203
					(0.0251)	(0.0115)
Year (trend)	-0.1121	-0.1432	-0.1449	-0.1448	-0.2505	-0.2114
	(0.0715)	(0.0656)	(0.0514)	(0.0525)	(0.0789)	(0.0646)
Instrument	None	None	Macro	Year	Macro	Year
R^2	0.0652	0.1834	0.1831	0.1833	0.0550	0.1720

Table 11: Publication Records. An observation is a person either seven (Panel A) or twelve (Panel B) years after the person last goes on the job market. The dependent variable is the number of EconLit journal articles. There are 1,590 observations in each Panel A regression and 1,044 in Panel B. The sample is limited to people who appear in two or fewer CV books. "Rank" is econphd.net's ranking of the institution, adjusted as described in Table 1 and in the text. "TTR" is an indicator for tenure-track ranked position. All columns include school fixed effects. "JOE listings" is the number of academic jobs listed in Job Openings for Economists in the calendar year when the CV book was sent out divided by the number listed in 1980. The "Macro" instruments are JOE listings, S&P 500 level, S&P 500 return for the year, and national unemployment rate. "Year" instruments is a set of indicator variables for the possible years of going on the job market. Standard errors (in parentheses) are adjusted for any correlation within year.