

Data Appendix

How Responsive is Higher Education? The Linkages between Higher Education and the Labor Market

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I. Compilation of Labor Market Statistics from the Current Population Survey

The labor market data employed in the paper are drawn from the CEPR ORG Version 1.5 and are freely available online from <http://www.ceprdata.org/>. The CEPR ORG are prepared from the NBER Outgoing Rotation Groups, also available online at: <http://www.nber.org/>, and which are in turn extracts from the Current Population Survey, now jointly conducted by the BLS and the Census Bureau.

The CEPR extracts are the preferable version to employ in our analysis as they have been manipulated to create a consistent wage series over our entire sample period. These adjustments are detailed in John Schmitt's (2003) which discusses the creation of earnings series making the following adjustments to the raw earnings data:

"Adjusting for changes in the topcoding of weekly earnings; trimming outliers; including overtime, tips, and commissions for "hourly workers"; and adjusting for the "hours vary" response to the "usual weekly hours", instituted in 1994."

Employment in the CPS Outgoing rotation groups is coded according to the Census Occupational Coding Scheme. Though not as clearly documented as one would hope, the CPS classify occupations according to the 1980 occupational coding scheme up through 1991. From 1992 to 2002, occupations are coded using the 1990 Census Coding Scheme, and from 2003-2009, occupations are coded using the Census 2000 Coding Scheme.

Deriving consistent occupations over time is a tricky exercise. Our solution is to employ a mapping scheme devised by Peter Meyer and Anastasiya Osborne (2005), which proposes a standardized list of occupations in Appendix A and tests them for consistency over time. We derive wage, employment, and occupation specific characteristics for these standardized consistent occupations.

Further documentation regarding construction of our labor market variables can be found within the Stata code, available online: <http://faculty-staff.ou.edu/H/Daniel.Hicks-1/data.html>.

II. Compilation of Degree Completions

Construction of consistent degree completions data over the entire sample period required some data manipulation as well. We use completions data from the Integrated Post-Secondary Education Data System or IPEDS provided by the National Center for Education Statistics (NCES) and available from <http://nces.ed.gov>. IPEDS essentially represents a census of all post-secondary degree granting institutions in the US on an annual basis, although no data are available for the year 1999.

Degree programs in the IPEDS data are classified according to the Classification of Instructional Programs (CIP) coding scheme. NCES has in numerous years updated the classification scheme. In order to obtain consistent education series, we employ the various NCES CIP crosswalks available from <http://nces.ed.gov/pubs2002/cip2000/>.

Further documentation regarding construction of our completions data can be found within the Stata code, available online: <http://faculty-staff.ou.edu/H/Daniel.Hicks-1/data.html>.

III. Pairing Scheme

A major concern in our analysis was the potential for our pairing scheme to introduce issues of sample selection. We have tried to limit our pairing using both common sense and clear rules and have explored several different pairings.

Our pairing is a subset of an initial degrees and occupations crosswalk created by the NCES and available online from <http://nces.ed.gov/pubs2002/cip2000/>. Within this crosswalk we limited our matches using the following criteria:

- 1-2) Matches must have completions and employment data for all paired years.
- 3) Employment must exceed 5000 in all years for pairings.
- 4) Completions must exceed 1000 in all years for pairings.
- 5) Employment must exceed completions for a given pair in all years for pairings.
- 6) Annual changes in completions must not exceed 250% for pairings.
- 7) Dropping pairings with very weak or very ambiguous matching or coding induced jumps.

Table IV(b) lists all excluded occupations and reason for exclusion. Surprisingly (1-2) does not prove as restrictive as we had feared. Many of the pairings which involve extremely new degree programs only have completions data for the period 2000 onwards, but at the same time, these pairings provide very few years of data, particularly once we incorporate lags into our regressions. The idea behind (3) and (4) is to limit the effect of extremely small pairings, which are of less interest to readers and to policymakers. When completions exceed employment as in (5) we have a clear indicator of a very weak pairing. The introduction of new completions programs sometimes caused extremely large jumps or falls in completions, restriction (6) captures many of these. The remainder we tried to capture by hand in (7). In addition to the limiting the overall pairings, we additionally removed from the NCES crosswalk, pairings to CIPCODE 99 for broad matches.

A complete list of pairings is included in Table IV(a). A complete list of excluded pairings is listed in Table IV(b), which includes notation explaining which criteria we used to exclude a pairing, and if we excluded a pairing for reason (6), explains in further detail for that specific pairing.

In addition to the NCES pairing, we restricted matches to "appropriate" degree levels, this can be seen for our primary sample in Table IV(a). This means individuals earning a PhD in Law were matched to college professors and those earning a JD were matched to practicing Lawyers. Several subsamples and different possible pairings are of interest. Table IV(c) lists the complete set of degrees matched to occupations used in our main sample regressions and is available online.

For the matches involving many occupations or degrees, additional computation was required. Where there were multiple matches on the education side, we linked degree and occupation by summing completions across the corresponding unique degree programs. Similarly, when there were many possible matches on the employment side, we simply summed employment across the relevant unique occupations. In order to obtain a consistent wage, we employed a weighted average of the wages among the linked occupations, where the weights were defined as the number of individuals employed under each occupational code of a given match. In this way we were able to preserve the total wage bill of the occupations in the pairing and provide a good proxy of the expected wage one might expect from multi-occupation knowledge areas.

Further documentation regarding our pairing scheme can be found within the Stata code, available online: <http://faculty-staff.ou.edu/H/Daniel.Hicks-1/data.html>.

IV. Selected Tables

IV(a) Matched Occupation Titles and Corresponding Degree Levels

Primary Sample

Meyer and Osborne Title	MO Code	Degree Level Matched
Financial managers	7	MA or Less
Human resources and labor relations managers	8	MA or Less
Managers and specialists in marketing, advertising, and public relations	13	MA or Less
Managers in education and related fields	14	MA or Less
Managers of medicine and health occupations	15	MA or Less
Funeral directors	19	MA or Less
Accountants and auditors	23	MA or Less
Other financial specialists	25	MA or Less
Personnel, HR, training, and labor relations specialists	27	MA or Less
Architects	43	MA or Less
Aerospace engineer	44	MA or Less
Metallurgical and materials engineers, variously phrased	45	MA or Less
Petroleum, mining, and geological engineers	47	MA or Less
Chemical engineers	48	MA or Less
Civil engineers	53	MA or Less
Electrical engineer	55	MA or Less
Industrial engineers	56	MA or Less
Mechanical engineers	57	MA or Less
Engineers not elsewhere classified	59	MA or Less
Computer systems analysts and computer scientists	64	MA or Less
Operations and systems researchers and analysts	65	MA or Less
Physicists and astronomers	69	MA or Less
Chemists	73	MA or Less
Atmospheric and space scientists	74	MA or Less
Geologists	75	MA or Less
Biological scientists	78	MA or Less
Foresters and conservation scientists	79	MA or Less
Physicians	84	Specialty Degree Only
Dentists	85	Specialty Degree Only
Veterinarians	86	Specialty Degree Only
Registered nurses	95	MA or Less
Pharmacists	96	Other see coding
Dietitians and nutritionists	97	MA or Less
Respiratory therapists	98	MA or Less
Occupational therapists	99	MA or Less

Physical therapists	103	MA or Less
Speech therapists	104	MA or Less
Subject instructors, college	154	PhD Only
Primary school teachers	156	MA or Less
Secondary school teachers	157	MA or Less
Special education teachers	158	MA or Less
Vocational and educational counselors	163	MA or Less
Librarians	164	MA or Less
Archivists and curators	165	MA or Less
Economists, market researchers, and survey researchers	166	MA or Less
Psychologists	167	Other see coding
Urban and regional planners	173	MA or Less
Social workers	174	MA or Less
Recreation workers	175	MA or Less
Clergy and religious workers	176	Other see coding
Lawyers	178	Specialty Degree Only
Writers and authors	183	MA or Less
Technical writers	184	MA or Less
Designers	185	MA or Less
Musician or composer	186	MA or Less
Actors, directors, producers	187	MA or Less
Art makers: painters, sculptors, craft-artists, and print-makers	188	MA or Less
Photographers	189	MA or Less
Dancers	193	MA or Less
Editors and reporters	195	MA or Less
Clinical laboratory technologies and technicians	203	MA or Less
Dental hygienists	204	MA or Less
Health record tech specialists	205	MA or Less
Radiologic tech specialists	206	MA or Less
Licensed practical nurses	207	MA or Less
Health technologists and technicians, n.e.c.	208	MA or Less
Engineering technicians, n.e.c.	214	MA or Less
Chemical technicians	224	MA or Less
Airplane pilots and navigators	226	MA or Less
Computer software developers	229	MA or Less
Legal assistants and paralegals	234	Other see coding
Dental assistants	445	Other see coding
Health aides, except nursing	446	Other see coding
Automobile mechanics	505	Other see coding
Heating, air conditioning, and refrigeration mechanics	534	Other see coding
Carpenters	567	Other see coding
Electricians	575	Other see coding
Dental laboratory and medical appliance technicians	678	MA or Less

IV(b) Matched Occupation Titles and Exclusion Reasons
All Excluded Occupations

Meyer and Osborne Title	MO Code	Exclusion Reason						
		#1	#2	#3	#4	#5	#6	#7
Legislators	3	0	0	1	0	1	0	0
Chief executives and public administrators	4	0	0	0	0	1	0	0
Postmasters and mail superintendents	16	0	0	1	0	0	0	0
Managers of food-serving and lodging establishments	17	0	1	1	0	0	1	0
Managers of properties and real estate	18	0	0	1	0	0	1	0
Managers of service organizations, n.e.c.	21	0	0	1	0	1	0	1
Managers and administrators, n.e.c.	22	0	0	0	0	0	0	1
Insurance underwriters	24	0	1	0	0	0	0	0
Management analysts	26	0	0	0	0	1	0	0
Purchasing agents and buyers, of farm products	28	0	1	0	1	0	0	0
Buyers, wholesale and retail trade	29	0	1	0	0	0	0	0
Purchasing managers, agents and buyers, n.e.c.	33	0	0	0	0	0	1	0
Business and promotion agents	34	0	0	0	0	0	0	1
Construction inspectors	35	0	0	0	0	0	1	1
Inspectors and compliance officers, outside construction	36	0	0	0	0	0	0	1
Management support occupations	37	0	0	0	0	0	0	1
Actuaries	66	0	1	0	1	0	0	0
Statisticians	67	0	0	0	0	1	0	0
Mathematicians and mathematical scientists	68	0	0	1	0	1	0	0
Physical scientists, n.e.c.	76	0	0	0	0	0	0	1
Agricultural and food scientists	77	0	0	0	0	0	1	1
Medical scientists	83	0	0	0	0	1	0	0
Optometrists	87	0	1	0	0	0	0	0
Podiatrists	88	0	1	0	1	0	0	0
Other health and therapy	89	0	1	0	0	0	0	0
Therapists, n.e.c.	105	0	0	0	0	0	0	1
Physicians' assistants	106	0	1	0	0	0	0	0
Earth, environmental, and marine science instructors	113	1	0	1	0	1	1	0
Biological science instructors	114	1	0	0	0	1	1	0
Chemistry instructors	115	1	0	0	0	1	1	0
Physics instructors	116	1	0	0	0	1	1	0
Psychology instructors	118	1	0	0	0	1	1	0
Economics instructors	119	1	0	0	0	1	1	0
History instructors	123	1	0	0	0	1	1	0
Sociology instructors	125	1	0	0	0	1	1	0
Engineering instructors	127	1	0	0	0	1	1	0
Math instructors	128	1	0	0	0	1	1	0
Education instructors	139	1	0	0	0	1	1	0

Law instructors	145	1	0	1	0	1	1	0
Theology instructors	147	1	0	0	0	1	1	0
Home economics instructors	149	1	0	1	0	1	1	0
Humanities instructors, nec	150	1	0	1	0	1	1	0
Subject instructors, college	154	0	0	0	0	1	0	0
Kindergarten and earlier school teachers	155	0	1	0	0	0	0	0
Teachers , n.e.c.	159	0	0	0	0	0	0	1
Sociologists	168	0	0	1	0	1	0	0
Social scientists, n.e.c.	169	0	0	0	0	1	0	0
Judges	179	0	0	1	0	1	0	0
Art/entertainment performers and related	194	0	0	0	0	0	0	1
Announcers	198	0	0	0	0	0	0	1
Athletes, sports instructors, and officials	199	0	0	0	0	0	0	1
Professionals, n.e.c.	200	1	0	1	0	1	1	0
Electrical and electronic (engineering) technicians	213	1	0	0	0	1	1	0
Mechanical engineering technicians	215	1	0	0	0	1	1	0
Drafters	217	0	1	0	0	0	0	0
Surveyors, cartographers, mapping scientists and technicians	218	0	1	0	0	0	0	0
Biological technicians	223	0	0	0	0	0	1	0
Other science technicians	225	0	0	0	1	0	0	0
Air traffic controllers	227	0	0	0	1	0	0	0
Broadcast equipment operators	228	0	0	0	0	0	1	1
Programmers of numerically controlled machine tools	233	0	0	1	0	1	0	0
Technicians, n.e.c.	235	0	0	1	1	0	0	0
Sales supervisors and proprietors	243	0	0	0	0	0	0	1
Insurance sales occupations	253	0	1	0	0	0	0	0
Real estate sales occupations	254	0	0	0	0	0	1	0
Financial services sales occupations	255	0	1	0	0	0	1	0
Advertising and related sales jobs	256	0	1	0	0	0	0	0
Sales engineers	258	0	1	0	0	0	0	0
Retail sales clerks	275	0	1	0	0	0	0	0
Cashiers	276	0	0	0	0	0	0	1
Door-to-door sales, street sales, and news vendors	277	0	1	0	0	0	0	0
Sales demonstrators / promoters / models	283	0	1	0	1	0	0	0
Office supervisors	303	0	0	0	0	0	0	1
Computer and peripheral equipment operators	308	0	0	0	0	0	0	1
Secretaries	313	0	0	0	0	0	0	1
Stenographers	314	1	0	0	0	1	1	1
Typists	315	0	0	0	0	0	0	1
Interviewers, enumerators, and surveyors	316	0	1	0	0	0	0	1
Hotel clerks	317	0	1	0	0	0	0	1
Transportation ticket and reservation agents	318	0	1	0	0	0	0	1

Receptionists	319	0	0	0	0	0	0	1
Information clerks, nec	323	1	0	0	0	1	1	1
Correspondence and order clerks	326	0	0	0	0	0	0	1
Human resources clerks, except payroll and timekeeping	328	0	0	0	0	0	0	1
Library assistants	329	0	0	0	1	0	0	0
File clerks	335	0	0	0	0	0	0	1
Records clerks	336	0	0	0	0	0	0	1
Bookkeepers and accounting and auditing clerks	337	0	0	0	0	0	0	1
Payroll and timekeeping clerks	338	0	0	0	0	0	0	1
Cost and rate clerks (financial records processing)	343	1	0	0	0	1	1	1
Billing clerks and related financial records processing	344	0	0	0	0	0	0	1
Duplication machine operators / office machine operators	345	1	0	0	0	1	1	1
Mail and paper handlers	346	0	0	1	0	1	0	1
Office machine operators, n.e.c.	347	0	0	0	0	0	0	1
Telephone operators	348	0	1	0	0	0	1	1
Other telecom operators	349	0	0	0	0	0	0	1
Postal clerks, excluding mail carriers	354	0	0	0	0	0	0	1
Mail carriers for postal service	355	0	0	0	0	0	0	1
Mail clerks, outside of post office	356	0	0	0	0	0	0	1
Messengers	357	1	0	0	0	1	1	1
Dispatchers	359	1	0	0	0	1	1	1
Inspectors, n.e.c.	361	1	0	1	0	1	1	1
Shipping and receiving clerks	364	0	0	0	0	0	0	1
Stock and inventory clerks	365	0	0	0	0	0	0	1
Meter readers	366	1	0	0	0	1	1	1
Weighers, measurers, and checkers	368	0	0	0	0	0	0	1
Material recording, scheduling, production, planning, and expediting clerks	373	0	0	0	0	0	0	1
Insurance adjusters, examiners, and investigators	375	0	0	0	0	0	0	1
Customer service reps, investigators and adjusters, except insurance	376	0	1	0	0	0	0	0
Eligibility clerks for government programs; social welfare	377	0	0	0	0	0	0	1
Bill and account collectors	378	0	1	0	0	0	0	0
General office clerks	379	0	0	0	0	0	0	1
Bank tellers	383	0	1	0	0	0	0	1
Proofreaders	384	0	1	0	0	0	0	1
Data entry keyers	385	0	0	0	0	0	1	1
Statistical clerks	386	0	0	0	0	0	0	1
Teacher's aides	387	1	0	0	0	1	1	1
Administrative support jobs, n.e.c.	389	0	0	0	0	0	0	1
Private household cleaners and servants	407	1	0	0	0	1	1	0
Supervisors of guards	415	0	0	0	0	0	1	0
Fire fighting, prevention, and inspection	417	0	0	0	0	0	0	1

Police, detectives, and private investigators	418	0	0	0	0	0	0	1
Other law enforcement: sheriffs, bailiffs, correctional institution officers	423	0	0	0	0	0	0	1
Crossing guards and bridge tenders	425	0	0	0	0	0	0	1
Guards, watchmen, doorkeepers	426	0	0	0	0	0	0	1
Bartenders	434	0	1	0	0	0	1	0
Waiter/waitress	435	0	1	0	1	0	1	0
Cooks, variously defined	436	0	1	0	0	0	0	0
Food counter and fountain workers	438	1	0	0	0	1	1	0
Kitchen workers	439	0	1	0	0	0	0	0
Nursing aides, orderlies, and attendants	447	0	0	0	0	0	1	0
Supervisors of cleaning and building service	448	1	0	0	0	1	1	0
Janitors	453	1	0	0	0	1	1	0
Elevator operators	454	1	0	1	0	1	1	0
Pest control occupations	455	0	1	0	1	0	0	0
Supervisors of personal service jobs, n.e.c.	456	1	0	0	0	1	1	0
Barbers	457	0	0	0	0	0	1	1
Hairdressers and cosmetologists	458	0	0	0	0	0	1	0
Recreation facility attendants	459	1	0	0	0	1	1	0
Guides	461	0	0	0	0	0	0	1
Ushers	462	1	0	0	0	1	1	0
Public transportation attendants and inspectors	463	0	0	0	0	0	1	0
Baggage porters	464	1	0	0	0	1	1	0
Welfare service aides	465	0	0	0	0	0	0	1
Child care workers	468	0	1	0	0	0	0	0
Farmers (owners and tenants)	473	0	0	0	0	0	0	1
Horticultural specialty farmers	474	1	0	0	0	1	1	1
Farm managers, except for horticultural farms	475	0	0	0	0	0	0	1
Managers of horticultural specialty farms	476	1	0	1	0	1	1	1
Farm workers	479	0	0	0	0	0	0	1
Marine life cultivation workers	483	1	0	1	0	1	1	1
Nursery farming workers	484	1	0	0	0	1	1	1
Supervisors of agricultural occupations	485	0	0	0	0	0	0	1
Gardeners and groundskeepers	486	0	0	0	0	0	0	1
Animal caretakers except on farms	487	0	1	0	1	0	1	0
Graders and sorters of agricultural products	488	0	1	0	1	0	0	0
Inspectors of agricultural products	489	0	1	1	1	0	0	0
Timber, logging, and forestry workers	496	0	0	0	0	0	0	1
Fishers, hunters, and kindred	498	0	0	0	1	0	1	0
Supervisors of mechanics and repairers	503	0	0	0	0	0	0	1
Bus, truck, and stationary engine mechanics	507	0	0	0	0	0	0	1
Aircraft mechanics	508	0	1	0	0	0	0	0
Small engine repairers	509	0	0	0	0	0	0	1

Auto body repairers	514	0	0	0	0	0	0	1
Heavy equipment and farm equipment mechanics	516	0	0	0	0	0	0	1
Industrial machinery repairers	518	0	0	0	0	0	0	1
Machinery maintenance occupations	519	0	0	0	0	0	0	1
Repairers of industrial electrical equipment	523	0	0	0	0	0	0	1
Repairers of data processing equipment	525	0	0	0	0	0	0	1
Repairers of household appliances and power tools	526	0	0	0	1	0	0	0
Telecom and line installers and repairers	527	0	0	0	0	0	0	1
Repairers of electrical equipment, n.e.c.	533	0	0	0	0	0	0	1
Precision makers, repairers, and smiths	535	0	0	0	0	0	0	1
Locksmiths and safe repairers	536	0	1	0	0	0	1	0
Office machine repairers and mechanics	538	1	0	0	0	1	1	0
Repairers of mechanical controls and valves	539	1	0	0	0	1	1	0
Elevator installers and repairers	543	0	0	0	0	0	0	1
Millwrights	544	0	0	0	0	0	0	1
Drywall installers	573	0	0	0	0	0	0	1
Electric power installers and repairers	577	0	0	0	0	0	0	1
Painters, construction and maintenance	579	0	0	0	1	0	1	0
Paperhangers	583	0	0	0	1	0	1	0
Plasterers	584	0	0	0	0	0	0	1
Plumbers, pipe fitters, and steamfitters	585	0	1	0	0	0	0	0
Concrete and cement workers	588	0	0	0	0	0	0	1
Glaziers	589	0	1	0	1	0	1	1
Insulation workers	593	0	0	0	0	0	0	1
Paving, surfacing, and tamping equipment operators	594	0	0	0	1	0	0	1
Roofers and slaters	595	1	0	0	0	1	1	1
Sheet metal duct installers	596	0	0	0	0	0	0	1
Drillers of earth	598	0	0	0	1	0	0	1
Drillers of oil wells	614	0	0	0	0	0	0	1
Explosives workers	615	1	0	1	0	1	1	1
Miners	616	0	0	0	1	0	0	1
Other mining occupations	617	0	0	0	1	0	0	1
Tool and die makers and die setters	634	0	0	0	0	0	0	1
Machinists	637	0	0	0	0	0	0	1
Boilermakers	643	0	1	0	1	0	0	1
Precision grinders and filers	644	0	0	0	0	0	0	1
Patternmakers and model makers	645	0	0	0	0	0	0	1
Lay-out workers	646	0	0	1	0	0	0	0
Engravers	649	0	1	0	1	0	0	0
Tinsmiths, coppersmiths, and sheet metal workers	653	1	0	0	0	1	1	0
Cabinetmakers and bench carpenters	657	0	0	0	1	0	0	0
Furniture and wood finishers	658	0	0	0	1	0	0	0
Other precision woodworkers	659	1	0	1	0	1	1	0

Dressmakers and seamstresses	666	1	0	0	0	1	1	0
Tailors	667	1	0	0	0	1	1	0
Upholsterers	668	0	0	0	1	0	0	0
Shoe repairers	669	0	1	0	1	0	0	0
Other precision apparel and fabric workers	674	1	0	0	0	1	1	0
Hand molders and shapers, except jewelers	675	1	0	0	0	1	1	0
Optical goods workers	677	0	1	0	1	0	0	0
Bookbinders	679	0	0	0	0	0	0	1
Other precision and craft workers	684	0	0	0	0	0	0	1
Butchers and meat cutters	686	0	1	0	0	0	1	0
Bakers	687	0	1	0	0	0	0	0
Batch food makers	688	0	1	0	0	0	1	0
Adjusters and calibrators	693	1	0	1	0	1	1	0
Water and sewage treatment plant operators	694	0	0	0	0	0	0	1
Power plant operators	695	0	1	0	1	0	0	0
Plant and system operators, stationary engineers	696	1	0	0	0	1	1	0
Other plant and system operators	699	0	0	0	0	0	0	1
Lathe, milling, and turning machine operatives	703	0	0	0	0	0	1	1
Punching and stamping press operatives	706	0	0	0	0	0	1	1
Rollers, roll hands, and finishers of metal	707	0	0	0	0	0	1	1
Drilling and boring machine operators	708	0	0	1	0	1	1	1
Grinding, abrading, buffing, and polishing workers	709	0	0	0	0	0	0	1
Forge and hammer operators	713	0	0	0	0	0	1	1
Fabricating machine operators, n.e.c.	717	1	0	0	0	1	1	1
Molders, and casting machine operators	719	0	1	0	1	0	1	1
Metal platers	723	1	0	0	0	1	1	1
Heat treating equipment operators	724	0	0	0	0	0	0	1
Wood lathe, routing, and planing machine operators	726	0	0	1	0	1	0	1
Sawing machine operators and sawyers	727	0	0	0	1	0	0	1
Shaping and joining machine operator (woodworking)	728	1	0	1	0	1	1	1
Nail and tacking machine operators (woodworking)	729	0	0	1	1	0	0	1
Other woodworking machine operators	733	0	0	0	1	0	0	1
Printing machine operators, n.e.c.	734	0	1	0	0	0	0	1
Photoengravers and lithographers	735	1	0	0	0	1	1	1
Typesetters and compositors	736	0	0	0	0	0	1	1
Winding and twisting textile/apparel operatives	738	0	0	0	0	0	0	1
Knitters, loopers, and toppers textile operatives	739	0	0	1	0	0	0	1
Textile cutting machine operators	743	0	0	1	0	0	0	1
Textile sewing machine operators	744	1	0	0	0	1	1	1
Shoemaking machine operators	745	0	1	1	1	0	0	1
Pressing machine operators (clothing)	747	1	0	0	0	1	1	1
Laundry workers	748	1	0	0	0	1	1	1
Cementing and gluing maching operators	753	1	0	0	0	1	1	1

Packers, fillers, and wrappers	754	1	0	0	0	1	1	1
Extruding and forming machine operators	755	0	0	0	0	0	1	1
Mixing and blending machine operatives	756	0	1	0	1	0	0	1
Separating, filtering, and clarifying machine operators	757	0	0	0	0	0	0	1
Painting machine operators	759	0	0	0	0	0	0	1
Roasting and baking machine operators (food)	763	0	1	1	1	0	0	1
Washing, cleaning, and pickling machine operators	764	1	0	1	0	1	1	1
Paper folding machine operators	765	1	0	0	0	1	1	1
Furnace, kiln, and oven operators, apart from food	766	1	0	0	0	1	1	1
Crushing and grinding machine operators	768	1	0	0	0	1	1	1
Slicing and cutting machine operators	769	0	1	0	1	0	0	1
Motion picture projectionists	773	1	0	1	0	1	1	1
Photographic process workers	774	0	1	0	1	0	0	1
Welders and metal cutters	783	0	0	0	0	0	0	1
Solderers	784	1	0	0	0	1	1	1
Assemblers of electrical equipment	785	0	0	0	0	0	0	1
Hand painting, coating, and decorating occupations	789	1	0	0	0	1	1	1
Production checkers and inspectors	796	1	0	0	0	1	1	1
Graders and sorters in manufacturing	799	0	0	0	0	0	0	1
Supervisors of motor vehicle transportation	803	1	0	0	0	1	1	1
Bus drivers	808	0	0	0	0	0	0	1
Parking lot attendants	813	1	0	0	0	1	1	1
Railroad conductors and yardmasters	823	0	0	0	0	0	0	1
Locomotive operators (engineers and firemen)	824	0	0	0	0	0	0	1
Railroad brake, coupler, and switch operators	825	0	0	0	0	1	0	1
Ship crews and marine engineers	829	0	0	0	0	0	1	1
Water transport infrastructure tenders and crossing guards	834	1	0	1	0	1	1	1
Operating engineers of construction equipment	844	0	0	0	1	0	0	1
Crane, derrick, winch, and hoist operators	848	0	0	0	1	0	0	1
Excavating and loading machine operators	853	0	0	0	0	0	1	1
Misc material moving occupations	859	1	0	0	0	1	1	1
Helpers, constructions	865	0	0	0	0	0	0	1
Helpers, surveyors	866	0	0	0	0	0	0	1
Construction laborers	869	0	0	0	0	0	0	1
Production helpers	873	1	0	0	0	1	1	1
Garbage and recyclable material collectors	875	1	0	0	0	1	1	1
Stock handlers	877	1	0	0	0	1	1	1
Machine feeders and offbearers	878	1	0	0	0	1	1	1
Freight, stock, and materials handlers	883	1	0	0	0	1	1	1
Garage and service station related occupations	885	1	0	0	0	1	1	1
Vehicle washers and equipment cleaners	887	1	0	0	0	1	1	1
Packers and packagers by hand	888	1	0	0	0	1	1	1

V. Additional Samples and Pairings

This section includes a number of robustness checks including regressions using restricted samples, alternative degree level classification, and incremental analysis. Examples are presented for Table 5 below, but the code carries out the same exercise for each regression table presented in the paper. Exact samples used in each of these regressions are documented in the corresponding code.

Because sample selection is a large concern in an exercise such as this, we include a version of incremental analysis. Traditionally this excludes individual observations, calculates regression coefficients, and then compares this to the original, looking for outliers. In our case we calculate each regression excluding each *pairing* individually to look for outlier pairings which may be driving the results. Results from these regressions are available in excel format online.

**Table 5: Regression of Completions on Labor Market Variables
Restricted Sample 1**

Lag	Coefficient on:	Dependent Variable: Completions			
		Absorption	Absorption	ShareOcc	ShareOcc
1 Lag		0.076***	0.013	65,801**	5,748
		-0.018	-0.007	-22,209	-4,807
2 Lags		0.081***	0.018**	47,522**	7,385
		-0.017	-0.007	-16,280	-4,817
3 Lags		0.075***	0.026**	53,799**	15,176*
		-0.011	-0.009	-14,732	-6,301
4 Lags		0.077***	0.027***	55,400***	20,233**
		-0.012	-0.007	-13,509	-5,572
5 Lags		0.091***	0.032***	60,583**	22,174***
		-0.017	-0.007	-20,360	-4,799
6 Lags		0.147***	0.055*	86,150***	32,551***
		-0.033	-0.028	-21,369	-4,621
7 Lags		0.151***	0.044*	118,116**	47,830*
		-0.029	-0.019	-36,198	-20,838
8 Lags		0.139***	0.031***	116,783**	45,427**
		-0.031	-0.006	-37,480	-16,770
9 Lags		0.148***	0.019*	112,269***	26,768*
		-0.025	-0.008	-26,332	-11,555
10 Lags		0.142**	0.007	97,318***	8,126
		-0.055	-0.015	-19,770	-7,384
CPS Controls		X	X	X	X
Year Fixed Effects		X	X	X	X
Pair Fixed Effects			X		X
Observations		952	952	1020	1020
R-squared		0.32	0.96	0.24	0.96

Notes:

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

CPS Controls: Occupational Share (Female, Married, Self Empl., Public Employees, Paid by the Hour, Union Members) as well as average age and a year trend.

Standard errors are clustered at the industry group level (Financial, Science, Engineering, Healthcare, Computer Related and Other).

**Table 5: Regression of Completions on Labor Market Variables
Restricted Sample 2**

Lag	Coefficient on:	Dependent Variable: Completions			
		Absorption	Absorption	ShareOcc	ShareOcc
1 Lag		0.068***	0.016*	51,001***	6,978***
		-0.016	-0.008	-8,451	-1,030
2 Lags		0.078***	0.020**	46,357***	8,637*
		-0.01	-0.006	-10,987	-3,760
3 Lags		0.073***	0.029**	51,108***	16,298***
		-0.012	-0.009	-11,533	-3,616
4 Lags		0.078***	0.028***	63,862***	23,671***
		-0.004	-0.006	-8,715	-2,986
5 Lags		0.090***	0.032**	64,288***	23,900***
		-0.009	-0.01	-13,347	-2,193
6 Lags		0.218***	0.084*	79,365***	32,763***
		-0.015	-0.043	-16,079	-3,520
7 Lags		0.209***	0.062	166,537***	67,610**
		-0.008	-0.038	-19,746	-26,232
8 Lags		0.161***	0.021	170,319***	52,599
		-0.035	-0.017	-30,564	-31,155
9 Lags		0.154***	0.003	149,041***	22,397
		-0.032	-0.011	-29,337	-21,395
10 Lags		0.116***	-0.011	105,652***	-4,369
		-0.021	-0.013	-21,332	-7,917
CPS Controls		X	X	X	X
Year Fixed Effects		X	X	X	X
Pair Fixed Effects			X		X
Observations		602	602	645	645
R-squared		0.58	0.96	0.44	0.96

Notes:

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

CPS Controls: Occupational Share (Female, Married, Self Empl., Public Employees, Paid by the Hour, Union Members) as well as average age and a year trend.

Standard errors are clustered at the industry group level (Financial, Science, Engineering, Healthcare, Computer Related and Other).

Table 5: Regression of Completions on Labor Market Variables
Alternative Degree Completions Level Definitions

Lag	Coefficient on:	Dependent Variable: Completions			
		Absorption	Absorption	ShareOcc	ShareOcc
1 Lag		0.081***	0.01	72,353**	4,755
		-0.019	-0.007	-21,665	-4,409
2 Lags		0.084***	0.016*	53,526***	5,895
		-0.017	-0.007	-15,049	-4,522
3 Lags		0.077***	0.022**	57,164***	13,217*
		-0.009	-0.009	-12,212	-6,188
4 Lags		0.080***	0.024**	60,999***	18,481**
		-0.01	-0.008	-10,038	-5,553
5 Lags		0.095***	0.029***	64,000***	20,538***
		-0.016	-0.007	-16,081	-4,911
6 Lags		0.134***	0.043	89,635***	30,599***
		-0.031	-0.027	-18,052	-4,996
7 Lags		0.151***	0.033	114,644**	42,097*
		-0.025	-0.019	-36,242	-19,177
8 Lags		0.141***	0.023*	118,981**	39,210**
		-0.026	-0.011	-40,830	-16,390
9 Lags		0.152***	0.015*	116,404***	22,148*
		-0.019	-0.008	-32,896	-11,516
10 Lags		0.154**	0.008	93,897***	5,505
		-0.047	-0.013	-22,427	-7,355
CPS Controls		X	X	X	X
Year Fixed Effects		X	X	X	X
Pair Fixed Effects			X		X
Observations		1092	1092	1170	1170
R-squared		0.27	0.96	0.19	0.96

Notes:

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1

CPS Controls: Occupational Share (Female, Married, Self Empl., Public Employees, Paid by the Hour, Union Members) as well as average age and a year trend.

Standard errors are clustered at the industry group level (Financial, Science, Engineering, Healthcare, Computer Related and Other).

VI. Appendix References

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