

VISITINPS

un anno dopo

formazione, ricerca e innovazione

**La transizione Università-Lavoro:
il ruolo della scelta di facoltà come determinante di reddito,
occupazione e carriera**

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The inefficiencies of the Italian market for college graduates

- ▶ In 2016 only 26.2% of Italians between 30 and 34 had a university degree, the lowest share in the EU (UE-27 average: 39.2 %)
- ▶ Although the supply of university graduates is so low, the unemployment rate of university graduates between 25 and 39 was 17,1% in 2016 (in Germany is 2.8%, for Italian high school graduates is 21.1%)
- ▶ Aggregate statistics about university graduates do not inform policy makers and family very well
- ▶ It is not a problem of overall supply of university graduates. There are extreme differences in labor market outcomes across fields of study

- ▶ The choice of university field of study has substantial long-lasting effects on careers and earnings
- ▶ Expectations on labor market outcomes are not the only determinants of the choice of field, but they play a crucial role.
- ▶ Which are the returns to specific fields of study in the context of the Italian Labor market?
- ▶ Which are the labor market events that explain the differential returns across graduates of different fields?
- ▶ Which fields guarantee higher employment probability? A better match between skills acquired and occupation? Steeper career trajectories? More employment stability? Higher social mobility?

Is field choice an investment or consumption decision?

1) **U.S. system:**

- ▶ Market price for university education
- ▶ Students make investment decisions
- ▶ Field choice in the third year at university, 1 or 2 years before entering the labor market
- ▶ Easy to switch field and possibility of majoring in different fields

2) **European System:**

- ▶ University education is heavily subsidized. Limited cost dimension
- ▶ Investment or consumption choice?
- ▶ Student tend to underestimate the importance of future economic returns
- ▶ Field choice at the end of high school and high cost to switch field. Students cannot adjust to labor market conditions

Alternative policies - Danish approach



Adjustment of student intake in higher education programmes

An initiative which will adjust the student intake within certain fields of study at the universities, university colleges, and academies of professional higher education was launched in 2014.

The adjustment of student intake concerns fields of study which have had a systematic high unemployment rate, compared to other graduates from the higher education programmes.

The objective for the adjustment of student intake within certain higher education programmes is to transfer student admission from programmes with systematic and notable higher unemployment among graduates to programmes which have better employment prospects.

The individual university, university college, and academy of professional higher education decides how to implement the reduction of student intake within the announced and agreed framework. Among other things it means that the individual institution has chosen how the reductions should be applied to the selected educational groups and on individual programmes. It



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Nicolai Ebsen

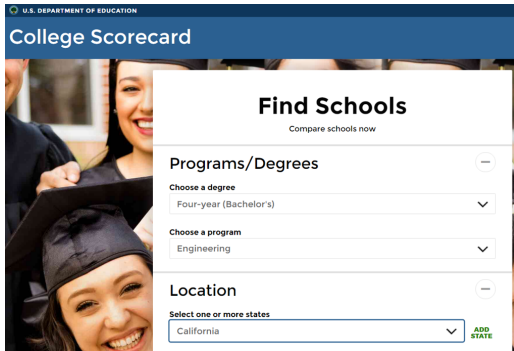
Phone: +45 72 31 78 44

Email: nieb@ufm.dk

Problems: very hard to forecast demand for graduates of specific fields 5 years from now, risk of artificially reinforce demand/supply cycles

Alternative policies - Obama approach

- ▶ Obama: “college scorecard aimed at helping students choose colleges that offer good value for their tuition dollars” (New York Times, 20/08/2013)
- ▶ Objective: Give students and family better information about costs and returns to field and university choice and stress the importance of field choice.
<https://collegescorecard.ed.gov/>



The image shows a screenshot of the 'College Scorecard' website's 'Find Schools' search interface. The header includes the U.S. Department of Education logo and the text 'College Scorecard'. The main heading is 'Find Schools' with the subtext 'Compare schools now'. Below this, there are three main sections: 'Programs/Degrees', 'Location', and a state selection dropdown. The 'Programs/Degrees' section has a minus sign icon and contains two dropdown menus: 'Choose a degree' with 'Four-year (Bachelor's)' selected, and 'Choose a program' with 'Engineering' selected. The 'Location' section has a minus sign icon and a dropdown menu with 'California' selected. To the right of the state dropdown is a green 'ADD STATE' button. The background of the interface features a photograph of smiling graduates in caps and gowns.

Alternative policies - Obama approach

College Scorecard

Filter Results

Edit Search

50 Results

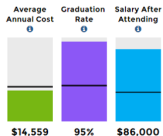
SHARE

SORT: % Earning Above HS Grad

PAGE: 1 2 3

Stanford University

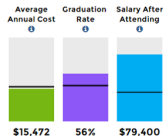
Stanford, CA
7,018 undergraduates



National Average

The California Maritime Academy

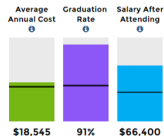
Vallejo, CA
1,047 undergraduates



National Average

Claremont McKenna College

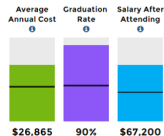
Claremont, CA
1,293 undergraduates



National Average

Harvey Mudd College

Claremont, CA
802 undergraduates



National Average

- ▶ **Selection on observables.** Hamermesh and Donald (2008), Del Rossi and Hersch (2008), Chavalier (2011), Webber (2014)
- ▶ **Discrete choice models** Arcidiacono (2004), Befy, Fougere and Maurel (2012), Kinsler and Pavan (2014)
- ▶ **Fuzzy Regression discontinuity** Hastings, J., Neilson, C. and Zimmerman, S. (2013), 'Are some degrees worth more than others? evidence from college admissions cutoffs in Chile Kirkeboen, L., Leuven, E. and Mogstad, M. (2015), Field of study, earnings, and self-selection. Norway

Pilot College Score Card for Italy

- ▶ Not just earnings, but complete careers
- ▶ Long run outcomes (till 25 years on the labor market) and trajectories
- ▶ Labor Market Determinants of differential earnings across fields of study
- ▶ Which are the fields of study that guarantee more equality of opportunity and social mobility?
- ▶ No RD, but detailed pre-college academic and background observables and IV strategy

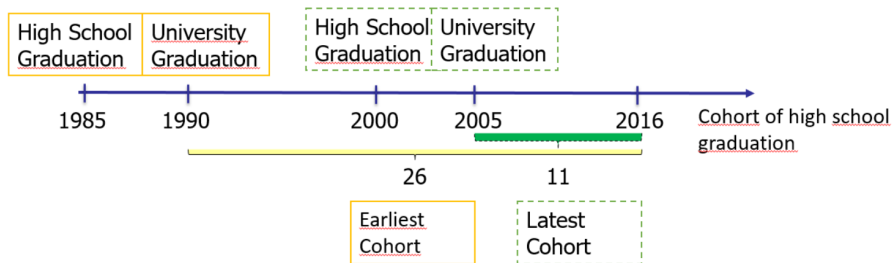
- ▶ High school hard-copy registries: manually collected administrative data for students graduating from college-preparatory high schools (“licei”) between 1985 and 2005 in the city of Milan.
- ▶ Individual high school info: high school exit score, peer characteristics, assignment to a specific team of instructors
- ▶ Matched high school records to administrative data of the 5 Universities in Milan containing Dalle UniversitÃ Milanesi ho ottenuto date di iscrizione e di conseguimento titolo, voto e corso di laurea
- ▶ Based on home address at time of high school attendance I matched data for family house value

Match with social security data (INPS)

- ▶ Employment records
- ▶ Self-employment records
- ▶ Firm id
- ▶ Sector
- ▶ Occupation

I have also matched civil statistic individual data to link parents' social security records

Dataset timeline



- ▶ I observe the earliest cohort for 26 post-education labor market years (post education defined exogenously starting from 6th year after high school graduation), the latest cohort for 11 post-education labor market years
- ▶ To avoid overweighting earlier labor market years, I weight regression by the inverse of the number of observations per labor market year (i.e. I weight labor market observations past the 11th post-education labor market years relatively more)

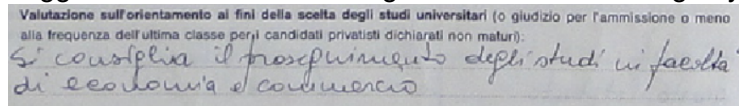
Basic model - Pool OLS model

$$y_{itcsg} = \alpha + \pi_i^f + \beta X_i + \gamma Z_{-i} + \phi_{sc} + \psi_g + \epsilon_{itcsg}$$

- ▶ y is labor market outcome observed t years after expected graduation for individual i who completed high school with graduating cohort c , attended school s with group of instructors g
- ▶ π_i^f is a set of dummies for field of study choice at the end of high school (9 fields or 4 broad fields). Humanities is the omitted field category
- ▶ X_i is a set of individual characteristics such as gender, high school exit score, parents' wealth proxy
- ▶ Z_{-i} is a set of average class peer characteristics such as gender share, share of low SES classmates, share of high SES classmates
- ▶ ϕ_{sc} is a set of school/cohort fixed effects
- ▶ ψ_g is a set of instructor team fixed effects
- ▶ Standard errors clustered at the individual level

IV strategy - Teacher field suggestion

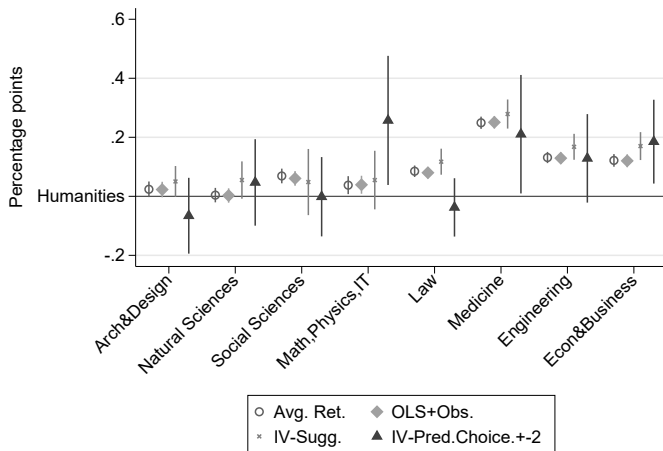
At the end of the high school students receive a formal field suggestion recorded in the high school exit exam registry.



“We suggest the student to continue her/his studies with an Economics and Business Degree”

- ▶ I exploit this field suggestion as “instrumental variable” for the observed choice of major. Intuition is that estimates of the returns to field rely on those individual who chose a major following their teacher suggestion
- ▶ In alternative estimation techniques I also exploit the average suggestions that specific teachers gave to students other than her/him as an “instrumental variable” for her/his own field choice.

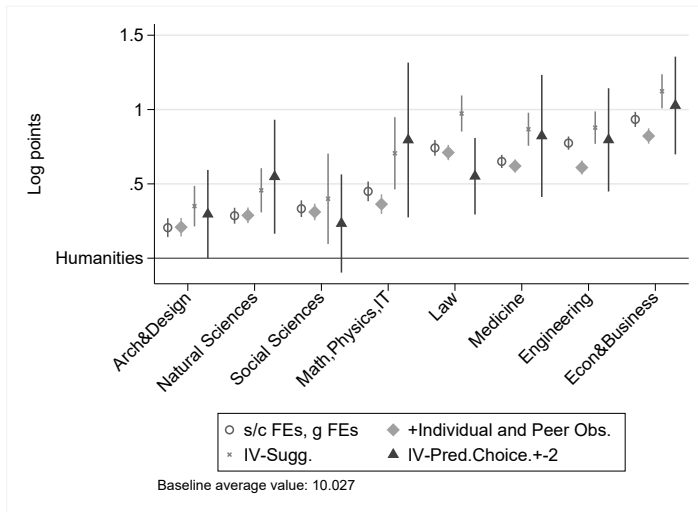
Probability of observing positive income 0-25 years on labor market



Baseline average value: .638

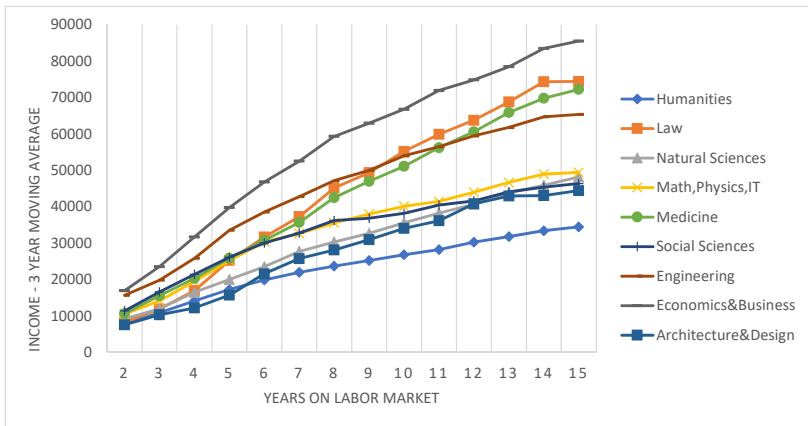
Estimates: 1 Average Return, 2 Ordinary least square controlling for observable characteristics, 3 **IV1** - Own suggestion, 4 **IV2** \hat{S}_{icsg}^f

Returns 0-25 years on labor mkt - Log of income (cond. on inc>0)

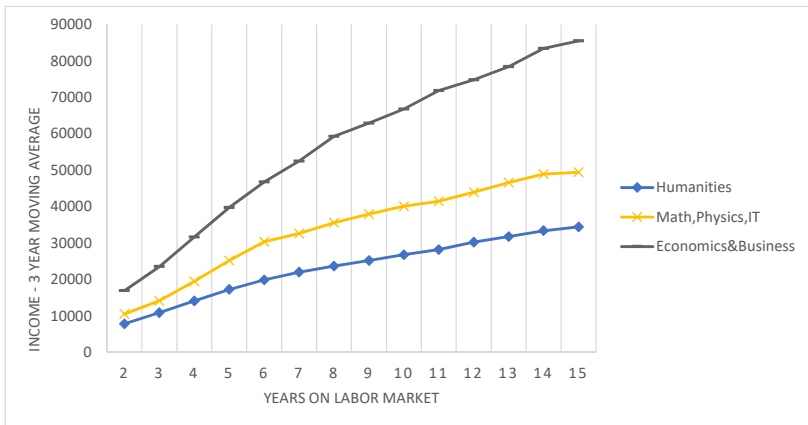


Estimates: 1 School/cohort and teacher group fixed effects, 2 +controlling for observable characteristics, 3 **IV1** - Own suggestion, 4 **IV2** $\hat{\pi}_{icsg}^f$

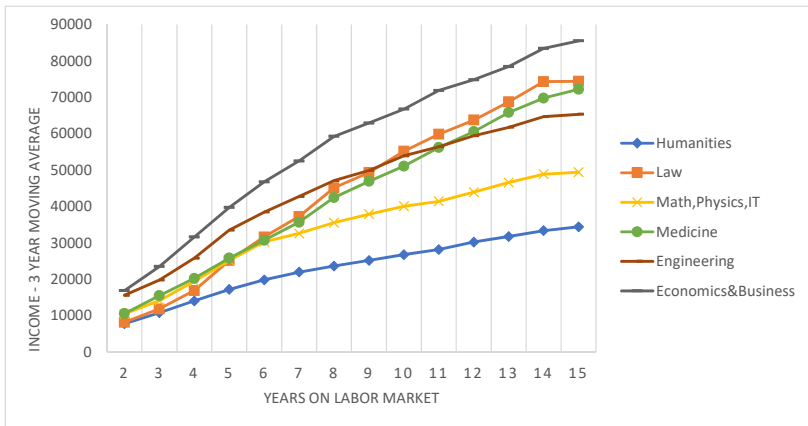
Income trajectories by field of study 0-15 years on labor market (OLS)



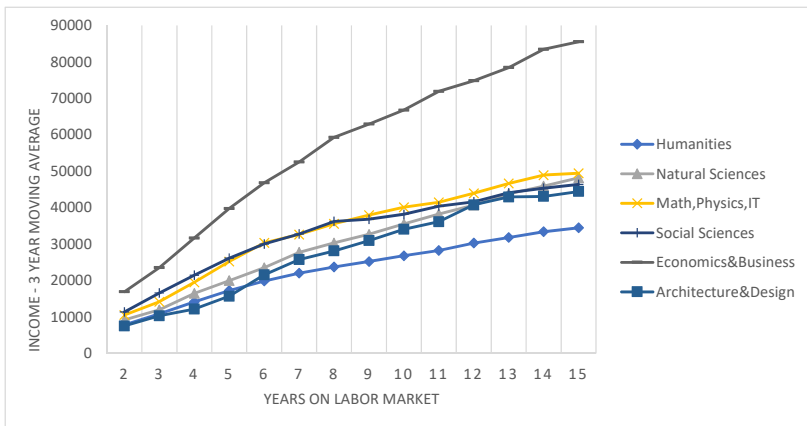
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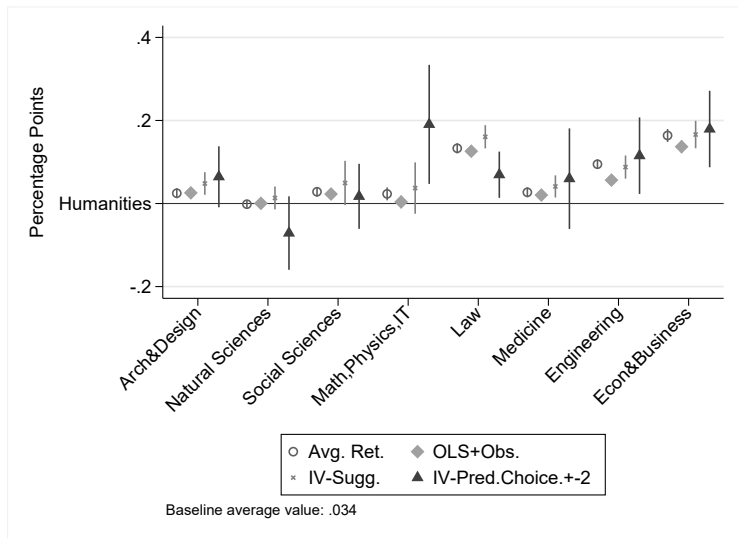
Income trajectories by field of study 0-15 years on labor market (OLS)



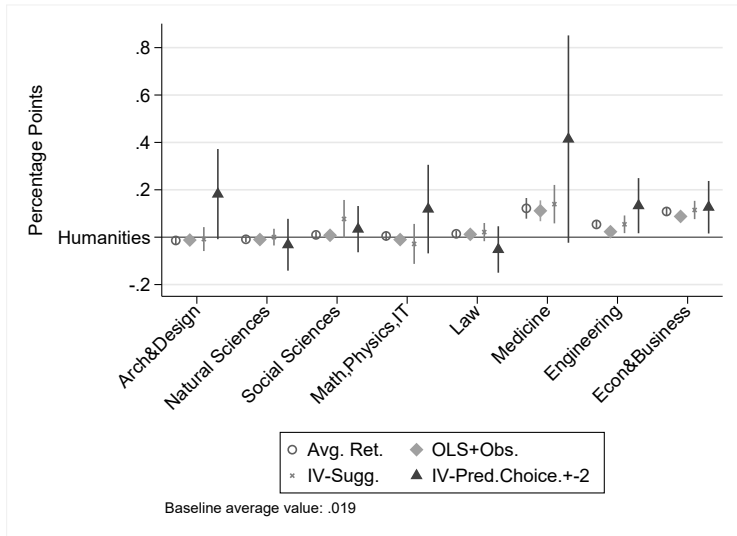
Labor market determinants of the differential returns to field

- ▶ Lottery ticket effect (probability of reaching top1%) and top management
- ▶ Poverty, unemployment and unstable careers
- ▶ Overeducation
- ▶ Insulation from recession

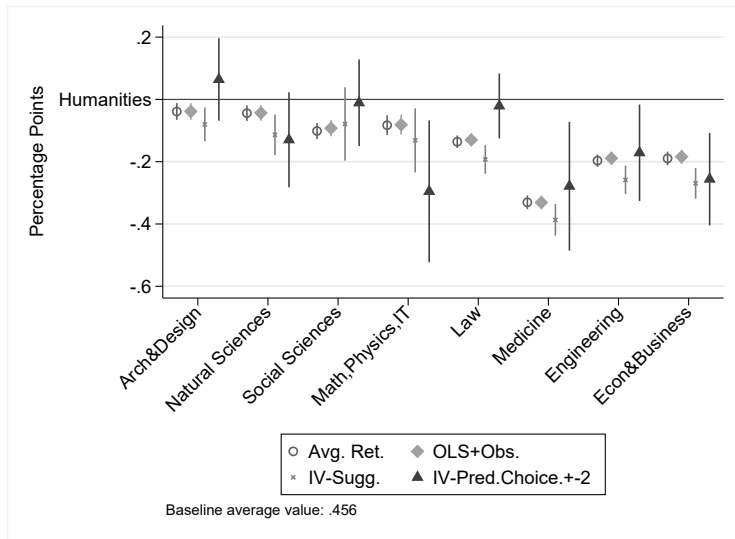
Lottery ticket effect - Probability of reaching top 1%



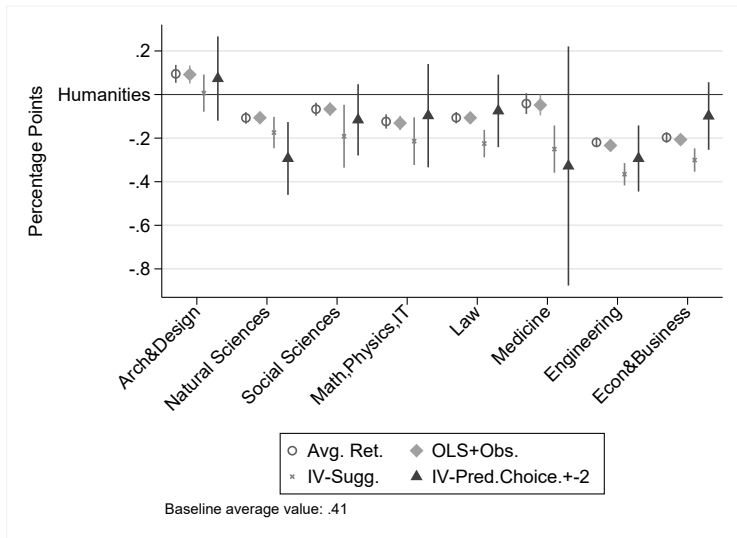
Probability of becoming a top manager



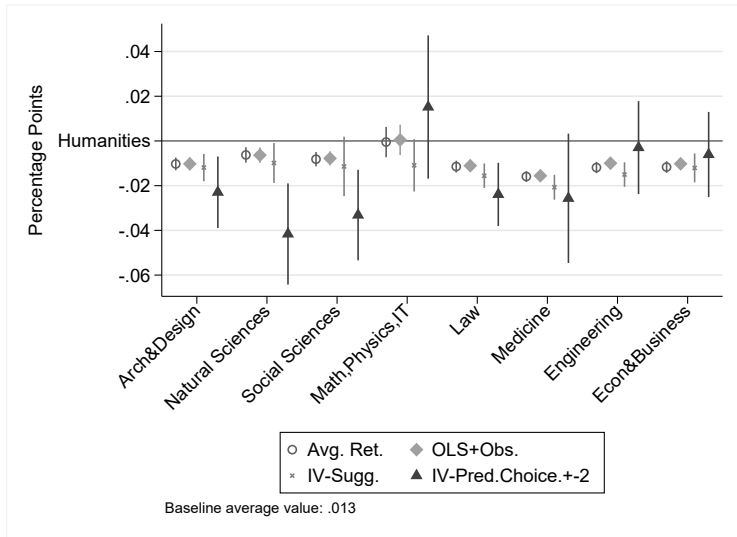
Probability of having income below the poverty line - 0-25 years on labor market



Probability of having a fixed-term contract



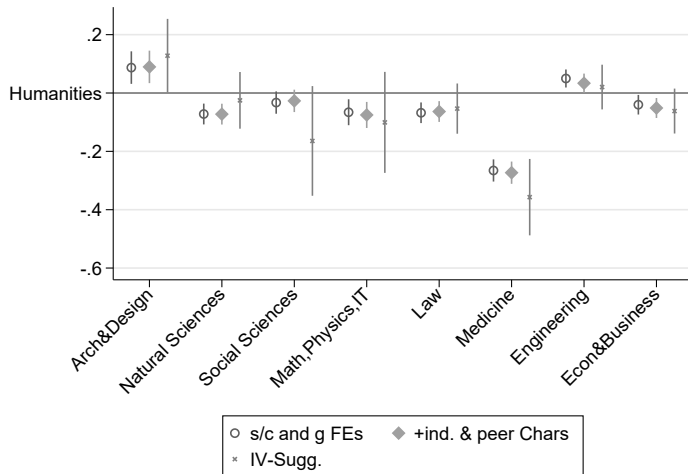
Probability of receiving unemployment benefits



Over Education as measure of excess supply

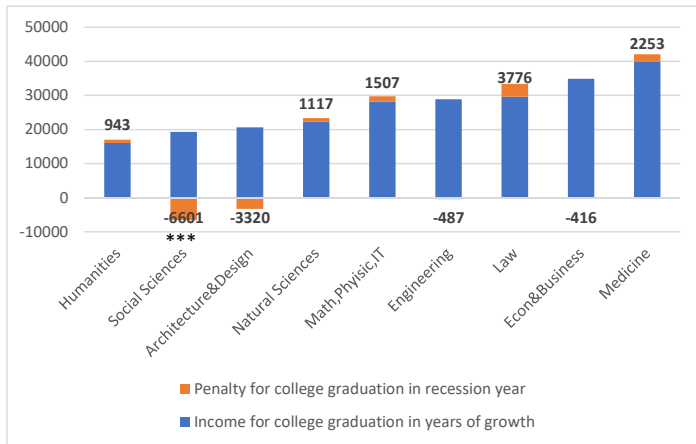
- ▶ Using the OECD PIAAC survey I have calculated for each “sector/occupation cell”, the percentage of respondents who answers that no college degree is required for her/his job
- ▶ I matched each labor market observation to this measure of overeducation
- ▶ I classified as over-educated those individuals who are in a “sector/occupation cell” that does not require a college degree (e.g. all respondents in that cell answers that no college degree was required)

Probability of working in a sector/occupation cell that does not require a college degree - 0-25 years on labor market



Baseline average value: 0.32

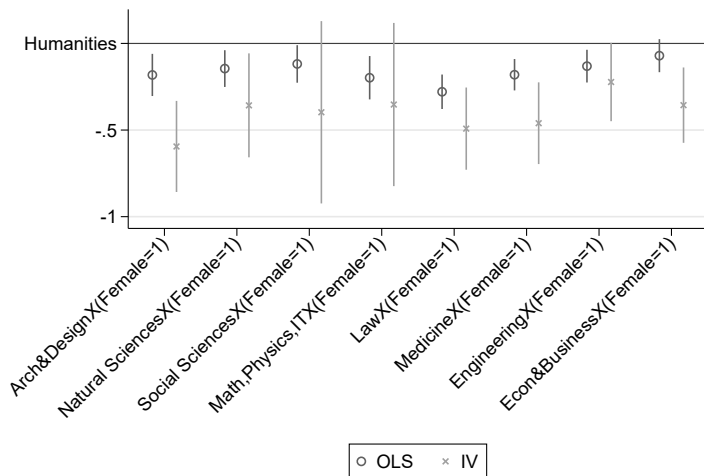
Penalty for entering labor market in recession years



Returns to the choice of field might be different based on gender and parental background

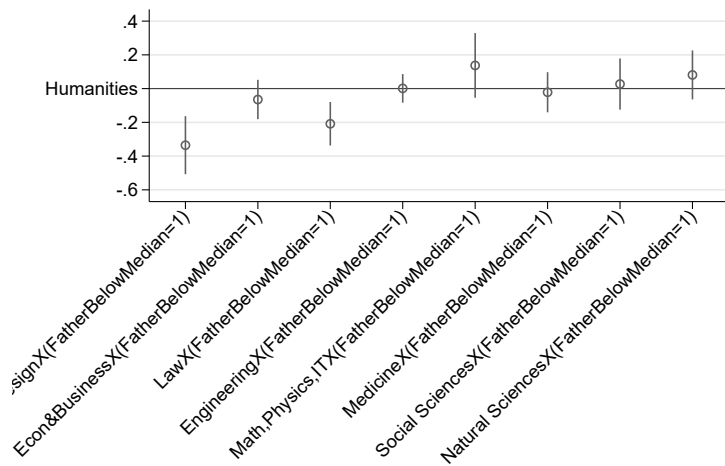
- ▶ Which fields have higher penalty for women?
- ▶ Are high return fields as rewarding for individuals with a low SES background?
- ▶ Do high return fields guarantee an equally high probability to reach the top 1% for individuals with a low SES background?

Log of annual income - interaction of field choice x dummy female



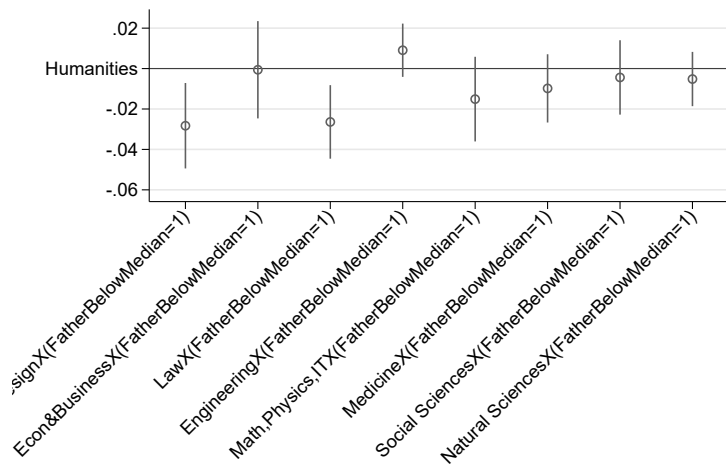
Baseline average Humanities: 9.65

Log of annual income - interaction of field choice x dummy father has income below median



Baseline average Humanities: 9.66

Probability of reaching top 1% - interaction of field choice x dummy father has income below median



Baseline average Humanities: 0.01

Results Summary

- ▶ Stark differences in returns across fields of study in the first 25 years on the labor market (1 full log point difference between economics and business and humanities in the first 25 years on the labor market)
- ▶ Differences are substantially driven by the probability of extreme events (income below poverty line vs top 1% income), by type of contract and unemployment probability
- ▶ Overeducation for certain fields suggest a possible excess supply of graduates in those fields
- ▶ High return fields also insulate from the risk of entering the labor market during a recession
- ▶ Interesting patterns also in the career trajectories with engineering starting high, but remaining relatively flat. Law and Medicine start low but steeper and soon pass engineering trajectories.
- ▶ Some fields yield substantially lower returns for females and individuals with low SES family background

- ▶ Study dynamics (job turnover frequency, upgrading etc.) that determine difference in trajectories
- ▶ Match to firm value added
- ▶ Maternity and health outcomes