The Impact of Going Public on the Firm's Human Capital

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Introduction

- Going public is one of the most important decisions in a firm's life.
- Not surprisingly, IPOs have long been the subject of interest for academics and practitioners.
- Policy makers also see access to public equity as being crucial for growth, e.g., the JOBS act in the US.
- Labor: key input in production. Yet: little is know about impact of going public on the human capital of firms

Introduction (cont'd)

There are many ways through which going public could affect the human capital of a firm.

- Worker exodus due to cashing in from IPO (stocks, options).
- Worker selection may change due to changes in corporate culture.
- Access to public equity markets may reduce firm's financial constraints allowing firms to pay higher wages.
- Public equity market certification and reduction in financial constraints could lead to an upgrade in the skill composition of the labor force.

Introduction (cont'd)

- Public equity markets regulation may force firms to hire specialized professionals: lawyers, accountants, etc.
- The presence of a new (dispersed) source of external financing could impose a degree of standardization and professionalization (Rajan 2012).
- IPOs could also impact employment and wage security:
  - Public firms may be less exposed to and more able to insure workers against (temporary) shocks.
  - On the other hand, access to market signals or short-termism could lead to lower firm insurance.
  - If IPOs change worker perception of employment risk, workers may select into public vs private firms based on degree of risk aversion.

Research Questions

- Does going public affect firms' human capital pool?
  - Study compensation, cognitive and noncognitive skills, and presence of HR professionals, accountants, and lawyers ("professionalization" of labor force) for "stayers" vs. "leavers" and "joiners".
- Does going public affect employer-employee relationship?
  - Study wage and employment security.
  - Track the labor pool along dimensions correlated with risk aversion: age, marital status, and gender.
- Goal: provide a characterization of the changes to the firm's human capital that occur around the IPO.

Related literature

- Large literature on causes and corporate consequences of IPOs:
  - Timing (e.g., Pastor and Veronesi 2005; Chemmanur and He 2011), share allocation (e.g., Benveniste and Spindt 1989), pricing (e.g., Rock 1986; Beatty and Ritter 1986; Ljungqvist and Wilhelm Jr 2003; Loughran and Ritter 2004), and performance of IPOs (e.g., Ritter 1991)
- Labor effects of going public:
  - Bernstein (2015), Borisov, Ellul, and Sevilir (2015), and Babina, Ouimet, and Zarutskie (2017)

Empirical challenges

Empirically studying these issues is challenging

- One requires very detailed employer-employee level data
  - Need to be able to observe the workers that leave and join firms along a set of relevant individual characteristics
- Identification is difficult
  - IPOs are not exogenous
  - Firms that go public may be fundamentally different from those that do not

Solutions to Empirical Challenges

- Use detailed employer-employee data from Sweden
  - Allows us to observe the individual characteristics of workers within and across firms
- For identification, we compare workers in firms that file for *and complete* IPOs to those in firms that file for but *withdraw from* the IPO.
- However, decision not to complete is itself endogenous
  - Follow Bernstein (2015) and use overall stock market returns at the time of the IPO book building as an instrument for completion.
  - Assumption: stock market returns in the 3 months prior to the IPO completion or withdrawal do not determine employee composition in the medium.

Data

- LISA:
  - Employer - employee matched data from Statistics Sweden (1990-2011)
  - Full Swedish population of over-16-year olds
  - Income, age, gender, marital status, etc.
- Military Data:
  - Enlistment data (1969-2011)
  - Cognitive and noncognitive skills scores for males
- Serrano:
  - Accounting data (1998-2011)

IPO Data

- Obtain list of IPO filings from Thomson One and Nasdaq Stockholm between 1998 and 2011
  - The initial registration is with Finansinspektionen (the Swedish government agency responsible for regulation of financial markets in Sweden)
  - According to Finansinspektionen there are no systematic records of withdrawn IPOs.
  - We obtain information on withdrawn IPOs and withdrawal dates from Thomson One
  - We complement these data with information from news searches in Retriever, a Swedish online media archive.

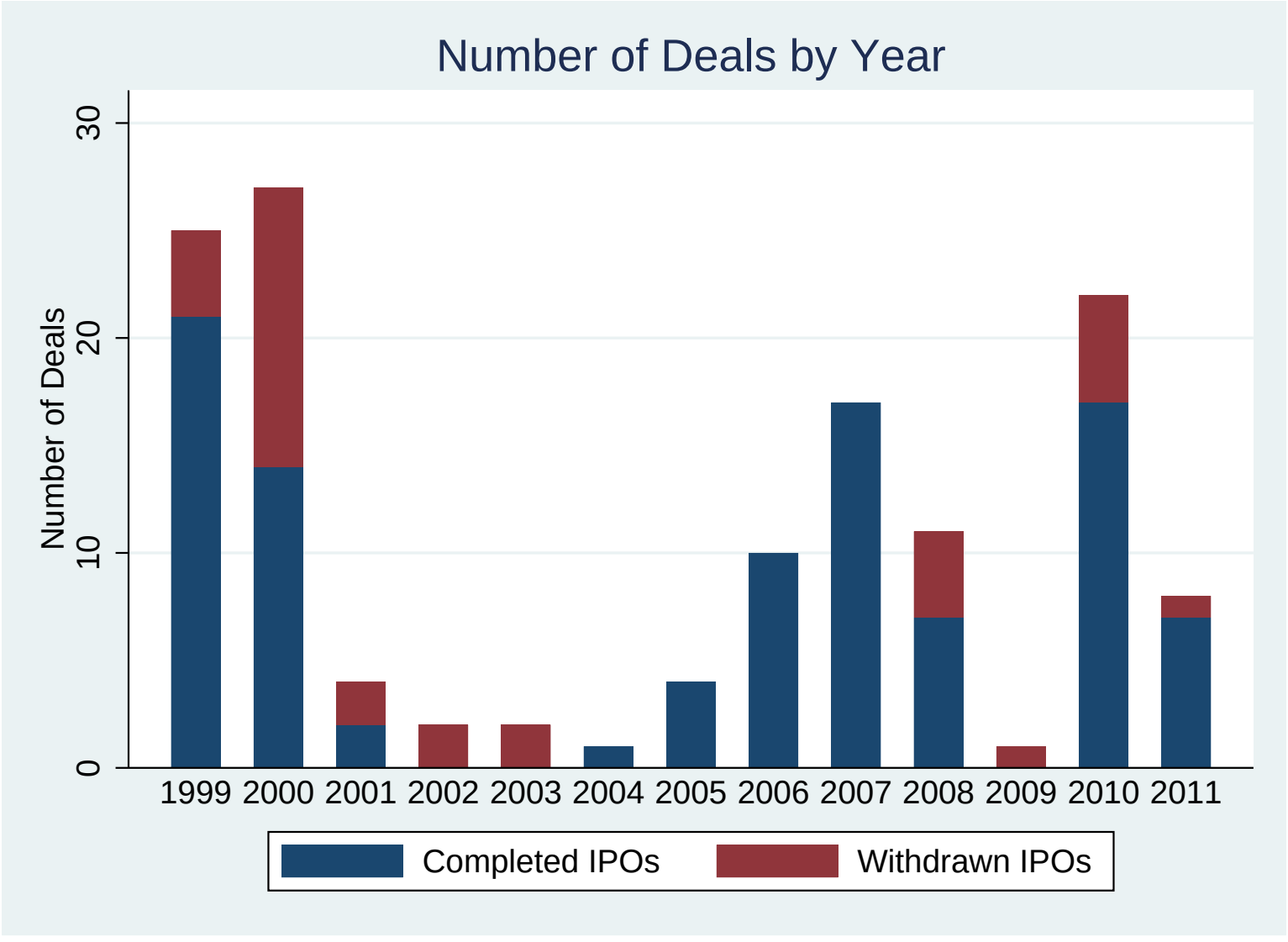
- Stock market data
  - We obtain SIX Return Index (a broad stock market index for the Swedish stock market) from Finbas (a database of Swedish financial data maintained by the Swedish House of Finance)

- We do not include spin-offs in the sample.

Sample

- The final sample:
  - Contains the period of t-2 to t+2
  - Requires firms to be in the sample at least one year before and after
  - Covers the period 1998 to 2011, when firm controls are available.
  - 134 "events" (100 completed IPOs, 34 withdrawn)
  - Contains a total of 29,155 workers

IPOs completions and withdrawals over time



Main Variables

- *IPO* × *Post*: is the main treatment variable of interest

- Main outcome variables:
  - *Ln(wage)*
  - *General skills*
  - Other characteristics: *Wage volatility*, *Dismissal*, *Employee age*, *Married*, *Female*, and *Mother*

- Controls:
  - Firm FEs
  - Year FEs
  - Employee fixed effects (in some specifications)
  - Firm controls (in some specifications): *Firm size*, *Tangibility*, *Profitability*, *Leverage*, *Cash / Assets*
  - Employee controls (in some specifications): *Employee age*, *Married*, and *Female*

Summary statistics

Variable	Obs.	Mean	Median	S.D.
Log(Wage)	67,646	7.53	7.73	0.94
General skills	20,523	11.62	12.00	2.89
Family members	67,646	0.16	0.00	0.46
Log(Wage) residual	67,646	0.08	0.13	0.53
Firm size	67,646	14.14	14.04	2.12
Tangibility	67,646	0.17	0.15	0.14
Profitability	67,646	0.01	0.06	0.32
Leverage	67,646	0.05	0.00	0.10
Cash/Assets	67,646	0.10	0.05	0.14
Employee age	67,646	38.12	36.00	12.44
Female	67,646	0.49	0.00	0.50
Married	67,646	0.40	0.00	0.49
Mother	67,646	0.19	0.00	0.39
Join minus leave	66,755	0.01	0.00	0.60
Dismissal	66,755	0.16	0.00	0.37
Wage volatility	34,931	0.03	0.01	0.05
Distance to median wage	67,646	0.57	0.35	0.63

First-stage: SIX index returns and IPO completion

SIX index returns and ex-ante firm characteristics

Variable	Top 25% Mean	Top 25% S.D.	Bottom 25% Mean	Bottom 25% S.D.	P-Value of Difference
Average Log(Wage)	7.75	0.60	7.70	0.56	(0.659)
Average Combined skills	12.57	1.92	13.05	1.61	(0.568)
Average Family members	0.06	0.11	0.07	0.11	(0.543)
Average Log(Wage) residual	0.06	0.36	0.13	0.29	(0.948)
Firm size	10.90	2.09	11.03	1.63	(0.829)
Tangibility	0.10	0.14	0.08	0.16	(0.429)
Profitability	-0.25	0.53	-0.22	0.49	(0.687)
Leverage	0.11	0.15	0.11	0.17	(0.793)
Cash/Assets	0.13	0.19	0.19	0.26	(0.136)
Average Employee age	41.30	10.01	37.39	6.84	(0.069)*
Average Female	0.22	0.19	0.35	0.23	(0.135)
Average Married	0.54	0.29	0.44	0.25	(0.258)
Average Mother	0.09	0.11	0.15	0.16	(0.370)
Average Join minus leave	0.20	0.38	0.24	0.35	(0.169)
Average Dismissal	0.12	0.18	0.13	0.13	(0.155)
Average Wage volatility	0.03	0.04	0.03	0.03	(0.830)
Average Distance to median wage	0.54	0.35	0.58	0.25	(0.175)

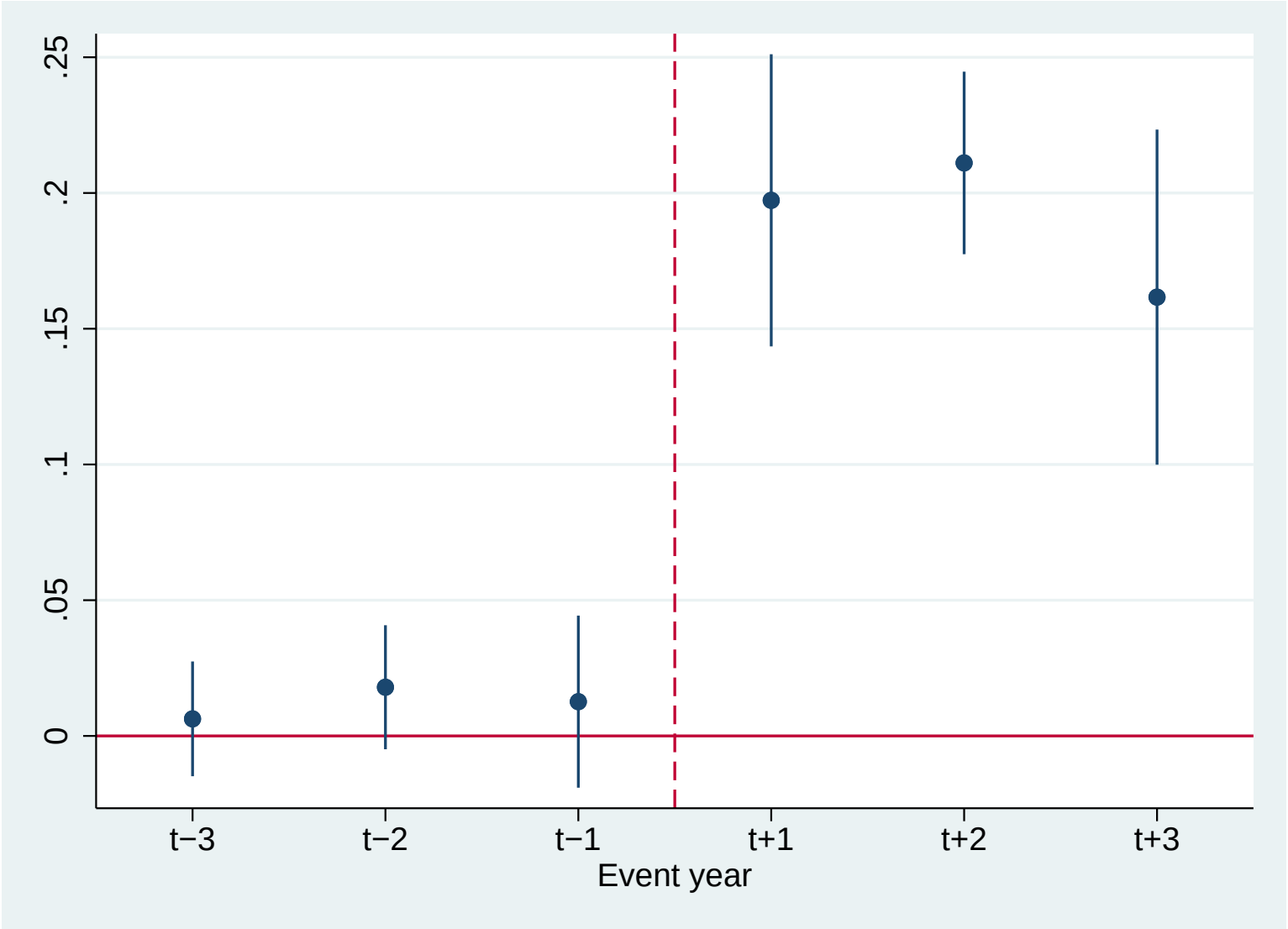
The impact of going public on wages

- We start by analyzing the effect of IPOs on worker wages
- Estimate a diff-in-diff specification: before vs after, completed vs withdrawn IPOs
- Instrument the probability of completing the IPO with overall stock market returns prior to the completion/withdrawal date
- Include firm FE, year FE, and in some specifications firm level controls (firm size, leverage, cash/assets, tangibility, and profitability) and worker level controls (employee age, marital status, and gender).

The impact of going public on worker wages

Dependent variable:	Log(Wage)
IPO × Post	0.176***
	(0.031)
Firm F.E.	Yes
Year F.E.	Yes
Firm Controls	No
Employee Controls	No
Observations	67,646
F-test first stage	41.959

Going public and the wages of workers



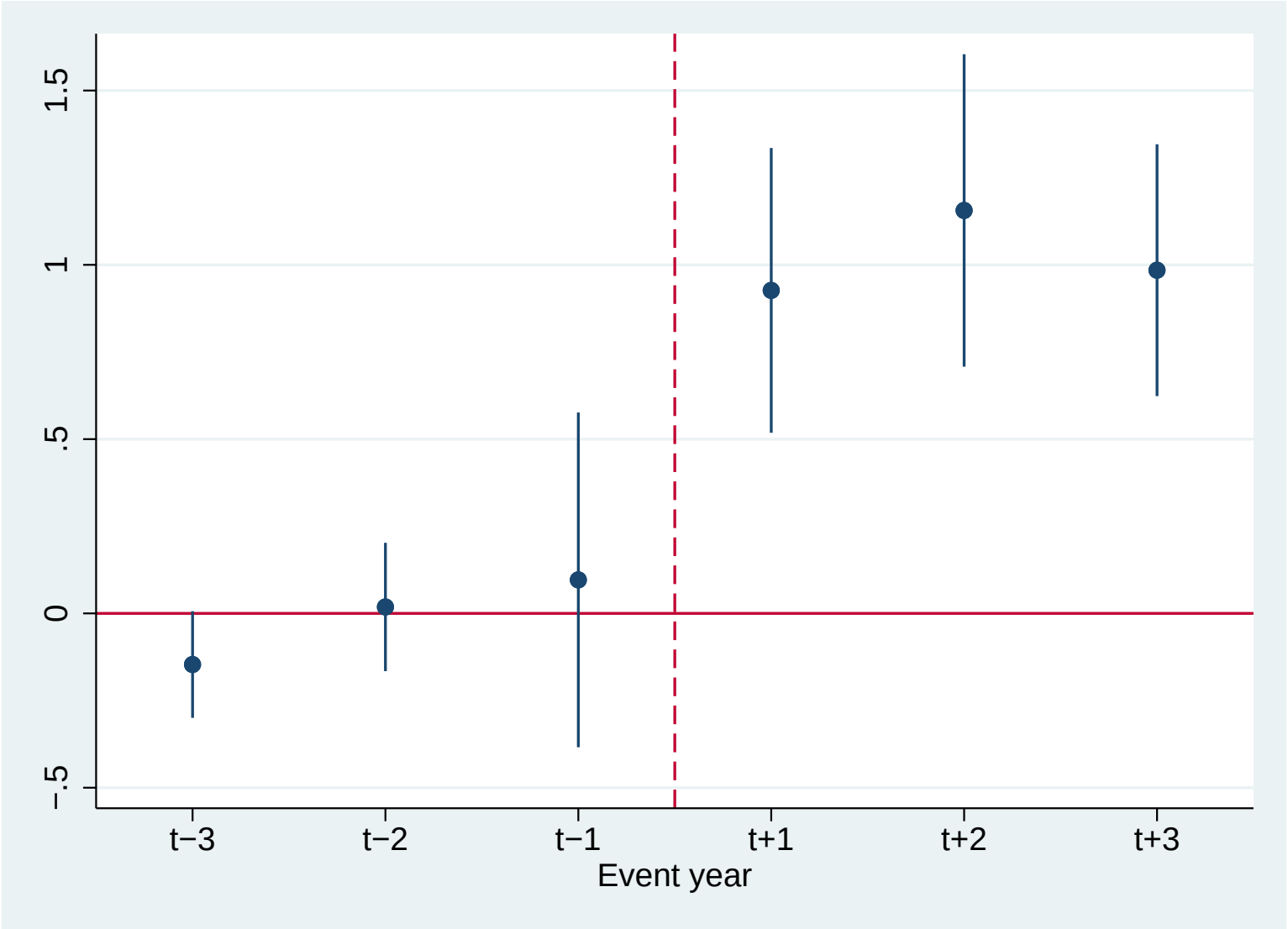
The impact of going public on the wages of workers: treatment vs. selection

	(1)
Dependent variable:	Log(Wage)
Panel A: Stayers	
IPO × Post	0.009
	(0.049)
Panel B: Joiners	
IPO × Post	0.290***
	(0.078)
Panel C: Leavers	
IPO × Post	-0.025
	(0.112)
Firm F.E.	Yes
Year F.E.	Yes
Firm Controls	No
Employee Controls	No

Going public and the skill composition of the labor force

	(1)
Dependent variable:	General skills
IPO × Post	0.870***
	(0.254)
Firm F.E.	Yes
Year F.E.	Yes
Enrollment period F.E.	Yes
Observations	20,523
F-test first stage	20.273

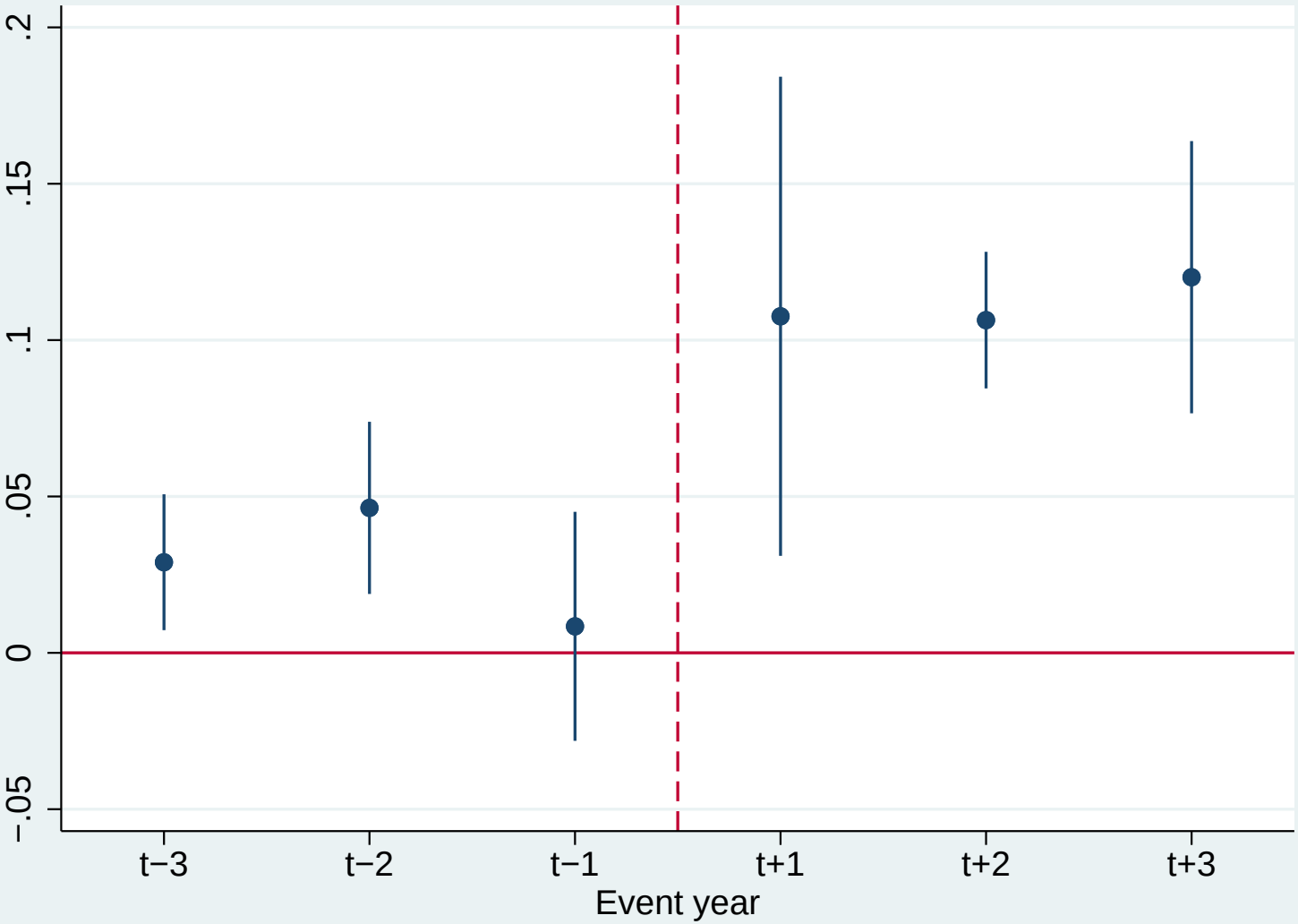
IPOs and the skill composition of the labor force



Wage residuals

Dependent variable:	(1) Log(Wage) residual
IPO × Post	0.069***
	(0.017)
Firm F.E.	Yes
Year F.E.	Yes
Observations	67,646
F-test first stage	41.959

Going public and wage residuals



Wages and tenure at the firm

- We find that post-IPO wages increase for incumbent ("stayer") workers with long tenure at the firm
- Consistent with firms financing with workers pre-IPO (Guiso, Pistaferri, and Schivardi 2013)
- These results not in previous version.

IPOs and the Professionalization of the Labor Force

- We analyze the prevalence of HR managers as a measure of professionalization of hiring process
- Find positive effects consistent with Rajan (2012)
- Also study the presence of other professionals that may be important for compliance with regulation: lawyers and accountants
- Find positive effects consistent with IPOs imposing regulatory/compliance costs

Employment and wage insurance

- We also study whether going public affects employment and wage insurance
- IPOs may:
  - Allow the firm to offer more security (in terms of wage and employment)
  - Increase sensitive of employment and wages to firm performance

Going public and the risk of employment contracts

	(1)
Panel A: Wage volatility	
IPO × Post	0.000
	(0.002)
Observations	26,256
F-test first stage	58.780
Panel B: Join minus leave	
IPO × Post	0.202
	(0.158)
Observations	66,755
F-test first stage	42.540
Panel C: Dismissal	
IPO × Post	-0.212**
	(0.081)
Observations	66,755
F-test first stage	42.540

Risk aversion and employee selection

	(1)
Panel A: Employee age	
IPO × Post	2.891***
	(0.503)
Panel B: Married	
IPO × Post	0.060***
	(0.017)
Panel C: Female	
IPO × Post	0.093***
	(0.022)
Panel D: Mother	
IPO × Post	0.031**
	(0.010)

Going public and within-firm wage inequality

	(1)
Dependent variable:	Distance to median wage
Panel A: All workers	
IPO × Post	-0.027
	(0.018)
Observations	67,646
F-test first stage	41.959
Panel B: Workers with above median wages	
IPO × Post	0.050***
	(0.014)
Observations	33,657
F-test first stage	42.366
Panel C: Workers with below median wages	
IPO × Post	-0.103***
	(0.025)
Firm F.E.	Yes
Year F.E.	Yes
Firm Controls	No
Employee Controls	No
Observations	33,662
F-test first stage	42.364

Caveats

- Sample contains only firms that file for IPO
- Failure to go public may itself be a treatment
- This is not unique to our setting, but worth keeping in mind – currently working on creating a matched control sample to include in the next version

Conclusion

- Going public is an important step for a firm and can have implications for its human capital.
- Our main results are that access to public equity markets affect the firm's workforce
  - Through wage increases (a manifestation of "selection" not "treatment")
  - Through increase in general (cognitive and noncognitive) skills of employees
  - Through professionalization of the recruiting process

Conclusion

- Going public also seems to allow the firm to offer more employment insurance and no less wage insurance
- Perhaps due the increase in firm insurance, relative to their private counterparts, public firms increase the share of worker that are:
  - Older, married, women, and women with children.
- These results imply that firms' financial choices affect the allocation of human capital in the economy
- We also believe these effects can have implications for the way firms operate and the functions they perform.

Thank you!